Scottish Hospitals Inquiry

Statement of Dr Teresa Inkster

Contents

Glossary/Acronyms

AICC	Acute Infection Control Committee
AMR	Antimicrobial resistance
ARHAI	Antimicrobial resistance and healthcare associated infection
BICC	Board Infection Control Committee
BMA	British Medical Association
BMS	Biomedical scientists
BMT	Bone marrow transplant
GGC	NHS Greater Glasgow and Clyde Health Board
CEL	Chief executive letter
CF	Cystic fibrosis
CNO	Chief Nursing Officer
CVC	Central venous catheter
GMC	General Medical Council
GRI	Glasgow Royal Infirmary
HAI	Healthcare acquired infection
HAI SCRIBE	Healthcare Associated Infection: Systems for Controlling Risk in the Built Environment
HEPA	High efficiency particulate air
HFS	Health Facilities Scotland
HIIAT	Hospital Infection Incident Assessment Tool
HIIORT	Healthcare Infection, Incident and Outbreak Reporting Template

HIS	Healthcare Improvement Scotland
HPS	Health Protection Scotland
HR	Human Resources
HSE	Health and Safety Executive
IC	Infection control
ICD	Infection control doctor
ICM	Infection control manager
ICN	Infection control nurse
ICU	Intensive care unit
ID	Infectious diseases
IMT	Incident management team
IPC	Infection prevention and control
IPCT	Infection Prevention and Control Team
ITU	Intensive treatment unit
MDDUS	Medical and Dental Defence Union of Scotland
MDT	Multidisciplinary team
MERS	Middle Eastern Respiratory Virus
NHS GGC	NHS Greater Glasgow and Clyde Health Board
NICU	Neonatal intensive care unit
NIPCM	National Infection Prevention and Control Manual
OD	Organisational development
PAG	Problem assessment group
PICU	Paediatric intensive care unit

PVC	Peripheral venous catheter
QEUH	Queen Elizabeth University Hospital, Glasgow
RHCG	Royal Hospital for Children Glasgow
SBAR	Situation background assessment recommendation
SGH	Southern General Hospital
SGUT	South Glasgow University Trust
SHFN	Scottish Health Facilities Notes
SHPN	Scottish Health Protection Network
SHTM	Scottish Health Technical Memorandum
SCI	Significant clinical incident
SMT	Senior management team
SPC	Statistical process control
SOP	Standard operating procedure
SSI	Surgical site infection
TB	Tuberculosis
TPD	Training Programme Director
WTG	Water technical group

CHAPTER 1: Personal and Professional History

Introduction

1. My name is Teresa Inkster. I am employed by Antimicrobial Resistance and Healthcare Associated Infection ("ARHAI") Scotland in a national role as an Infection Control Doctor and Microbiologist. I took up this post in September 2023. Prior to joining ARHAI, I had been employed by NHS Greater Glasgow and Clyde Health Board ("GGC") from 2002 as a Specialist Registrar and latterly as a Consultant in Microbiology.

Qualifications

2. My qualifications are as follows:

- MBChB and BSc Honours in Medical Science, University of Aberdeen (1997)
- Member of Royal College of Physicians (2001)
- Diploma in Tropical Medicine Hygiene (2007)
- Fellowship of the Royal College of Physicians (2011)
- Masters in Public Health, University of Glasgow (2007)
- Fellowship of the Royal College of Pathologists (2007)
- Fellowship of the Royal Society for Public Health (2020)

3. I have provided my CV to the Inquiry.

Overview of Professional Experience and Roles

Early career: 1997 to 2002

4. I started my career as a Junior House Officer working in various hospitals in Glasgow between 1997 and 1998. During this time, I did six-month rotations in medical and surgical specialties. At that point, I planned to pursue a career in acute

medicine and, from 1998, I did two years of acute medicine at Monklands Hospital, Glasgow. At Monklands, I rotated through various medical specialities including cardiology and respiratory.

5. I was a Senior House Officer covering the Beatson, Gartnavel and Western Infirmary Hospitals between 2000-2002. I spent 6 months in Oncology at the Beatson followed by 18 months in haemato-oncology at Gartnavel and the Western Infirmary. As a Senior House Officer, I gained experience and developed an interest in the management of infections in immunosuppressed patients and I ultimately decided to train as a microbiologist.

Specialism in Microbiology and Infection Control, 2002 to date

6. In 2002, I started training as a Specialist Registrar in microbiology and virology, working in the Western Infirmary and Gartnavel Hospitals. During this training, I gained further experience in covering specialist units such as haemato-oncology, intensive care, renal medicine and infectious diseases.

7. During training, I gained a number of additional qualifications. I obtained a Masters Degree in Public Health during which I studied outbreak management, advanced epidemiology, environmental health, statistics and research methodology.

8. As a final year trainee, I became interested in the built environment after being involved in an Aspergillus outbreak in intensive care patients in which the problem was ultimately traced back to mould in a ceiling void following water leaks.

9. As a senior trainee in microbiology, I became an Assistant Editor for the Journal of Hospital Infection. I continue to review papers and have published in this journal. This work keeps me up to date with infection control literature and developments.

Consultant Microbiologist and Sector Infection Control Doctor, 2009 to 2015

10. After completing five years of specialist training, I became a Consultant Microbiologist in 2009. Not all jobs as a Consultant microbiologist involve infection control, but I specifically sought one out that did because I had developed an interest in this during my training.

11. Initially, I was based in two different health boards, which is quite unusual. I had two sessions a week allocated in my job plan for infection control cover in the Western Infirmary and Gartnavel Hospitals both of which were in GGC. The rest of my week was spent at the Golden Jubilee Hospital covering clinical microbiology and infection control. The Golden Jubilee Hospital is a special health board and not part of GGC.

12. In 2011, I moved to the Glasgow Royal Infirmary ("GRI") full time. I had an interest in teaching and training, which I couldn't pursue at the Golden Jubilee as I was the only Consultant Microbiologist at the site. I maintained the infection control cover for the Western Infirmary and Gartnavel Hospitals. By this time, around fifty percent of my time was dedicated to infection control across the sites.

Health Protection Scotland, Development of National Guidance, November 2013 to May 2014

13. From November 2013 to May 2014, I spent three sessions a week at Health Protection Scotland ("HPS"). My main role there was as a Consultant Microbiologist for Antimicrobial Resistance ("AMR"), but I also provided some infection control support. These sessions at HPS were in addition to my role as a Consultant Microbiologist and Infection Control Doctor ("ICD") for the north of Glasgow.

14. My role at HPS involved providing support to health boards dealing with incidents, and outbreaks. These terms are often used interchangeably. An "incident" is a single case of infection, serious illness or adverse event resulting in, or having

potential for harm from an infectious agent. An incident can happen without there being any patient cases, e.g.,positive water test results for legionella. An "outbreak" occurs when there are two or more cases linked in time, place and person. There are exceptions to this definition, such as a data exceedance, which would be an increase from the normal expected level of cases, or a single case of a highly infectious or dangerous agent. The management of all incidents involves a HIIAT risk assessment. As explained in more detail in Chapter 2 below, this risk assessment informs ongoing communication between the health board , HPS (now ARHAI) and Scottish government (SG) throughout the incident or outbreak. Any HIIAT that is an amber or a red is automatically referred to HPS/ARHAI at the time of the incident, all greens are referred on a weekly basis.

15. Four columns are scored when undertaking the HIIAT assessment; severity of illness, impact on services, risk of transmission and public anxiety. Each is rated as Major, Moderate or Minor. If any of these categories is Major then the score is Red. If there was no Major score and 2-4 were scored as moderate , the incident would be Amber, If there were 3 minor and 1 moderate or all minor then the incident would be Green. A green incident would also be reported to the Scottish Government if the relevant Health Board asked HPS for support or if HPS assessed the incident as something SG should be made aware of.

Regional Sector Infection Control Doctor, 2015 to April 2016

16. In 2015, I became the Regional Sector ICD. The lead ICD at the time, Prof Williams, wanted to restructure the service. The Western Infirmary and Gartnavel Hospitals were closing, and a number of the specialist units that I covered, such as BMT, infectious diseases and renal were being moved to the south of the city. Prof Williams decided that ICD cover for regional services would be amalgamated. This meant that I was working between various sites. At the time, I covered the Beatson at Gartnavel, the burns unit at the GRI, neurosurgery at the QEUH and renal medicine and BMT throughout the city. However, this was all going to be merged once most of the sites moved to the QEUH and I would, ultimately, be

predominantly based at the QEUH.

17. There had never been a job description for sector ICD. It was never a clearly defined role. When I became lead ICD, that was something that I wanted to change. I recall that one of the recommendations from the Vale of Leven Inquiry was that there should be a job description for the ICD. I was conscious that, several years later, we still didn't have one. The lack of a job description often led to problems particularly for any issues that might have an impact on the service, e.g., ward or theatre closures. The sector leads were often overruled or bypassed as it wasn't clear what our role was and therefore colleagues would go straight to the lead ICD.

Lead Infection Control Doctor for GGC, April 2016 to September 2019

18. From April 2016 to September 2019, I was the lead ICD for GGC and provided ICD cover for the RHCG. The reason I provided ICD cover for the RHCG is that I wanted to retain some operational sessions as I felt it was important not to lose touch with what was happening in the hospitals.

19. The role of lead ICD is different to that of sector ICD in that, as lead ICD, I had oversight over a lot of different things. For example, I had much more involvement with the surveillance team and I would receive reports for the key performance indicators like C. diff and MRSA, which was data that I didn't have much involvement with as a sector ICD. As lead ICD, I also had much more involvement with policy development. For example, colleagues such as infection control nurses ("ICNs") and members of the surveillance team might send me a draft policy or a draft surveillance report and ask me for advice or comment. In addition, I had responsibility for a team of ICDs and provided them with incident and outbreak support where required. Decontamination also fell under my remit. Therefore, the role of lead ICD was a broad one. There were also more meetings to attend. This included GGC Infection Control Committee ("BICC") and governance meetings.

20. I performed the role of sector and lead ICD alongside my role as Consultant Microbiologist. At times it was challenging to balance the two roles. I was often expected to be in the duty room covering the microbiology lab and taking phone calls for advice whilst also having to provide an IPC service. If, for example, there was an outbreak, I had to be able to prioritise. When I moved as sector ICD to the QEUH, I worked very well with [redacted] who was the ICD for the QEUH. We had an agreement that, if one person got called for infection control, the other would step in and cover their microbiology. It was all about teamwork.

21. When I was lead ICD, I spent almost a hundred per cent of the week on infection control because it was a huge workload.

22. I resigned as lead ICD in September 2019. The circumstances surrounding my resignation are discussed in more detail in Chapter 14 below.

23. In terms of my overall experience, it is important to note that I have extensive experience of outbreak management in my role as an ICD, chairing incident management teams ("IMT") for several significant outbreaks. My experience includes Group A streptococcus, MRSA/MSSA, CDI, VRE, RSV, CPE, PCP, Norovirus, Influenza, Parainfluenza, Acinetobacter, Serratia, Aspergillus, Environmental Gram negatives and others. Several of these have resulted in peer reviewed publications. I have an interest in fungal incidents/outbreaks including PCP, Aspergillus, Mucor, Cryptococcus and Exophiala.

Chair of Health Protection Scotland Consensus Group 2017 to date

24. In 2017, I was approached by HPS to chair the HPS Consensus Group which would go on to develop Chapter 3 of the National Infection Prevention and Control Manual ("NIPCM"). Chapter 3 contains definitions and tools for the investigation and reporting of outbreaks and incidents. Amongst these are an alert organism list, and the HIIAT and HIIORT tools. Following the Glasgow water incident (discussed in more detail in Chapters 11 and 12 below), further work in the form of an aide

memoire for environmental organisms was developed to support health boards investigating similar incidents.

25. Up until September 2023, I chaired the Infection Control Built Environment and Decontamination Group. Previously, this group existed within HPS but it has evolved and has now been given responsibility for developing Chapter 4 of the NIPCM. This group is now part of ARHAI Scotland.

ARHAI Scotland 2022 to date

26. I have worked with ARHAI Scotland since January 2022 where I am involved with outbreak and incident support nationally. I also provide microbiology/ICD support to various programmes within ARHAI including clinical assurance, built environment and decontamination, data and intelligence and national policy and education and guidance. The national ICD/Microbiology role was created when ARHAI Scotland split from HPS and they reassessed their staffing. They realised they did not have any ICD sessions and that such sessions might be beneficial. They have had Consultant Microbiologists in the past, but not one with specific time allocated for infection control.

27. In terms of my time commitment, when I first started working with ARHAI Scotland in January 2022, I worked one day a week with them and a second day at NHS Assure (see below). However, since September 2023, I have worked full time at ARHAI Scotland. I am based at Delta House in Glasgow but I often work from home.

NHS Assure 2021 to date

28. In July 2021, I was appointed as the clinical lead for ventilation for NHS Assure. NHS Assure is a new body that was formed following a recommendation from the Independent Review. At the time there were two Consultant Microbiologists, one for ventilation and one for water. Initially, I only provided advice where required in

relation to ventilation, now I provide advice for both. We have two senior nurse consultants for infection control who lead on each project. We are involved with projects from conception to the end. If there is a new build or complex issue, I will be involved. There is a key stage authorisation review process and a team of people from NHS Assure will attend those meetings. This includes project managers, engineers and infection control. We now have much better oversight at a national level than we did when the QEUH was designed and built. For example, I have been involved in the new build at Monklands Hospital where I have given advice on the ventilation specification for their ID unit.

29. Although ARHAI are involved throughout the build, we would still expect the local ICD to also be involved throughout the process, i.e., review the reports and visually inspect the site. We are there to provide support. Depending on the level of local expertise, we might need to become more involved.

RCPath 2014 to date

30. I have been a Royal College examiner for different components of the FRCPath exam for many years. The FRCPath exam is the qualification which allows you to specialise in microbiology. I am currently an examiner for the FRCPath part 2 scenario paper and am involved with writing and marking questions, usually with an infection control theme.

University of Highlands and Islands 2012 to date

31. I first became involved with the University of Highlands and Islands (UHI) as a tutor on the micro-organisms and disease module before moving to the outbreak module where I am now the module lead.

32. During lockdown in 2020, I put forward a proposal for a new “Built Environment and Infection Control” module and I was granted funding from UHI to develop this. I wrote ten chapters of material and then worked closely with the education team at

UHI to develop this into an online module. Chapters include hospital design, ventilation (operating theatres and specialist units), water systems, HAI scribe, fungal outbreaks, built environment scenarios and new concepts.

33. My commitment at UHI requires daily input over two terms. I tutor the outbreak module alongside a colleague but I am the only tutor on the built environment module.

Other Roles

34. In March 2016, I was invited to India as an expert on the built environment to support and establish links with infection control colleagues in Mumbai. This was organised by the British Deputy High Commission. I gave a presentation on water damage in hospitals and participated in a Q+A session on Legionella control. I also spent a day touring three of Mumbai's hospitals providing infection control advice to the teams based there. This included tours and advice on ICUs, outpatient TB clinics and operating theatres. I wrote a blog for the Foreign Office on this experience.

35. I have been a national ICD and microbiology representative on various groups. I have also received research funding from NHS Assure for projects relating to water testing. One was for testing for Cupriavidus and other environmental organisms and the other was for developing water testing methodology in collaboration with UKHSA environmental labs.

36. I was a member of Faculty for the European Society of Clinical Microbiology and Infectious Diseases postgraduate education course, "An introduction to healthcare associated waterborne infections; ecology, prevention, mitigation and control" which was held in Belfast in November 2023. At the course, I delivered two sessions on Gram negative pathogens and outbreak communications.

37. I am also a member of the "HTM 04-01 Development Group for Non-tuberculous

Mycobacteria" and the British Standard Panel for Water Testing for Pseudomonas and other pathogens. These are new groups established in 2023.

Experience of Ventilation and Water Issues

Ventilation

38. Most of my knowledge of ventilation comes from experience gathered throughout my career.

39. Initially, my experience in ventilation was in relation to operating theatres. The Golden Jubilee is principally a surgical hospital (including providing the national heart transplant service), so quite often I would be investigating increases in surgical site infections that might be linked to ventilation failures in theatres. I would inspect the theatres, look at verification reports and perhaps carry out air sampling. I covered the Beatson which included the BMT unit and I was familiar with the design of rooms for immunosuppressed patients. As part of the regular monitoring for that group, we did monthly air sampling and water testing, the results of which would come to me for interpretation.

40. Early in my career as a Consultant, I had significant involvement with refurbishments, which continued when I moved across from the Golden Jubilee to the GRI. I was involved in the refurbishments of theatres, renal units, general wards and an endoscopy unit. I risk assessed any theatre ventilation problems on all sites that I covered and reviewed annual verification reports.

41. Due to my interest in ventilation, I was the ICD representative on the Theatre Validation Group. This was a group set up by GGC to review all the operating theatres in Glasgow. We maintained a spreadsheet which contained information such as the age of the theatre, what the theatre was required for and the original specification. We had a yearly plan for verification reports. If they failed verification, we prepared an action plan.

42. I also provided ICD cover to specialist ventilated areas such as the ID unit at the Brownlee Centre. It had a suite of negative pressure rooms for the management of ID patients. I dealt with several issues regarding water damage, the formation of mould and the safe removal of mouldy material from buildings. These require control of the ventilation and the creation of a negative pressure along with other specific precautions. These were common issues when dealing with an ageing estate.

43. In 2015, and as discussed in more detail below, I was one of several microbiologists who highlighted issues with ventilation in the QEUH. As lead ICD, I continued to deal with ventilation issues involving operating theatres and the monitoring of air quality in the adult and paediatric BMT units. I was also involved in the retrofit of negative pressure rooms in the QEUH and the retrofits of the adult and paediatric BMT rooms.

Water Issues

44. I gained experience of dealing with water damage and mould incidents in all the hospitals in which I worked, including incidents involving immunosuppressed cardiac transplant patients at the Golden Jubilee.

45. Also of relevance is the fact that I began my Consultant post at the Western Infirmary in the middle of a legionella incident. By way of background, with the move of the cardiothoracic surgery to the Golden Jubilee, level nine of the Western Infirmary building had remained unoccupied for a long period of time. Nobody had done any flushing of the outlets and there was stagnation. This resulted in a problem with legionella throughout the building and affected high risk patients such as renal transplant patients. I was involved with the risk assessment of patients and the interpretation of results. I became familiar with legionella control measures including chlorine dioxide and KEMPER systems.

46. My experience in handling water issues also extended to my time at the GRI. The GRI was an old building and had historical issues with legionella. When I moved over there, we already had chlorine dioxide dosing in place. I was responsible for lots of water sampling results at the GRI. I chaired an IMT for a suspected hospital acquired legionella. This does not happen very often and is obviously very serious. This meant a referral to the Health and Safety Executive ("HSE"). As a result, I became familiar with the HSE processes around the handling of legionella incidents, the importance of documentation, the methods of control, and risk assessments. My early experience was predominantly with legionella, but I also had some experience in dealing with Pseudomonas in the Golden Jubilee, where there were cases in patients which were linked to taps.

47. I was involved in the implementation of control measures for legionella in the Western Infirmary. I sat on the Sector and Board Water Safety Groups as part of my role as ICD. All the ICDs should have been attending their Sector Water Safety Groups. There was an overarching Board Water Safety Group which I also attended as the only ICD from the north of the city, but also to deputise for Prof Williams as the then lead ICD. A lot of what GGC Water Safety Group did was exception reporting. I was there to discuss any issues from the North Sector of the city. I have sat on the Sector Water Safety Group and GGC Water Safety Group throughout my career.

48. When I was lead ICD, I dealt with multiple water ingress issues at the QEUH affecting the neurosurgical building, the haemato-oncology wards, the ICU and the renal dialysis points. I have extensive experience of HAI SCRIBE and relevant control measures for built environment projects and incidents.

CHAPTER 2: Background and Introduction to Microbiology and Infection Control

The Role of a Consultant Microbiologist

49. The role of a Consultant Microbiologist comprises mainly laboratory work, with some clinical work. The role involves giving advice to ward based clinicians about the diagnosis and management of infections. Our laboratory dealt with all patient samples and we telephoned out any urgent results direct to the wards and provided an interpretation of those results. We gave advice about what antibiotics to prescribe and what further investigations might be required to find the source of the infection. I would also perform ward rounds in units such as intensive care and took part in multidisciplinary team ("MDT") meetings for specialties like BMT. From 2020 to 2023, I was the named microbiologist for the adult BMT unit at the QEUH. These meetings involved colleagues from a variety of backgrounds such as clinicians, pharmacists, physiotherapists and occupational therapists. Each patient and every aspect of their care is discussed.

50. The laboratory reporting software is linked to infection control using a package called ICNET. There is a list of bacteria, fungi and viruses that will be automatically transferred to ICNET. This enables the ICNs to pick those up straightaway. However, it is not a substitute for a microbiologist because we can pick up issues earlier than the laboratory system. We can look at plates on the bench in the lab and we can give an earlier alert than the ICNET system. ICNET has a set list of bacteria and fungi, so if a new emerging agent comes along, that might not be captured. Therefore, there isn't really a substitute for a clinical microbiologist in picking up patterns of infection due to common organisms or identifying rare and unusual bacteria that might represent a risk.

51. Only Consultants can cover infection control. Microbiology/ID trainees will often do placements or attachments with an ICD, but in terms of decision making and assuming the actual role of ICD in GGC, you have to be a Consultant.

The Incident Management Team (IMT) Process

52. IMTs are established to investigate infection control outbreaks and incidents. The IMT is described in Scottish Health Protection Network ("SHPN") guidance as *"an independent multidisciplinary agency group with responsibility for the investigation and management of an incident."* In some situations where it is not immediately obvious whether an outbreak is occurring, an initial Problem Assessment Group ("PAG") may be established with key individuals present. They will decide whether to escalate to a full IMT.

53. For hospital outbreaks, the IMT chair is typically the ICD. IMTs will utilise the incident definitions and tools from chapter 3 of the NIPCM. Membership of the IMT varies according to the nature of the incident but typically will involve the Infection Prevention and Control Team ("IPCT"), clinical staff (nursing and medical), facilities, management colleagues and a member of the communications team. Others that may be involved include public health, occupational health, Estates and pharmacy colleagues. Depending on the incident, external agencies may also be involved.

54. One of the roles of the IMT is to complete a HIIAT assessment in which the incident is rated green, amber or red. This rating informs communications about the incident.

Problems with the IMT Process

55. I have provided a detailed account of my involvement in various IMTs over the years below, but the following is an overview of some of the problems that arose.

56. In all my years chairing IMTs, I never felt these were truly independent. They were always subject to input or influence by senior management particularly in relation to communications. My comments on communications were not always taken on

board and, as chair of the IMT, I did not have the final say on this.

57. I chaired many IMTs and PAGs during my time at GGC. The nature of these meetings means there is often challenge, debate and discussion. Despite some complex incidents and aside from the IMTs I have highlighted in this statement, IMTs were relatively unremarkable until the IMT for the Ward 2A water incident in 2018. As discussed in more detail below, this IMT was challenging because, whilst we felt we had implemented relevant control measures, new problems arose and the IMT became very protracted. Communication around an evolving and unknown situation was also difficult. I will refer to these challenges later when discussing the duty of candour.

58. As also discussed below, due to the complexity of the 2018 water incident, a subgroup of the IMT was established to look at the technical components. In addition to the IMT and due to the impact on services, there was also a service and operational group meeting. I became concerned about the complexity of the incident and also the slow progress with the implementation of long-term water control measures.

59. During the 2018 water incident, I recall a telephone call with the Medical Director where I expressed concerns regarding the governance of the IMT and other groups. I said that, in my view, oversight at Director level was required. The Medical Director agreed and requested the formation of the Executive Control Group chaired by the Director for the RHCG. This group reviewed three main areas of progress regarding Wards 2A/2B: Incident Management Team (IMT) meeting, Water & Technical Group meeting and Service & Operational Group meeting. It was also confirmed that the Executive Control Group would report jointly to GGC Chief Operating Officer and the Medical Director.

60. Overall, at the time of the IMT relating to the 2018 water incident, I thought that everyone worked hard to solve complex issues and to make difficult decisions. There was also oversight of this IMT by the Scottish Government and we would

attend teleconferences to provide updates.

61. However, as discussed in more detail below, at the end of June 2018, the DMA Canyon reports came to light. I was astonished to learn that those members of the IMT who knew about the reports had not disclosed the information held within them to the IMT earlier. This would have enabled a much clearer understanding of the issues and more rapid implementation of control measures, which would in turn have led to a reduction in the risk of infections and a reduction in the resultant harm to patients.

62. The problems with the IMT process were not limited to the 2018 water incident. I also felt that problems with culture in IMTs arose during the Cryptococcus incident in late 2018. While challenge is expected, I had never experienced the undermining, lack of respect and continual challenge I experienced during that incident. This persisted when dealing with the Ward 6A IMT later that year.

63. During the Cryptococcus IMT, it transpired that relevant information was being withheld from me as the chair. Meetings became inefficient due to constant challenge and the need to revisit themes when different members of senior management attended. There was also extensive discussion regarding minutes and concerns about omissions and inaccuracies. The environment I found myself working in was toxic and, ultimately, led to my resignation later that year. It was clear that, at these IMTs, organisational reputation took precedence over patient safety.

64. After one of the 6A IMTs a fellow clinician described me as having been "*in front of a firing squad*". At a subsequent meeting I therefore requested microbiology colleagues attend for support and there was considerable debate around certain aspects.

65. Indeed, it was after this meeting that an attendee undertook an anonymous whistle blow to HPS regarding my treatment as chair. I was subsequently asked by

the Infection Control Manager ("ICM") what support I required at IMTs. I advised that I would like meetings to be recorded so that there could be no debate about minutes. I also advised that I wanted to bring microbiology colleagues to future meetings for support because I felt that senior management were not willing to listen to me and were continuously challenging me.

66. The problems I experienced during the IMTs in 2018 and 2019 are described in more detail below.

HIIAT Reporting Tool

67. The HIIAT is a tool used for hospital acquired infections. Its not always used for an environmental incident. For example, if there is a major flood that has a significant impact and carries with it an infection control risk, no one is obliged to report that to HPS because the HIIAT does not lend itself well to that sort of incident. The HIIAT is all about patients and the impact on patients and patient services. The obvious disadvantage of HIIAT is that it does not capture everything. ARHAI are aware of this and the tool is under review. Despite the lack of applicability of the HIIAT some health boards do report environmental incidents without cases to ARHAI.

68. The decision to categorise an incident as red or amber is made by the IMT. It is not a decision made by one individual, all members are involved in the discussion. Consensus must be achieved to determine whether it's an amber or a red. If a decision cannot be reached, the chair has the final say. The HIIAT starts off with four columns. The first column assesses the impact on the patients which is then rated. The second column assesses the impact on the service. The third column relates to your view on the risk of ongoing transmission. The fourth column assesses the level of public anxiety if a press statement is released. Each of the four columns is given a score and, depending on the numbers, the result is green, amber, or red.

69. HIIAT instructs who to communicate the result to. For example, an incident categorised as amber or red will be escalated to the Scottish Government. Often the part of the tool that is the most difficult to achieve consensus on is the release of a press statement. There are sometimes very different views in the room. This becomes very difficult when there is a very specialised group such as paediatric haemato-oncology patients, because for the general population it is not a risk that they might be concerned about. Therefore, there would often be a lot of debate around the public anxiety column.

The Relationship between IPC and Construction/Refurbishment Projects

70. In December 2007, a CEL **(Bundle 14, Volume 1, Page 8)** was issued to Scottish health boards notifying them of the publication of SHFN 30, '*Infection control in the built environment: Design and planning'* **(Bundle 27, Volume 3, Page 337)** and HAI SCRIBE. The purpose of these documents was to ensure that infection control remained at the forefront of the design, planning, construction, refurbishment and maintenance of healthcare facilities.

71. The link between infection prevention and control ("IPC") and the built environment was apparent in my role as sector ICD between 2009 and 2016. As sector ICD, I was heavily involved in the refurbishment work carried out at the Western Infirmary and Gartnavel Hospitals. I think GGC was aware that it had an ageing estate and, despite the plans for the new hospital, some of the facilities were not fit for purpose. They invested quite a lot into the Western Infirmary and Gartnaval to bring the wards at both hospitals up to standard.

72. I attended design meetings with an ICN. Architects, capital planning, estates and clinical teams would also be present. At each stage of the project, we would look at the plans. We would be responsible for making sure that there were adequate side-rooms, that the flow on the ward was "clean to dirty", that the spacing was adequate and that it was all planned in conjunction with the relevant technical

standards at the time, which were set out in SHTM 03-01.

73. We were involved for the duration of the project. As time went on, we would look at the plans for individual patient rooms. It was very detailed at this stage, right down to the placement of alcohol gel dispensers in the rooms. We would check that the plan had adequate hand hygiene facilities, that the position of the hand hygiene sink was correct, that the specification of the en-suite for each room was appropriate and that any specialist requirements for the room, such as ventilation, were included. We would even discuss where electrical sockets would be placed. These meetings were often lengthy and there was considerable attention to detail. The plans would then be signed off by myself as ICD and by various other parties, such as the manager for the service and the project team.

74. Throughout the project, the IPCT would regularly visit the sites at the Western Infirmary and Gartnavel. I remember going into the renal unit whilst it was a construction site. At that point, we were checking that the builders had complied with the design for the general layout of the ward and that everything was in order. We kept a close eye on the construction work and, if we had any concerns, we had the power to halt the work. On one occasion we did just that because there was dust ingress into neighbouring wards and a failure to comply with HAI SCRIBE control measures.

75. Once the work was complete but prior to the patients and staff moving in, we returned to check for any defects or snagging issues. We compiled a list of things that required to be rectified and identified any infection control risks. Once the patients and staff moved in, the ICN team returned to make sure that everything was satisfactory.

76. During this project, I felt that my expertise was respected and my views were taken into account. There were sometimes disagreements, but I felt I could raise issues and we were able to resolve any differences. There were times when we had to derogate from guidance. This was because it was a refurbishment, and we were

limited by the existing structure of the building, e.g., if there were pillars in place that could not be moved. Compromising on things such as size was a common thing. We would conduct risk assessments from an infection control perspective and document any derogations. There were disagreements but I don't remember any conflict as such. We were able to compromise and resolve issues as they arose.

77. I believe that the guidance which was in place then, i.e., the CEL, in relation to the SHFN 30 mentioned above, was adhered to during this refurbishment.

78. A similar process took place with a theatre refurbishment at Gartnavel. I was involved in commissioning and validation following on from the refurbishments. Depending on the unit, once the building work has been done and before patients are moved in, ICDs interpret various tests such as water sampling and air sampling. With the theatre refurbishment, I carried out visual inspections of the theatres. An external company was employed to come in and check the air pressures, the air change rates, the direction of flow and to ensure compatibility with the SHTM. The company then produced a report. I reviewed this report, along with an authorising engineer. Additionally, the laboratory carried out sampling in this brand-new, empty theatre and I interpreted the results. This is the process which was followed during the theatre refurbishment at Gartnavel but would happen anywhere there is a specialist ventilated facility.

79. Things do go wrong in health care projects and that is why we have a commissioning and validation process - to detect any defects. Time should be built into the project plan to address any issues before the building is actually opened.

CHAPTER 3: Infection Prevention and Control Team – Overview of Structure, Operation and Culture

Structure of the Infection Prevention and Control Team (IPCT) – 2009 onwards

80. When I joined as a Consultant Microbiologist in 2009, the Infection Prevention and Control Team ("IPCT") was sector based for each part of the city of Glasgow. The sectors were comprised of the northwest, the northeast, Clyde and the southeast, and the west. Each sector had their own team of ICNs and each had their own nominated ICD. Overarching that was the Infection Control Senior Management Team ("SMT"). There was a lead ICD who all the sector ICDs reported to. There was an Associate Nurse Director for Infection Control, who all the ICNs reported to, and there was an ICM who sat above that. So, both the lead ICD and the Associate Nurse Director would report to the ICM.

81. To hold the post of ICM, there is no requirement to have any particular qualification or to have undergone any particular training. Despite the recommendations of the Vale of Leven Inquiry and the enormous responsibility that the individual in the post has to assume, a nationally agreed job description has only just been published. The ICM reports up to the Healthcare Associated Infections (HAI) executive lead who will be clinically qualified either as a doctor or a nurse but who does not have to have an IPC qualification. This was the structure in place when I joined, which was post the Vale of Leven Inquiry. I know there had been structural changes in IPC as a result of the Vale of Leven report but I don't know what those changes were as they predated me joining.

82. When I started as an ICD with GGC in 2009, the IPC service was well established. I worked in the northwest sector with Laura Imrie (lead ICN) and her team. Ordinarily, I would spend every Wednesday on the Western Infirmary site. There had been an ICD, John Hood, at the GRI for many years. Giles Edwards subsequently took over. I followed on from them at the GRI and I did not change the system that was in place. I was the only ICD for the sector and split my time

between the sites. The ICNs would refer issues to me and I would travel over to the relevant site or deal with issues over the phone.

83. At this point, my lead ICD was Prof Williams. Prof Williams covered the Royal Hospital for Children at Yorkhill but also had overall responsibility for all sectors in the health board area. We would report any issues or exceptions to him. It would be the lead ICN and the lead ICD who would attend executive board level meetings such as the Acute Infection Control Committee ("AICC") meetings and the BICC meetings. As a sector lead, I was not expected to attend those meetings.

84. When I first started as sector lead, I didn't go to AICC meetings at all. However, a decision was then made that sector leads should attend. I was told by Dr Linda Bagrade, who was ICD for Clyde at the time, that we should attend but not speak. She said that it was up to the lead ICD to speak and we should only speak if we were asked a question. After a while, we were told we did not need to attend anymore. But, a few months later, we were told we should go. So, our attendance at AICC meetings was very patchy. Since then, ICDs do attend the AICC. I did not attend the BICC until I became lead ICD.

85. As sector ICD, I attended the SMT meetings on a monthly basis. The main purpose of those meetings was to report any issues that were going on in the sector and to provide any updates. It was an opportunity for the IPC senior managers to update us on national or local policy changes. There was also a slot on the agenda for the surveillance team during which the surveillance nurse lead would report on the key performance indicator data. A public health consultant would also be in attendance. They might talk about any relevant public health outbreaks or guidance. The surveillance team are part of the IPCT. The nurse lead for surveillance would report to the Associate Nurse Director for IC.

Roles and responsibilities within the IPCT

Infection Control Nurse (“ICN”)

86. An infection control nurse (“ICN”) is much more ward based than an ICD. Our lab would notify ICNET when a patient was isolated because of any of the particular pathogens on the list, which then creates an alert for an ICN. The ICNs would then work their way through those alerts. They would usually go out and visit the ward, speak to the staff and give them advice on infection control precautions. They might issue a patient information leaflet to explain to the patient why they are in isolation. They would be responsible for an initial outbreak response. So, if there was a suspected outbreak, I would go to the ICNs and obtain the relevant information about the patients and a timeline.

87. The other big programme of work that ICNs dealt with was environmental audits. This involved the ICNs attending wards and looking for issues with cleanliness, the environment, practice issues, hand hygiene etc. They would also attend various meetings and they had a much bigger role in education than the ICDs.

Infection Control Doctor (“ICD”)

88. An ICD is a microbiologist with ICD sessions assigned as part of their job plan. An ICD usually chairs an IMT. In Glasgow, the city is divided up into sectors. ICDs are responsible for a particular sector. They provide support for their local team, deal with incidents and outbreaks, and support ICNs with queries. Microbiologists will report unusual or concerning findings to their local sector ICD. The ICD role is an in-hours role. In the out- of-hours period, the role is covered by a Consultant Microbiologist on a rota, irrespective of whether they have any ICD sessions in their job plan.

Lead ICD

89. There was no job description for the sector ICD. This was something that I created as lead ICD. Some of the duties the role included were:

- Attend meetings relating to the sector ICD's site e.g., water group, facilities meetings.
- Attend and contribute to monthly ICD meetings and SMTs. Regular attendance at AICC was encouraged.
- Provide advice and support to the local IPC nurses.
- Be involved in the planning, upgrading and commissioning of facilities.
- Provide, in conjunction with microbiology colleagues, a 24-hour infection control medical on call service.
- Chair local PAGs and IMTs.
- Interpret and provide advice on abnormal water results as per exception report from Estates. By way of explanation, across Glasgow, water testing is undertaken in each of the hospitals. Results are returned from the lab to Estates, who then fill out an exception report if any results are out with the normal acceptable limit. The exception report would then be escalated to the sector ICD. That enables the ICD to undertake a risk assessment. Following this, the ICD should work with clinical teams and Estates to decide what actions they are going to put in place, such as any remedial measures or arranging repeat water testing. The only circumstance in which the initial results would come back directly to an ICD would be if there was a suspected water-borne outbreak and it was an ICD asking for the water test to be done. In those circumstances, they might get the results directly from the lab.
- Monitor the local Surgical Site Infection ("SSI") rates. In addition to C Diff and MRSA, we also do mandatory surveillance for SSI. At the time, we did mandatory reporting for orthopaedics and caesarean sections. However, that has since changed. But we would have data for those two categories. If there was an above expected number of cases, then the ICD would be responsible for investigating why there had been an increase.

- Support compliance with national standards and guidance. This refers to guidance like the HAI SCRIBE, but also guidance on other matters, such as resistant bacteria, called CPEs. The guidance required us to set up screening questions for patients that were transferred from hospitals overseas and that might be high risk of these organisms. The laboratory would then need to test for them. If a policy like that is put in place, infection control and microbiology input is required for implementation.
- Support compliance with national targets.
- Assist lead ICD with reviewing and updating IPCT policies.
- Attend and contribute to specialist groups where appropriate, e.g., decontamination, theatre ventilation.
- Support and contribute to training of medical microbiology and infection trainees.
- Escalate significant concerns to lead ICD.

Infection Control Manager ("ICM")

90. As noted above, there is no requirement for an ICM to have any clinical training, qualification or background. Instead, ICMs can have varying backgrounds, for example managerial or, in the case of Tom Walsh (the ICM who I worked with), a nursing background. As a lead ICD, I would expect to escalate my concerns up to the HAI executive lead because they were a direct link to the Chief Executive. But my formal link was via the ICM. If I was struggling to get information, I would expect the ICM to come in and facilitate the provision of information.

HAI Executive Lead

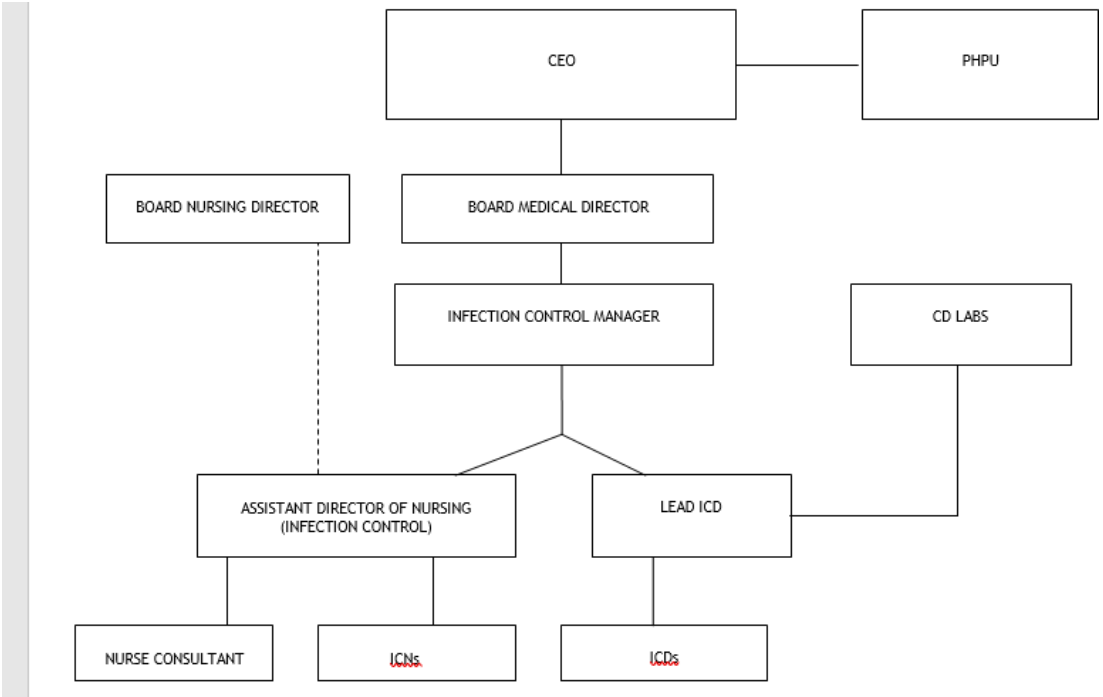
91. In GGC, at the time I was lead ICD, the HAI executive lead sat at Medical Director level. The HAI executive lead reported to the Chief Executive Officer ("CEO").

Reporting Structures

92. In terms of reporting structures, ICDs in GGC are always microbiologists and they have a separate structure within microbiology. The lead ICD reported straight to the Clinical Director of the laboratories, as opposed to head of departments or head of service, because the lead ICD is quite a senior position in the organisation.

93. ICDs and ICNs have different reporting lines but, ultimately, it all gets reported to the ICM.

94. The following diagram illustrates the reporting lines, communication pathways and escalation routes:



95. Weekly reports of incidents and outbreaks were produced and sent to senior management. The lead ICN for each sector would compile information on outbreaks or incidents, for example, cases of C. diff, Staph aureus bacteraemia, key performance indicators and put them into a report. They would then be sent

for approval to Sandra McNamee who was the Associate Nurse Director. They would all come out together as five or six reports on a Friday afternoon. They would go round all the senior management for the various different hospitals, at director level and also all the Consultant microbiologists, as a sort of handover for on call. There was a wide distribution of knowledge of what was happening in terms of infection control within the organisation. The amount of information in these reports, however, was variable.

96. There was also the HAIRT report which was submitted monthly to board meetings. I did not have any input into this paper as sector ICD but I did as lead ICD. It would usually come to me already written so I would mainly comment, edit or add things that might have been missed. The purpose of this report was to give the corporate board assurances around key performance indicators; for example, data on C. diff, Staph aureus, MRSA, and CPEs. There was also a section for outbreaks and incidents, so there would be brief summaries of any ongoing issues. It was the HAI Executive Lead who had overall responsibility for this.

97. At some point, the lead nurse and sometimes the sector ICD would attend clinical governance meetings which could probably be described as speciality clinical governance. For example, there was regional clinical governance, medical clinical governance, surgical etc. These meetings would usually be chaired by a senior clinician or manager and there would always be a slot for a member of the IPCT to come along and talk about IPC matters.

Decision making responsibility and governance

98. As a sector ICD, I was involved in local decision making - mainly around the management of incidents and outbreaks, local HAI SCRIBEs, and building projects and refurbishments I was involved in. In situations that were escalated, usually if the HIIAT tool categorised them as red or amber, or where there was an impact on services, that is when the IPC SMT (comprised of the ICM, the Associate Nurse Director, Infection Prevention and Control and lead ICD), would become involved.

This would often include situations such as closing wards.

99. In terms of the new build project at the QEUH, the then lead ICD, Prof Williams was responsible for the decision making from an IC perspective. He would report to the SMT, which would then report to the AICC if necessary. The SMT was chaired by the ICM.

IPCT relationships with other departments/outside agencies

Microbiology Department

100. The Microbiology Department provides IPC sessions for the ICDs and close working is required as the microbiology lab supports the IPCT for the investigation of incidents and provides surveillance data continuously. Not all microbiologists will have ICD status, but regardless of ICD status microbiologists provide infection control cover out of hours and on weekends. Microbiologists are all equipped to deal with the situations that arise on evenings and weekends. All of them have had training as part of their microbiology training and most of them have some experience of infection control.

101. There is a school of thought that all microbiologists should undertake infection control and remain up to date with it. I am more of the opinion that it is not for everyone as some aspects of the job have become very specialised e.g. the built environment. It is the same as the sub-specialties in other aspects of medicine. For example, not all cardiologists have a specialist interest in heart failure. However, if you are in the microbiologist role, the expectation is that you will cover infection control at the weekend and out of hours despite it not being part of your normal “day” job.

102. When I was a trainee, microbiologists and ICNs had a very close working relationship and would visit the microbiology lab daily. When GGC’s pathology services were reformed, they amalgamated the labs into two super labs to make

the service more efficient. In Glasgow, this meant that the lab I trained in, the Western lab, closed down and the lab's work was transported across the city to the GRI. On the Southside, the Victoria lab shut down and all that work was transferred to the Southern General. Eventually, the Clyde sector moved and I believe most samples now go to the North.

103. As a result, we were left with two large super labs. This has its advantages. However, in terms of infection control cover, there are considerable disadvantages. We used to have ICNs coming into our department every day. They would sit at our handover meetings, so we had really close working relationships with them, and we had good relationships with the lab staff too. We lost that way of working when the labs merged. I think it has created a danger of things being missed. Previously, I would give information to the lab but they would also tell me what was going on across the site on a daily basis. There was a constant flow of information. We lost that communication and awareness of what was going on. The burden is now on the ICD to provide all the information and, if they are busy, this can be really difficult.

Estates/Facilities and working culture difficulties

104. In 2015, we had the Sector Water Safety Groups where IC would meet with Estates and Facilities. We also had Sector Facilities meetings. These were predominantly attended by the lead ICN and often the sector ICD would try to attend. At these meetings, they would discuss water, ventilation, any HAI-SCRIBES, any cleaning issues and so on. It was a broad agenda. We would meet with them to complete the HAI-SCRIBE documentation for any pieces of work that were ongoing. There was no representation at the SMT but there were site managers at the AICC and there was usually representation at director level for Estates or Facilities at the BICC. Depending on an outbreak or incident, if we felt it was related to an estates issue such as water or ventilation, then they would come along to IMTs.

105. I moved to the QEUH in August 2015. Before that, I had worked with Estates in the north. I felt that working relationships between estates and IPC was really good in the north of the city.

106. I noticed a big difference in the south. There were historical difficulties and, in my opinion, poor working relationships between Estates and IPC. However, colleagues of mine who worked in the south before I joined can probably elaborate more on that.

107. When I moved to the south sector, I noticed that it was difficult to get information from the Estates team. That may have been partly due to workload and resource. I don't think they were adequately resourced for a building as big as the new campus. It was a massive undertaking. There was also, perhaps, a lack of experience and maybe some personality issues.

108. As discussed in more detail below, I am aware that, when it came to water related issues, there was a direction from Mary Anne Kane, who was at senior director level, not to give microbiologists access to water testing results. This direction features in the minutes of a meeting held on 16 October 2017. **(Bundle 11, Page 77)** I don’t know if colleagues in Estates were told we should not be given access to information, but, in my view, this is a theme that carries through all of the incidents. There was a consistent problem with information being withheld. I don’t think individual Estates officers were making those decisions, but the directions would be coming from more senior managers. I believe several senior managers have no clinical training. It is not clear to me why they would be best placed to determine what information is or is not relevant for Consultant Microbiologists who are carrying out their professional duties.

109. If I was dealing with Estates, I would usually contact Ian Powrie, who I had worked with in the north. He was very experienced in a range of issues. There were one or two occasions where I was not content with a response from Estates and I would involve Ian. For example, there was an issue in the BMT unit where

they were trying to carry out some work, but the correct measures had not been put in place. I felt that those carrying out the work did not have the necessary expertise, so I sought out Ian and asked him to correct it. I think he was the Estates Sector Manager at the time, I am not sure of his exact role. I also worked with Billy Hunter in the North who I sought out for similar issues.

110. Ian Powrie did not have infection control training but he had experience of dealing with various incidents. He had come from the north of the city so he knew a lot about water and legionella due to all the problems there. He also had a reasonable knowledge of ventilation. My relationship with Ian Powrie did not deteriorate as time went on. However, I noticed that he had a large workload and I saw him start to struggle with that over time. I think the demands of the role were really difficult for Ian. He seemed to be the "go-to person" for a lot of things and he had major involvement with the water incident in 2018.

111. In 2019, I proposed to Sandra Devine that we should have a senior ICN who would spend a couple of sessions working within the Estates department. Such was the volume of infection control related work in the HAI SCRIBES, I think Estates would have benefitted from senior IPC input with someone working within the team. That suggestion was not taken on board.

Taps

112. I found that, compared to my previous experience in other hospitals, if I wanted to introduce any measures or policies that would impact on Estates, then I came up against more resistance than I was used to. An example of this is around water testing related to the presence of flow straighteners. Given my experience in HPS with the flow straighteners on taps in 2014, I was concerned to see that, when I arrived at the QEUH in 2015, they still had flow straighteners in place. This was before the water incident in 2018. I brought it up at a water safety meeting. My concerns were dismissed as advice had already been provided in an HPS SBAR. The background to this is that, when working with HPS in 2014, I was

contacted by Lisa Ritchie, Nurse Consultant in Infection Control at HPS, regarding an enquiry that had been received from GGC. The enquiry concerned taps in the QEUH and whether or not the flow straightener component should be removed. An SBAR was produced for GGC by Lisa and I incorporating the views of Dr Jimmy Walker from PHE. Dr Walker had been involved in an outbreak of Pseudomonas in Northern Ireland and had undertaken microbiological analysis of the tap components. We also sought the views of Dr Mary Hanson, a Consultant Microbiologist in Edinburgh. She emailed us on 7 March 2014 advising that it would be desirable for the contractor to take immediate action on flow straighteners in the high-risk unit to meet the standards set out in SHTM-401. **(Bundle 14 Volume 1, Page 122)** As I was an employee of GGC, I declared a conflict of interest. My advice at the time, as evidenced by my changes to the HPS SBAR set out in the email of 8 April 2014 **(Bundle 14, Volume 1, Page 122)**, was either to remove the flow straighteners from the taps in high-risk units or, if these could not be removed, to replace the entire tap with ones that complied with the guidance.

113. When I brought up the issue of flow straighteners in 2015, I received a lot of resistance from individuals such as Prof Williams, who said that the taps had already been dealt with via the advice in the HPS SBAR and there was Scottish guidance on Pseudomonas that did not specify any requirement for testing. I did not agree with that, especially given the presence of flow straighteners, which were a known risk in the water system.

114. In 2016, when I became lead ICD, I pursued the issue of flow straighteners again with Ian Powrie. I went back to HPS and asked if we should be testing the water given the presence of the flow straighteners. I reached an agreement with HPS about testing but I do not think it was supported by senior management. I think senior management should have instructed all of their Estates teams to make sure this testing was carried out in all the high-risk areas. However, it felt like I was continually having to drive this to get it underway. As described later, with Iain's help, we started rolling out water testing in high- risk units.

HPS/HFS

115. HPS provided support with incidents/outbreaks if requested or if the framework was invoked and I will discuss that in further detail below. All incidents were HIIAT assessed and would be reported to HPS. Amber and red cases were reported immediately and green cases were reported every Monday. The Monday reporting began post-2015 but I cannot recall when exactly.

116. I do not recall any contact with Health Facilities Scotland ("HFS") as a sector ICD, but I did have contact as lead ICD. This was mainly to do with the building and particularly the ventilation. An example of where I got involved with them was the retrofitting of the negative pressure rooms within the ITU where I needed expert engineering advice.

Public Health

117. There was close interaction between the IPCT and Public Health. They attended IPC SMTs, AICCs and BICCs. They would often attend incidents/outbreaks with public health relevance and, in some instances, they would chair meetings, e.g. if there was a measles or TB outbreak with the potential for community spread. Any Public Health involvement would usually be instigated by the chair of an IMT.

External Experts

118. In 2015 I was not aware of any external experts being involved in any of the issues I was dealing with at that time. As a microbiologist or ICD, I had the ability to contact any expert informally, at any time. To bring them into an incident on a more formal basis is slightly more complicated because our reporting structure requires that we inform HPS or HFS. For example, in relation to the incident with the adult BMT unit, I suggested that we involve Peter Hoffman from Public Health

England (“PHE”). Because HPS were involved, they had to approve this, which they did.

Observations about the functioning of the IPCT, 2009 to 2015

General

119. When I first joined the IPCT in 2009, I sensed tensions amongst the team. Some team members were still being interviewed as part of the Vale of Leven inquiry, so there was a lot of tension and friction around that. But this tension was something I felt carried on throughout my time there. I think people found it difficult to speak up about issues. Fellow ICDs would say that they were fearful of raising issues for fear of being shot down or ridiculed. This was something I also felt. When myself or others raised issues, it was often met with ridicule, sniggers and laughter. I was often belittled and undermined in meetings. This was behaviour which Prof Williams would often engage in, and he set the tone as the lead ICD. I regularly experienced behaviour which demonstrated a total lack of respect for my professional qualifications and expertise. The people who engaged in this behaviour were usually less qualified than me and on many occasions were managers with no clinical qualifications or training at all.

120. There was always division amongst the members of the IPCT about our role and the extent of our involvement in certain matters. What particularly concerned me was the culture around the reporting of health care acquired infections and hospital acquired infections. For example, I was told by Dr Linda Bagrade not to worry about legionella because, while hospital acquired legionella is a very serious occurrence, Prof Williams would change the definition and make it community acquired. This immediately set alarm bells ringing. I remember clashing with a lot of people in early IPCT meetings due to this. Certain colleagues felt that legionella was nothing to do with us and was a concern for Estates. I strongly disagreed with this. As I was covering units with very vulnerable patients, I wanted to know about any positive legionella pneumophila in

my patient group, so I could carry out risk assessments.

121. As stated above, I was told that ICDs could attend AICC meetings but could only speak if spoken to. In my opinion, this was a culture of suppression and demonstrated an unwillingness to listen to opposing views. When I did attend AICC meetings, my experience matched what I had been told by Dr Bagrade about not asking any questions. I found those meetings odd because people were not encouraged to speak up. We would go through the agenda but there were rarely any questions or discussions. Given the level of meeting and the presence of senior attendees, this surprised me. I would have thought that the implications of some of the incidents dealt with at the meetings might have merited discussion in more detail or might have led to some learning and changes in policy. It felt to me that the meetings were just a formality. This was my experience throughout my time there.

122. I felt that the lessons from the Vale of Leven Inquiry about being open and transparent had not been learned. I was really concerned about that. As sector ICD, I had got my own water results back, so I had control over legionella in the north. However, things changed when I moved to the QEUH. I have mentioned that there was no exception reporting process in place in the QEUH whereby ICDs would routinely be made aware of out of specification results.

Specific issues with the Lead ICD

123. I believe the issues with the lead ICD, Prof Williams, were to do with his personality. Early in my career, I did raise concerns about the culture I was experiencing. I had a lot of discussions with Consultant colleagues in the GRI. I felt there was a culture of fear among these colleagues when dealing with him.

124. During 2015 and 2016, Prof Williams discouraged us from putting anything in writing, including sending emails. Over and above the IPC SMT meetings, we

also set up more informal ICD meetings. These meetings moved over to the QEUH and were chaired by Prof Williams. He directed that they should be informal and that there should be no minutes. There were email records but no action logs or anything similar. I think people were concerned that there was no record of what was discussed at these meetings, or, if decisions were made, that there was no evidence of them. We pushed for minutes to be taken. The meetings eventually evolved to become slightly more formal and a PA took minutes. I think Christine Peters in particular had quite a few issues with the lack of minute taking and the accuracy of the minutes. She can explain this in more detail.

125. As sector ICDs in the QEUH we often had trouble getting access to some results such as water results. Christine Peters and I would email a range of people including the then ICM Maryanne Kane and Prof Williams. Often, senior management would respond asking why we needed to see the results because the lead ICD had already seen them rather than providing what we asked for.

126. In terms of Prof Williams' time commitment in the role of lead ICD, it is relevant to note that he and, indeed, Linda Bagrade, had substantive appointments with NHS Western Isles providing IPC support despite their posts in Glasgow. Prof Williams was absent from his responsibilities in Glasgow at times as a result of this.

Lack of Clarity Around Roles and Decision Making

127. It was clear that control over IPC input for the QEUH build lay with Prof Williams. I was based in the north sector at the time, so I had no responsibility for the project which was in the south sector. Prof Williams would give us updates on the build at the SMT meeting, the AICC meeting, and the ICD meeting. The HPS report details his role in the commissioning process, as does the Independent Review report. He was the only microbiologist assuming that role and that responsibility. Tom Walsh, in his role as ICM, would have allocated Prof Williams

this role. They had a close personal and professional relationship. I am aware that Tom Walsh would give Prof Williams access to his email inbox, and Prof Williams would use it to send emails.

128. When the hospital was handed over, there was a lack of clarity regarding roles on the QEUH site. For example, and as mentioned above, local QEUH ICDs did not get access to water results. The rationale for this was apparently that it was unnecessary because Prof Williams had already seen them. At times, ICDs were involved with issues but then later excluded when Prof Williams and IPCT senior management took over. As an example, and as discussed below, in 2015, having been excluded from discussions on the adult BMT unit, I was then expected to lead on a plan to move the unit back to the QEUH with inadequate information shared.

129. Decisions made by sector ICDs could be overruled by Prof Williams, as the lead ICD. By way of example, in August 2015, there were a number of sewage leaks into theatres and various water leaks. There were meetings at which the views of Christine Peters and I differed from those of Prof Williams. Those views concerned risk (Christine and I deemed the theatres not safe for undertaking neurosurgery) and what needed to be done to the building. Although I was the regional sector ICD for neurosurgery and had produced a report on the situation in theatres, I felt that my views were overruled in favour of Prof Williams' views. Prof Williams' view was that the theatres could be used (and they were). I think that was driven by organisational reputation. If a decision made by a sector ICD might have an impact on reputation, senior management (usually at director level), would seek to have it overruled by Prof Williams and he would usually oblige.

130. When we raised issues in 2015, there was a lot of discussion about personalities, team working and people not working effectively together. There were attempts to address this through organisational development. The executive board was making it all about personality and organisational development. They were not listening to the issues that we had raised about patient safety.

Relationship between ICDs and ICNs

131. Generally speaking, the ICDs had reasonably good relationships. There were some differences of opinion about how involved we should be with IC and some colleagues thought certain things were nursing or Estate roles. I don't recall any particular friction between individual ICDs. Instead, the friction was with Prof Williams.

132. I would say I had good working relationships with the ICNs, particularly the team in the northwest, which is the team I started with. That team was led by Laura Imrie. I thought that they were a cohesive and inclusive team which I felt very much a part of. Laura and I did not always agree on things, but we would reach a consensus and we would meet before management or other meetings and go in with a joined-up view. We always made sure we resolved any differences before the meeting. In the northeast, the lead ICN was Kate Hamilton. She had a different style to Laura but I did not experience any issue or friction working with Kate and her team.

133. When I moved to the QEUH, I was working with a new team of ICNs. I think part of the challenge for the QEUH team was that it was a massive new build hospital. I don't think they were adequately resourced. I did not feel I had that same, close, cohesive relationship that I'd had with the teams in the north. I think the workload was far too high for the ICNs. The lead ICN came from a non-acute background. I think it was difficult for them from the outset.

Record Keeping

134. Poor record keeping was a Board-wide problem. It was not limited to Prof Williams. Meeting minutes were often left in draft form. For example, my understanding is that the AICC minutes from 2015 remain in draft form to this day. In my view, there was a problem with record-keeping and version control.

(Bundle 12, Page 208) Coming from a laboratory background, I take version control of documents very seriously. We would always number all documents and remove old ones. This did not happen in IPCT. I would often seek changes to the draft minutes via email or at a meeting, but I would never see those changes on a finalised version or even an acknowledgement that the changes had been made. On two occasions I was forwarded requests to change minutes by the PA responsible for taking them. These changes were requested by Kevin Hill and Tom Walsh and not discussed with me as the chair first. They approached the PA directly. I wish to highlight the differences with one particular set of minutes in relation to Stenotrophomonas. The minutes submitted for an IMT on 12 March 2018 differ significantly from my finalised copy as Chair. **(Bundle 1, Page 63)** Notably, the discussion about Stenotrophomonas and the issues with taps are not included in the version submitted to the Inquiry.

135. We attended lots of meetings, sometimes discussing significant issues, where no minutes or actions were recorded. For example, in a 2015 meeting dealing with the move of the adult BMT unit, nothing was written down. I was really concerned about record- keeping. I rarely got anything back in writing from Prof Williams about any issue I raised. Instead, if he responded it would be with a phone call, which would obviously not be recorded.

136. My main worry was that actions were not being undertaken because there was no record of them. Therefore, no one had responsibility for executing them. A specific example of this is when I attended a couple of meetings where the BMT rooms within the new renal unit in the QEUH were being discussed. As the Western Infirmary was to be closed down, the plan was for BMT patients at the Beatson to come to the QEUH if they needed dialysis. There were to be two rooms in the renal ward for BMT and immunosuppressed patients. This was going to require specialist ventilation. I attended a couple of meetings where they asked about the design criteria for the rooms. On two occasions, I emailed the CDC guidance on how to design these rooms. Rooms built at the Beatson were based on this guidance. I became concerned because I had to send the

guidance twice. However, there was no follow-up from that. There were no meeting minutes or any action plan to say that the action was complete. I completed that action, but I did not actually see what the project team did with that advice.

137. Another example is when I was asked by Prof Williams to send information on the legionella and water specification for the existing BMT unit at the Beatson. I assumed this was so that he could ensure that the same standards were met in the new build. It would have been easy for him to simply use the same specification because the Beatson was a state of the art facility. I sent this information but I do not know what happened with it. Emails such as this should have been found on the shared drive but the drive was not well organised. There were parts of emails missing and there was nothing to explain what the emails were about. It was not clear why certain emails had been saved on the drive and for what purpose. This was something I tried to rectify as lead ICD.

Culture and Bullying

138. Pre-2015 and quite early on in my consultant career, I recall attending a meeting in the GRI with microbiology Consultant colleagues and members of senior management, namely Isobel Neil and Rachel Green. The Consultants were concerned about the bullying behaviour of Prof Williams and examples were given by at least two Consultants. His behaviour was acknowledged, but no action was taken.

139. Further complaints of bullying by Prof Williams emerged in 2014 from trainees in our department who had written a letter to the Training Programme Director ("TPD"). This was investigated. However, I do not believe the response was appropriate. In fact, I feel that Prof Williams benefited from the arrangement which was put in place because it relieved him of things he would otherwise have had to do. Specifically, it was decided by John Hood, in his role as Head of Service, that Prof Williams would still be on call with the trainees, but that he

would not be in the same lab. All this meant was that the trainees were not in the same room as Prof Williams but they still had to be on call with him. I believe he should have been taken off the on-call rota so that the trainees did not have to deal with him at all. Instead, what happened was that the trainees were left with a huge workload in the south with inadequate on-site supervision. The only support available was via the phone, from somebody who they feared and who had bullied them. The result was that the person being accused of bullying had less work but was still getting paid to do on calls. It was an arrangement that suited the Microbiology Service, but it did not support the trainees. I think that part of the reason this situation arose was because the TPD was also the Head of Service. So immediately there was a conflict of interest. I believe on this occasion service provision was put ahead of trainee welfare.

140. There was a culture of suppression and fear. Prof Williams was feared due to his seniority and his manner. He was domineering, misogynistic, and very aggressive in his dealings with his colleagues, particularly when faced with any sort of dissent. For example, in around 2012, when I was covering for him, he reduced me to tears over an incident that I had reported to HPS. I cannot recall why he was not at work on this occasion; he was often away. We had an IMT meeting about an outbreak of VRE in the renal ward at the Western Infirmary. The IMT consensus was that the HIIAT should be rated amber and that it should be escalated to HPS that afternoon, which was entirely consistent with the protocols in place. He called me later that day and shouted at me. He told me that I should not have rated the outbreak as amber and escalated it. I felt bullied and intimidated by him. I didn't understand why he was so opposed to open and transparent reporting. The local IPCT continued to support me. They also believed there was an issue. Of relevance may be that he had a very strong view about VRE in renal patients and wanted to reduce the screening that we were doing. I think his view was that, if we didn't look for it, we wouldn't find it and then wouldn't have to do anything about it. Our views on this issue were polar opposite.

141. In my opinion, Prof Williams' behaviour was only taken seriously once Anne Cruikshank was appointed as Clinical Director for Infection Control in the summer of 2015. Her previous role was Clinical Director for Diagnostics. The role of Clinical Director for Infection Control was created as a direct response to the concerns raised by myself and others in 2015. Once the role was created, Prof Williams was required to report to her. In essence, Anne Cruickshank was put in place to manage the situation with Prof Williams. Although I don't know the circumstances of her intervention, she did take action and, within six months, he had resigned. Anne Cruickshank did not remain in her role for long. I think she resigned in around May 2016 and returned to her previous position. She was not replaced. She is an important witness for the Inquiry because she would be able to explain the circumstances of Prof Williams' abrupt departure.

Attitude of senior management and GGC to infection control issues pre-2015

142. Prior to 2015, I found the attitude of IPC senior management towards some of the outbreaks I investigated concerning. Three incidents come to mind.

143. The first was in 2012/2013 when there were two outbreaks in the renal unit in the Western Infirmary. The outbreaks were of PCP, a fungal infection, and VRE. At the time, both were considered emerging pathogens but with published literature reporting hospital outbreaks. The approach to these incidents by the IC SMT, particularly Prof Williams, was not open and transparent. There was a tendency to attribute these outbreaks to laboratory issues or increased testing rather than properly considering cross transmission. While it is important to ask whether there has been a change in testing and whether we are just picking more things up, that became the focus of this outbreak and nothing else was entertained. It got to the point that the SMT were so dismissive of what the local IPCT were doing that they stopped attending IMTs.

144. During the PCP outbreak, Sandra McNamee told me that, if I thought that cross transmission was a theory, then I would have to update the HAI executive lead myself. That was unusual. As a sector ICD, my interaction with the HAI executive lead should usually go through the lead ICD. I ended up providing a summary of the incident directly to the HAI executive lead. She thanked me for my input and all the work we were doing. I certainly did not get a negative response from her.

145. The second example concerns the incident in 2012 discussed above when I reported an outbreak of VRE in the renal ward at the Western Infirmary to HPS. In fact, both incidents detailed above were real outbreaks which were published and peer reviewed with significant learning from each.

146. The third incident was pre-2015 and was in the Beatson. There was an outbreak of RSV in haematology patients. Kirsty Ferguson, a lead ICN, and I were summoned to a meeting chaired by Dr David Stewart. Dr Stewart was a Deputy Medical Director, which means he was a member of the senior management team. It was attended by Prof Williams and Pamela Joannidis, a senior ICN. I felt that this meeting was very much driven by Prof Williams because he was asking the questions. We were asked to explain our handling of the outbreak. The whole focus of the meeting was on why we did not do a hand hygiene audit. They did not listen to the circumstances of the outbreak and what the real issues were. We had, in fact, taken a very aggressive and novel approach to this outbreak but they were not interested in hearing this. We adopted a process of “enhanced supervision”. We had ICNs allocated to the ward looking at hand hygiene and other practices. The aim was to provide support rather than to critique the staff. We also screened all of the patients and staff for RSV. The alternative would have been to send an ICN onto the ward to do a 15 minute hand hygiene audit which I don’t think would have achieved much and that was the reason why we didn’t do it. It was a very strange situation and I don’t know why they had such a reaction to the way we handled the incident. It was another example of me feeling intimidated and bullied by Prof Williams, who should really have been supporting his team.

147. My perception of the above incidents is that the IPC SMT did not respond well to new and emerging issues or novel thinking. They were only concerned with what was already in guidance, or on an alert list. They were rigidly bound by guidance and when new problems emerged, they attempted to downplay and suggest alternative reasons, such as increased testing. I felt there was a fear of escalating issues and that organisational reputation was placed ahead of patient safety. These issues continued once the QEUH opened.

148. I also came to realise that, if you raised concerns, then there would be reputational consequences. The first time I realised this was in 2015 when I was involved in workforce planning for the new QEUH. I was at a meeting of GRI Consultants and we were discussing resources, particularly Consultant Microbiologists. Dr John Hood and Prof Brian Jones, the Head of Microbiology, were both at the meeting. It was my understanding that the purpose of this meeting was to agree that we would not be sending any extra resource to the South Sector. I did not think this was right. I suggested that perhaps there should be some movement across the city to the south to allow for the increased workload given the merger of several different hospitals into the new hospital. Dr John Hood backed me up. After that, Prof Jones did not speak to me for a very long time. He asked colleagues if I had personal problems which would account for my behaviour. All I had done was disagree with him about the allocation of resource. Yet, he was making the problem all about me and ignoring the substantive issue. This meeting is also relevant to my discussion on staffing concerns and I will return to it later in my statement.

149. This incident showed me that there were not just issues within the IPCT, but that there were issues in other departments too. I realised that, if you conformed in the organisation, you would do well and you would be promoted. But if you spoke up, then there would be consequences. For example, when I moved to the GRI, I was approached by Prof Coia and Prof Jones who wanted me to take over from John

Hood. I did not feel ready to do that. They suggested that we could have a mutually supportive arrangement whereby they would support my promotion to Head of the Department if I provided no real oversight of what they were doing. I made it clear that I did not want to do the job. When I later started raising concerns about staffing levels, they told me in terms that they would no longer be interested in the previously mooted alliance. I was even told that they were bringing someone over to the be Head of the Department and that it wouldn't be me. This is when Mairi McLeod was given the post. The clear implication was that I had caused them trouble by putting my head above the parapet and that I would be punished for it by being professionally disadvantaged.

Role of the IPCT post-2015

150. When I first took over as lead ICD in 2016, Anne Cruickshank asked me to produce a document about the role of the IPCT in the built environment. **(Bundle 4, Page 54)** The feedback I was getting from the IPCT was that they had not been involved in the design or build of the new hospital because Prof Williams had dealt with the project and that was why there was a need to have a summary document so that everyone knew what their role was.

151. The SHFN-30 clearly delineates where the IPCT should be involved throughout a project, and the role of the ICD in terms of ventilation and the review of results. I effectively uplifted that information and used it to draft my document. The same information would have been available to Prof Williams and Tom Walsh during the design and commissioning process.

152. The document went to the Director of Facilities, David Loudon, and others to approve. It certainly went to AICC level and possibly BICC level. The Medical Director certainly saw it and approved it, so at least there was some recognition of the issues.

CHAPTER 4: HAI Reporting – Overview of Procedure and Practice

The procedure for monitoring and reporting HAIs within GGC and escalation to HPS and the Scottish Government

153. The following reflects the position when I was an ICD up until September 2019.

Mandatory surveillance

154. Certain infections were monitored and reported in the bimonthly HAIRT report. HAIRT is not the same as the HIIAT. It is a summary of infection control. Staphylococcus bacteraemia (SABs) would be reported in the HAIRT as healthcare associated cases rate per 100000 bed days, community cases rate per 100000 of the population and as IV access device related HAIs. The targets are set by the Scottish Government. All boards in Scotland have to report these particular organisms.

155. Clostridioides difficile (C. diff) are reported as healthcare associated cases rate per 100,000 bed days and community cases rate per 100000 of the population.

156. Compliance with MRSA and CPE screening was also reported.

157. Overall figures for SABs and CDIs were reported for GGC and then broken down per hospital. Statistical Process Control ("SPC") charts were constructed and reported for these organisms.

SSI surveillance

158. Mandatory reporting was in place for Caesarean section, hip arthroplasty, large bowel surgery and major vascular surgery. Voluntary reporting was undertaken for knee arthroplasty and repairs of femoral neck fractures. In response to increases in SSIs, we also undertook surveillance of cranial and spinal surgery.

Mandatory surveillance was set by HPS at the time which was for orthopaedics and caesarean sections. However, if clinicians or microbiologists felt there was an increase from a certain department then they could set up retrospective surveillance and start surveillance prospectively. This information should also be reported in HIART under the outbreaks and incidents section.

159. The alert organisms list is contained in chapter 3 of the NIPCM. The list is set by HPS. They can add to this list and they can, but rarely do, take away from it. The alert organism list comprises of significant hospital acquired pathogens. It is used by IPCTs. If they get a single case of one of these organisms, they need to take action.. The infection control response depends on the organism. The manual does not set out what the course of action should be. However, it does give the definition of what constitutes an outbreak or an incident (see above for the definitions of an “outbreak” and an “incident”). For the organisms listed, we would work from the manual. However, just because an organism is not listed does not mean it does not require a course of action. People with infection control expertise can work beyond the manual if something new comes along. We would then feedback to HPS and it would subsequently appear in the alert organism list. Therefore, in a way, HPS are relying on microbiologists/IPCTs who are out in the hospitals to add new things to the list. Those of us on the ground are the ones that inform the national guidance. This is a concept that GGC does not grasp well. We cannot expect guidance for every scenario we encounter and we need the ability to work beyond guidance, applying basic scientific principles.

Outbreaks and incidents

160. Incidents were assessed in line with chapter 3 of the NIPCM utilising the alert organism list, incident definitions, the HIIAT assessment which informed escalation/comms and the HIIORT report which provided incident details. The HIIORT goes into case details including what we thought the hypothesis was. Some information from the HIIORT would be reported in the weekly sector reports which would go to the IPC SMT, the AICC, and the BICC. Ambers or reds

would be reported to all the aforementioned plus the HAIRT report. Greens did not usually feature in the HAIRT. All green /amber /red HIIATs were reported to HPS. Greens were reported on a weekly basis and the others were reported as they arose. Ambers and reds were reported by ARHAI to the Scottish Government policy unit. The HAIRT is written by the IPCT. A lot of it was put together by the surveillance team. Often Sandra Devine had a lot of input. Tom Walsh or I would then check it and it would be sent to Jennifer Armstrong. Ultimately, it would be Jennifer who presented the paper to the executive board. I have not been to any of these meetings, so I am not entirely sure what the process is. The part of the HAIRT that would get the most scrutiny and comment concerned the Staph aureus bacteraemia. I think that is because GGC was often an outlier as compared to other health boards. There was also discussion about what we were doing in terms of these bacteraemias. I am not really aware of any other scrutiny at board level as I did not attend the meetings. If Dr Armstrong wanted IPCT support, she would invite Sandra Devine and sometimes Dr Iain Kennedy.

The practical operation of the system within the QEUH

Barriers to reporting HAIs

161. As lead ICD, I did not experience barriers to reporting. However, since resigning, there have been some infections I would have classed as HAI or HCAI which have not been classed as such. HCAI means “Healthcare Associated Infection”. This relates to patients such as those on dialysis or haematology patients who are frequent attenders at outpatient clinics. They still have healthcare contact and there are still procedures undertaken where infection could be introduced.

162. The IPCT is still applying a strict 48-hour post admission rule. The standard definition of a HAI is a positive result from a sample obtained more than 48 hours after the patient is admitted to hospital. While it is important to have an internationally recognised definition for a HAI for surveillance purposes, it is also

important to recognise the significant limitations of the definition for the purposes of managing incidents and outbreaks. The 48-hour post admission rule will inevitably fail to capture many HAIs if something is acquired in hospital, for example, from a contaminated water system, a piece of equipment or a contaminated product. It could be acquired within an hour of admission. Therefore, it doesn't make sense to apply that rule. If a patient has a procedure in A&E, bacteria could be introduced at that time. If the patient is also immunosuppressed, they might rapidly develop a significant bacterial infection. But because their sample was taken before the 48-hour time limit has elapsed, their infection will be treated as community acquired when in reality it came from A&E and the cause of their infection should be investigated to ensure there is no ongoing risk to other patients. I think this is something that GGC does not accept.

163. When I was still working in QEUH, in around 2020, I was covering the lab and I came across two cases of Burkholderia at the same time but in different wards. One case was classed as community acquired because the infection emerged less than 48 hours after admission. However, the fact that it occurred at the same time as another case in the hospital and is a very rare Gram-negative should have led to consideration of an environmental source and early acquisition from the hospital environment. In fact, this case was subsequently confirmed to be hospital, rather than community, acquired and to have come from contaminated ultrasound probe lubricant gel.

Data collection for different types of infections – fungal, Gram-negative, Gram-positive, other

164. For things like Staph aureus, C. diff and MRSA, we have something called a SPC chart, which collects data at Board level for the whole of Glasgow and can be broken down into ward sites. This means there is significant data around these particular organisms.

165. Similarly, we have SPCs for E. coli. What we don't have is the same for rare and

unusual organisms and environmental organisms.

166. The SPC chart does not lend itself well to the environmental organism. To work, the SPC chart needs 25 historical data points. It works well in organisms like Staph aureus and Clostridium difficile where we expect to have a stable background rate in the population, i.e., where there are endogenous infections belonging to the patient's own flora.

167. With environmental organisms, the situation could be that there is a contaminated water system that has been going on for two years, and that contaminated position is the baseline. In fact, it is actually an elevated baseline because you shouldn't have contaminated water. Monitoring in this fashion creates a false sense of security. They tend to be used for organisms that we call endemic, i.e., circulating in populations all the time. Environmental organisms are not. These are acquired from a hospital environment.

168. Instead of using SPC charts in GGC, we had triggers in place for 4 common environmental organisms. I devised these after the 2015 NICU outbreak. In my view, this would be a better way of dealing with an environmental organism.

169. At the time I wrote the IPC triggers, I focused on the four most common. These were Acinetobacter/Stenotrophomonas/Serratia/Pseudomonas. The triggers for IPCT review were as follows:

- Single HAI bacteraemia
- Two infections other than BSI in a 2-week period
- Three colonisations in a 2-week period. Colonisation is when the patient has the bacteria but it is not causing an infection and they have no symptoms.
- General increase in environmental Gram-negatives, i.e., mixed organisms, on advice of ICD.

170. I do not know if the triggers have been revised, but they should include the

organisms from the Glasgow water incident. Only one of the triggers needed to be met to trigger a review. The triggers are on ICNET. ICNET has all the alert organisms from the NIPCM. Every time a patient has one of these, it will come through to the ICN as an alert and they will investigate. A colonisation might not trigger immediately but it should ping an alert when there are three. The ICNs would then escalate to a doctor.

171. In August 2019, HPS issued an Aide Memoire with an expanded list of environmental Gram-negative organisms and one which included fungi and nontuberculous mycobacteria. **(Bundle 19, Page 515)** This was in response to the 2018 water incident. This was an addition to chapter 3.

172. There is no surveillance or data collection for fungal infections. The reason is complicated. To meet the definitions for fungal infections, there are a number of things to consider. There is what is called a host factor, which includes immunosuppression or underlying conditions. Then, there are radiological features such as changes on a CT scan. Thereafter, there is microbiology which is very difficult because the gold standard is the culture of a fungus on a plate. We also have molecular tests. These different factors together feature in the definitions and this is very difficult to capture on a surveillance system. Due to these complexities, fungal infections are identified as probable, possible and confirmed on the basis of meeting certain criteria. It is not as straightforward as the organisms described above. For those, there is a direct uplift from the lab to ICNET. For example, with a Gram-negative, you would take a blood culture, if it tested positive, the result would transfer to ICNet. With fungal infections, we don't have access to clinical features, because that comes from the medical staff. We also don't have access to the radiology department. As a result, we can miss possible fungal infections if we are solely dependent on the microbiology data. Some of our microbiology tests for fungal infection need to be sent to other labs and are therefore not captured on ICNet.

173. In general, the difficulty with fungal infections is that a biopsy is required to diagnose a definite case. In the sickest of patients, particularly haematology patients, it is often not safe to do a biopsy due to risk of bleeding. Therefore, we often don't get a definitive diagnosis in that patient group though we may have a strong clinical suspicion.

Dr Inkster's reflections on the adequacy of the system and how it might be improved

174. As I have touched on above, the current standards and targets set by the Scottish Government are all in relation to endogenous organisms. These are organisms that are considered part of an individual's normal flora and for which a background rate is expected. For endogenous infection, I believe the current system is adequate and that benchmarking against other hospitals is useful.

175. For environmental related outbreaks/infections, the current system is inadequate. A hospital can be performing well with regards to the aforementioned national standards in relation to other hospitals but have significant underlying built environment issues because we are not measuring them appropriately. Solely reporting these endogenous organisms can lead to false reassurance that a hospital is performing well.

176. With respect to the built environment, suitable standards would need to involve exogenous flora, i.e., flora which the patient acquires from their environment. Suitable indicators might be rates of bacteraemia due to environmental Gram-negatives or numbers of fungal infections.

177. I think the solution would be a national surveillance programme for environmental organisms. A starting point would be the most common ones such as Pseudomonas, Stenotrophomonas and Serratia. The standards and mandatory reporting are a good thing, but we are neglecting a lot of other areas. ARHAI is currently working on environmental surveillance, and I am involved with this. We are currently piloting this work with two Scottish health boards. It is notable that

GGC have refused to be a pilot site. I do think that, once it is set up, the reports coming in should be relatively low. They should be much lower than the other ones we are currently monitoring because they are not endogenous and we hope that patients are not acquiring them too often from the environment. I hope this is a surveillance system that is implemented nationally in the future. It would be a starting point for environmental surveillance.

178. We are not very good at recording environmental incidents. In ARHAI I see a discrepancy across Scotland. Some health boards will report a water organism and an environmental risk without any patient cases at all, whereas other health boards will depend on patient cases before they report. I think things could be improved if there was guidance on when they should be reported. Changes to the HIIAT will support this. It is something that would allow there to be more consistency in the monitoring of environmental issues within hospitals.

179. In relation to fungal infections, given the issues I have described above in surveilling these, it highlights the importance of clinical and microbiological surveillance. We cannot simply rely on laboratory data /electronic surveillance.

180. Another useful indicator would be non-microbiological surveillance, by this I mean having a reporting system for environmental incidents that do not have patient cases associated with them. Such incidents might include – abnormal water testing results, water leaks, ventilation failures. Such a system might help identify hospitals where the environment is a risk and support could be provided with incident management and risk mitigation to prevent infection. The existing HIIAT tool could be adapted for this purpose.

Advice provided in relation to flow straighteners while at HPS and Board response

181. On 5 June 2014, and after HPS had produced the 2014 SBAR **(Bundle 5, Page 3)** about the flow straighteners (discussed above), the hospital had a meeting with the tap manufacturers and people from HFS **(Bundle 15, Page 692).** I had left HPS before this meeting took place. At the time, I was working in north Glasgow, so I wasn't privy to information about what was going on in the south. What surprised me about this meeting, which was chaired by Ian Stewart from HFS and attended by Lisa Ritchie, Jimmy Walker, Ian Storer, Ian Powrie, and Alan Gallagher from GGC, is that the tap manufacturers (Angus Horne and John Horne of Horne Engineering) were allowed to be present at a meeting at which they were risk assessing patient safety in light of the issues with Horne Engineering's product. I did not think that was appropriate given their obvious commercial interest in the supply of their products. Clearly, they were going to make a case for using their product. No Consultant Microbiologist or ICD was present at that meeting either. Given the subject matter of the meeting and given that these flow straighteners were linked to an outbreak in Northern Ireland which led to the deaths of babies, I would have expected ICD input in that decision.

Other input/concerns about the built environment from the IPC perspective

182. Prior to becoming involved in the new hospital, I had already given some information to Prof Williams about water systems. The BMT unit at the Beatson had a state-of-the-art water system that was developed by my colleague Dr Hood, for legionella control. Prof Williams asked about the specification for the Beatson unit. I forwarded him information from John Hood between 2012 and 2015 including information about ventilation specification and PPVL rooms in relation to isolation rooms. **(Bundle 14, Volume 1, Page 323)**

183. I remember having a conversation with John Hood about the work he had done

with Penelope Redding. They had been involved in specifying the number of negative pressure rooms for infectious diseases and airborne infections in the QEUH. This did not include the ID unit, because they did not know it was moving over to the QEUH at that point. It was a specification for a big, busy acute hospital if patients were to present with an airborne infection. Their vision had been to have two negative pressure rooms on each floor of the building which would be suitable for airborne infection.

184. Sometime in around 2012, when I was still sector ICD in the north, I went to an SMT meeting at which I was shown plans which showed that in some hospital areas there would be PPVL rooms rather than negative pressure rooms for the isolation of infectious diseases/respiratory patients. I had not come across the concept before. They seemed to have replaced the plans for negative pressure rooms. I asked what the PPVL rooms were for as I was not familiar with them. Prof Williams tasked me with speaking to Peter Hoffman about them to get his opinion. I sent him an email and I forwarded the response to Prof Williams. **(Bundle 23, Page 194)** Peter Hoffman was not keen on these rooms for the management of airborne infections. I do not know what happened with the information I sent to Prof Williams. The question for me was, why had John Hood not been involved with the design of those rooms, given his expertise?

185. When Prof Williams found out that the adult BMT unit in its entirety was moving to the QEUH, he eventually sent an email to John Hood and asked him about the specification of the Beatson. Whether or not John Hood had any involvement before that, I don't know, aside from working on the negative pressure rooms with Penelope Redding. The Beatson had not long opened, so I don't think there was a plan to move the entire unit over to the QEUH until much later.

186. In the latter part of 2012, the new build started to feature in the monthly SMT meetings. Prof Williams would generally provide an update to us. That was really the only information I was getting about the QEUH at that time. No concerns were raised about the built environment during these meetings.

187. In late 2014 and early 2015, I was involved in discussions about water and ventilation for BMT patients because at that time, we needed rooms in the QEUH for such patients undergoing dialysis. When they were in the Beatson at Gartnavel, if they needed dialysis, BMT patients would be transferred to the Western Infirmary renal unit. However, the Western Infirmary was closing, so they would need to be transferred for dialysis to the QEUH renal unit. BMT patients need to be in state-of–the-art facilities with HEPA filtration and high air changes.

188. I attended two meetings, on 12 September 2014 and 25 February 2015, about the specification for two rooms within either Ward 4A or 4D. I cannot remember which. At both meetings, I made reference to the CDC guidance that John Hood talks about in his document. My action was to forward that guidance, which I did, to the design team and people around the table, but specifically for the two rooms in the renal ward. All I knew about the BMT patients at the QEUH was that there would be haematology patients requiring dialysis so the ventilation had to cater for that. I do not know what happened as a result of these meetings as the two rooms ended up being PPVL rooms, which were a slightly different design. They did not take on board the CDC guidance. The CDC guidance requires a positive pressure lobby and a positive pressure bedroom. In contrast, PPVL rooms have a positive pressure lobby but neutral pressure in the bedroom. The PPVL guidance in force at that time advised against the use of these rooms for the immunosuppressed population.

189. My next involvement with the QEUH was in around March 2015. Before the building opened, I remember going on a walk around with Prof Williams and Sandra Devine. I recall going into the ICU with hard hats on, because the building work was not quite finished. During the walk round, I came across the PPVL rooms in the ICU. I asked Prof Williams why there were ensuites in the ICU. The presence of ensuites meant there were patient bathrooms with a shower and sink in an ICU where patients are often ventilated and not using such facilities. In

fact, very few patients are discharged straight from the ICU and are usually stepped down to high dependency units first, once they get to the point of being able to use a bathroom themselves. For me, the presence of ensuites represented a water risk because outlets were not being used regularly and as a result stagnation could occur. Prof Williams sort of agreed with me, but by that time the rooms were in place and the hospital was close to opening. I do not know who approved that design in the first place.

CHAPTER 6: Ventilation

The Adult Bone Marrow Transplant Unit (BMT), Ward 4B

Initial concerns about ventilation

190. In June 2015, Christine Peters, who was sector ICD in the south, wanted a handover of the QEUH building. She invited me to a handover meeting with Estates on 25 June **(Bundle 14, Volume 1, Page 338)** for two reasons: first, I was moving and I'd have responsibility for the regional services such as the BMT Unit and the renal service, and second, at that particular time, Prof Williams was on a period of extended leave and had asked me to cover any ventilation issues that arose in the QEUH in his absence. People were trying to get in touch with him and were unable to reach him. I think he might have been in China for some of the time but I am not sure. Neither Christine nor I had had any handover from Prof Williams about whether any issues were going to arise at the meeting. I would not have expected there to be any issues given it was a new build hospital. I would have expected that everything would have been sorted through the commissioning and validation process. If Prof Williams had been aware of or anticipating any issues, I would have expected him to tell one of us.

191. Prior to this meeting, Dr Peters' principal concern was around a decontamination room in the A&E department and its suitability for highly infectious patients. The purpose of the meeting was for both of us, particularly Christine, to get more

information about the building. Despite being the sector ICD for the QEUH, Christine had not had any information about the specialist units, the commissioning, the validation or the specification. I had responsibility for the BMT unit, because it was classed as regional. There was no information about air or water quality for the unit. I expected that information to be available. As I will come on to describe, when the Beatson BMT unit was built there had been many months of air and water quality sampling undertaken in advance of the opening. However, we did not have any knowledge of what had taken place in the QEUH. It was really a fact-finding meeting and an attempt to get this information. This was something I would have expected Prof Williams to have knowledge of as he was the designated ICD for the new build project. Once the building was open, this responsibility would devolve to the sector ICD who was Dr Peters. I do not know if Dr Peters attempted to get this information from Prof Williams before the meeting.

192. I did not walk around any of the wards at the QEUH on 25 June 2015. I visited the lab building and was informed by Christine about the issues she had observed during her walk round. Present at the meeting were colleagues from Estates and people from Brookfield Project Managers. Christine asked questions about all the specialist ventilated areas, and asked if we could see the specification and information about the commissioning and validation process. Nobody seemed to have the information. There did not appear to have been any air or water quality checks undertaken. We asked questions about all the specialist ventilated areas.

193. What particularly shocked me was that Brookfield in particular did not appreciate that there were to be ID patients at the hospital. It seemed to be the first time they had heard that such patients were to be located in the QEUH and no one could tell us about the specification of the BMT units. There was a long list of issues. The meeting was summarised in a note and Christine and I have a copy of the key points arising from it.

194. The issues which arose from the meeting included concerns about ventilation,

the paediatric BMT unit, the adult BMT unit, the isolation and critical care isolation rooms, the operating theatres and the A&E decontamination room. There were unsealed rooms, holes in the ceiling in the paediatric BMT unit and missing HEPA filters. There did not seem to be any information that there had been any commissioning and validation process undertaken, which is what I would have expected to have occurred in a new build. I do not know what Prof Williams did with that information. All I knew at the time was that lab staff had told us that Prof Williams was out doing his own water testing with Ian Powrie. Therefore, we knew that Prof Williams was undertaking water testing of some sort. I think this testing had taken place before we raised our concerns in June 2015. The water testing is described in the HPS report **(Bundle 19, Page 174)** into the incident in Ward 2A. I do not know if it features in the Oversight Board or one of the other reviews. At the meeting, Ian Powrie also told us that there had been positive legionella results.

195. We came out of that meeting really concerned. Christine had gone expecting to confirm that the units were fit for purpose and had been through a commission and validation process. It was clear that they had not. It was obvious that a very different process had been taken at the QEUH from the one that I was involved in as sector ICD in relation to the refurbishments at the Western Infirmary and Gartnavel hospitals, as described above. During those projects, I was right down the middle of them and knew that the relevant specifications and commissioning and validation information would be available. The approach at QEUH was very different to what I had experienced.

196. Over the next few days, we were able to gather more information and undertake air sampling which resulted in Dr Peters putting together a table **(Bundle 14, Volume 1, Page 326)** of the issues we had identified. These issues included: no specification, commissioning and validation data available for any specialist ventilated area, no information about air and water quality for the BMT units, unsealed rooms and holes in the ceiling in the paediatric BMT unit, PPVL rooms not HEPA filtered, PPVL rooms not leak tested, certain issues specific to Ward

4B (the adult BMT unit), no HEPA filters in two rooms in the adult BMT unit, the degree of positive pressure being unclear, non-HEPA filtered corridors and other spaces in high risk areas of the ward, missing solid ceilings, and no maintenance schedules. The concerns with regards to air quality, specification and lack of commissioning and validation data were disclosed to Tom Walsh, Ian Powrie, Peter Moir, Gary Jenkins and attendees of the initial meetings which were held in June and July 2015. There are no minutes available for these meetings because of the issues I have outlined above with record keeping.

197. As explained above, the CEL and the SHFN-30 clearly state that, when health care facilities are being built, IC should have a role at each stage: design, commissioning and validation, handover and beyond in terms of maintenance. To find that this was not in place, and not readily accessible, was a serious concern for me. It did not accord with the guidance as I understood it, and I would have thought, for a new build project, that should have been all in order.

198. At that stage, I was covering for Prof Williams who was away for a long period. I thought I needed to take some sort of action but it was hard to know where to start given the scale of the challenge. I started with the adult BMT unit. The adult BMT unit at the QEUH was Ward 4B. Christine went to look at it and I instructed air sampling to be done **(Bundle 14, Volume 1, Page 337)** because it became very apparent that no air quality checks had been done for that unit. This was in marked contrast to the unit at the Beatson. When that unit was built, they did many months of legionella, water and air sampling, which delayed the opening. The Beatson unit did not open until John Hood, in his capacity as ICD for the Beatson, was satisfied with the results and GGC had undertaken remediation. It was clear to me that this had not happened with the new adult BMT unit at the QEUH. Therefore, the first step for me was to try and get some information about the ventilation.

199. As already stated, it was clear to me that no monitoring of air and water quality had happened in relation to Ward 4B. There was a suggestion at the meeting on

25 June 2015 that the pressure and air changes were insufficient. Whilst it is the case that there is no bespoke guidance for the design of a BMT unit, there is and was at the time SHTM 03-01 which gives parameters of 10 pascals positive pressures, 10 air changes per hour and HEPA filtration for 'neutropenic' rooms. Furthermore, GGC had successfully designed and constructed a state-of-the-art unit at the Beatson making reference to the CDC guidance on the topic.

200. I believe that the reason why the design and expertise associated with the Beatson unit was not utilised at the QEUH is because the decision to move the adult BMT patients to the QEUH was made late. The original specification for the ward which was drafted by John Hood in 2009 was to accommodate non transplant haemato-oncology patients (who are now accommodated in Ward 4C). However, the decision to accommodate adult BMT patients on the ward instead meant that the unit was no longer fit for purpose. We never got any information as to where the original specification was and why validation and commissioning reports were not available.

201. The next meeting was on 30 June 2015. This is when I visited the adult BMT unit with Dr Peters, Prof Jones and Myra Campbell. Myra Campbell was a clinical services manager for haematology regional services. At that point, I think the staff on the ward were worried. They had come from the Beatson, so they were familiar with the air monitoring that had taken place there and were aware that similar monitoring had not taken place on the unit. I recall there being issues with the rooms not being properly alarmed. For example, if there was a pressure failure in one of these rooms, it should set off an alarm at the nurses' station. That was not happening at QEUH.

202. On the walk around the unit, we observed that the ceilings were not solid. There were obviously issues with the pressures not being adequate, because we could see the readouts for those. It was a different design to what I expected in a BMT unit. For example, in the Beatson, we had a double door entry system to create an airlock and to protect the corridor from contamination. The unit at the QEUH did

not have that. There was an issue with something that we call pentamidine rooms. Pentamidine rooms are where patients get a drug to prevent a fungal infection called PCP. The drug, pentamidine, can be toxic to staff and passers-by, so that means the room must be at a negative pressure so that the drug is not being released into the corridor and exposing people walking past. However, in this case it was the wrong way around and it was positive. We raised this issue as well. It was not really an infection control issue. Rather, it was more of a health and safety, and occupational health issue. But it was just another thing that was not right about the build. Other issues which we identified included: no visual indicators of pressure levels, no ante- rooms and no alarm system to alert staff to pressure failures. Air changes were verbally reported as 10 air changes per hour but were found to be between 4 and 6 air changes per hour. Professor Jones shared our concerns and was supportive. I know that Dr Peters did a more detailed table **(Bundle 14, Volume 1, Page 326)** of what she thought all the deficiencies were.

203. On Tuesday, 30 June 2015, particle results were returned to me and were elevated, with two rooms in particular having very high counts. These results and Dr Peters' concerns led to us attending two meetings on Wednesday, 1 July 2015 **(Bundle 23, Page 199)** which were chaired by Gary Jenkins, then Director for Regional Services. In these meetings, we were met with fierce resistance from him. I can appreciate why. He was questioning why Christine and I were suddenly raising issues which he would expect to have known about before.

204. Some information regarding the specification of the unit was available at these meetings and my colleagues, Dr Christine Peters, Dr Brian Jones and Dr John Hood, and I concluded the environment was not safe for patients. It was our collective microbiology voice that the unit was not safe.

205. We agreed that engineers would increase the positive pressure within the unit. We would then repeat the air sampling and reassess the situation on Friday, 3 July 2015. I was not convinced that this would achieve anything and it did not.

206. As I have mentioned, for a BMT unit, the air pressure should be up at 10 pascals, as specified in SHTM 0301. However, it was well short of that, somewhere between four and six. There was a suggestion that trying to increase the positive pressure might improve the air quality and be a short-term fix. However, I was still concerned when I saw the repeat sample results. I felt that they were still too high and there was too much risk to have patients within that unit. I think that increasing the positive pressure, by itself, was insufficient because there were other major issues. The air change rate was too low but the rooms were not sealed properly. They did not have solid ceilings and they had pop-up tiles.

207. On the afternoon of 3 July 2015, I attended a meeting about the BMT unit where a decision was made to transfer patients back to the Beatson's BMT unit **(Bundle 27, Volume 7, Page 393)**.

208. The adult BMT unit at the QEUH had not been built to an appropriate specification. We had emails back and forth with Tom Walsh throughout that time explaining this. Gary Jenkins was chairing the meetings, so I assume that Gary Jenkins was escalating it up the organisation to the HAI Executive Lead and maybe even to the CEO. Certainly, Tom Walsh was aware of all the issues with the unit because we were keeping him updated.

209. The clinical staff in the unit were involved in the decision to return patients to the Beatson. Anne Parker is one of the haematology consultants. She would have been involved from a clinical perspective saying it was the right idea to go back to the Beatson. I think she put together an SBAR that is attached to an email from 5 July 2015 **(Bundle 14, Volume 1, Page 362)** which concludes that the correct decision was to return to the Beatson.

210. Within this SBAR there are comments about the prophylaxis that is used on adult patients to address the risk to health posed by the BMT. In high-risk BMT patients and some general haematology patients, particularly acute leukaemics

and adults, prophylaxis is part of their standard protocol. This is because even with a high quality, safe environment, these patients are still at risk of fungal infection. We know that one single fungal spore can cause invasive fungal infection in these patients. They are high risk because they have no immune system. Even with the best environmental control, you can still get fungal spores from time to time in the environment. This is why they are all given prophylaxis. It is absolutely standard for allogeneic stem cell transplants (from a donor). If a patient is on other drugs or if they have underlying issues with their liver or renal function, there might be a bit of variation as to which drug they get. However, I would expect every single allogeneic BMT patient to be on an antifungal prophylaxis of some sort. Therefore, patients were not on prophylaxis because the environment was suboptimal, it was something that would be done anyway. I think my concern was that some of my colleagues felt the prophylaxis was enough. They felt that if patients were on prophylaxis, which would be enough to protect them from environmental issues, then some lower environmental standard could be accepted. I would disagree with that. You require both because these patients are so high risk.

211. An AICC meeting was held on 6 July 2015. Dr Christine Peters attended that meeting as I was annual leave. An issue with ventilation was raised at the meeting but Prof Williams was of the view that there were no particular issues. The AICC was the sort of meeting where these issues would be reported so that there was an overview of what was happening with the new build. The whole purpose of the AICC meeting was for infection control to report on various issues. We would expect people around the table to question issues that arise and not just accept what they are being told. There were some fairly senior individuals present at that meeting. For example, David Stewart chaired the meeting and he was the Associate Medical Director. He had some infection control remit because he was the chair of that meeting.

212. On 7 July 2015, Prof Williams sent an email to me, John Hood, Brian Jones, Christine Peters and Gary Jenkins, with Tom Walsh copied in, which attached a

draft of a document to clarify the original building requirements **(Bundle 20, Page 13).** It also briefly described the building and validation process. We were given very little time to consider this document and we were expected to endorse it. He drafted the document which was attached to that email in response to concerns that Dr Peters and I had raised. The document was destined for the Medical Director to provide her with assurances that the environment was safe for the patients in that ward.

213. The document drafted by Prof Williams mentions the 2009 clinical output and specification document that John Hood had written for Ward 4B. Prof Williams' document included a reference to the original specification if delivered by Brookfield being satisfactory for a BMT unit. However, as explained above, that document was for general haemato-oncology patients and not for BMT patients. Christine Peters, John Hood and I made notes down the side of the document stating our concerns. In terms of the design of a BMT unit, the guidance is SHTM 03-01 and it is called "neutropenic rooms". In SHTM 03-01, the specification for neutropenic rooms requires 10 air changes per hour, 10 pascals of positive pressure, HEPA filtration and for the room to be completely sealed. The document sent by Professor Williams did not give any assurances that what we had in Ward 4B at that time met those standards.

214. I have been asked about Dr John Hood's comments on the document that Prof Williams prepared (page 37-40 of BMT bundle); in particular, under the heading "Specification for rooms at WoS Cancer Centre" in which Dr Hood talks about speaking to Andy Striefel, an expert who works in Minnesota, and Peter Hoffman, an expert in the UK. Dr Hood was getting input from both of these experts as part of the design process. This is something I would expect to be done when you are trying to create a state-of-the-art facility. The guidance at the time may not have been as specific as it is now in terms of neutropenic rooms. However, what Dr Hood was trying to achieve was more than just a handful of neutropenic rooms in a ward. He was preparing a specification for an entire BMT unit, which we did not have in Scotland. Glasgow is the only one, so it was really good practice that he

involved not just one but two external experts in supporting that.

215. I would expect that similar experts would have been consulted for projects such as the QEUH and RHCG. I was involved partially with the redesign of Ward 2A and I was in constant dialogue with Peter Hoffmann because these are complex high-risk units so they need to be absolutely correct. Given that Glasgow had successfully built a state-of-the-art BMT unit at the Beatson and had successfully built a state-of-the-art infectious diseases unit in the Brownlee with a suite of negative pressure rooms, I am unclear why that expertise, in the form of John Hood and colleagues, was not used to build the QEUH. That said, I do know that the decision to move BMT patients to the QEUH was made late.

216. After we commented on Prof William's document, there was no further discussion about it. I do not know if any of the amendments we suggested were made. I was not involved in any decision about the actual move. However, I think I was still worried about this document and the reference to the original specification being satisfactory for a BMT unit, because I knew that was not the case. Prof Williams took over at that point as the lead ICD, so we were excluded from any further meetings, but we had made our views perfectly clear.

217. In terms of commissioning, Prof William's report attached to his email of 7 July states that the IPCT was assured that all areas had been fully commissioned and validated. However, in my view, it is not just a question of being assured. The IPCT has to actually see the underlying reports and formally sign off on them. There were no assurances that had been done. When you are undertaking commissioning and validation of a facility, what you need to see in the report is the specification that it has been validated against. Therefore, the report should have said the specification was for 10 pascals of positive pressure, 10 air changes per hour, HEPA filtration installed and been validated against that, in which case it would have failed. To be assured that all areas had been fully commissioned and validated did not mean anything because we did not know what they had validated it against. As part of the commissioning process, the

IPCT should have inspected the ward prior to opening, as was done in critical care. It is not clear if this took place for Ward 4B.

218. As explained above, SHFN 30, which was the guidance at the time, is very clear about the role of IPCT from the beginning of a project right through to commissioning and validation. It states they have a role in commissioning and validation. It was Prof Williams' responsibility, per his appointment by Tom Walsh, to perform this role. Tom Walsh should have been seeking out regular reporting and approvals from Prof Williams to show that he was fulfilling this responsibility. Part of my routine job as an ICD was to review theatre validation and verification reports. I would get the reports in person, go through them, highlight any deficiencies before going back and asking for a test to be repeated or changes to be made. Prof Williams should have been doing that throughout the commissioning and validation process. I see it as the role of the IPCT to review those documents in conjunction with Estates colleagues. It is not purely an IPCT role. It is a multidisciplinary role, but there should be IPCT involvement along with Estates and, if possible, an authorising engineer for ventilation should look at them as well.

219. I am not aware of an original specification for Ward 4B that provided for 10 pascals, 10 air changes per hour and HEPA filtration. I would expect validation data to be available before the safety of the unit is confirmed. In the document he drafted, Prof Williams says this data is not available. If you look at the project plan within the SHFN 30, a unit should not be open until the commissioning and validation is complete. Usually, within a project there is time built into the project plan for any abnormalities to be rectified. Therefore, you would expect to have all that information before facilities open to patients. As I have already mentioned, this happened with the Beatson when there were issues with the commissioning and validation data. The same process which happened many years ago in the Beatson did not happen with the adult BMT at the QEUH.

220. Prof Williams insisted that Ward 4B had been built to specification and that was

the main point Christine and I disagreed with him on. We had not seen evidence of this and, the information we did have suggested that it had not been. Ultimately, he did suggest that the patients should go back to the Beatson. Given my experience with projects and builds prior to this, I was surprised that the document attached to the 7 July 2015 email appeared at this stage when the build had already been completed. I would have expected Prof Williams to be able to refer to contemporaneous documents from the commissioning and validation stage given his role at that point, rather than have to produce a new document for approval at this stage.

221. It was obvious that no commissioning and validation process had been undertaken for the adult BMT unit because nobody could produce any evidence to show that it had and nobody appeared to have seen any reports. It appeared to me that there had been no IPCT involvement in that process at that time. I emailed Tom Walsh about the roles and responsibilities of the IPCT in the commissioning and validation process.

222. Tom Walsh sent me an email on 7 July 2015 in which he stated that he could not see this guidance regarding roles and responsibilities in the HTM **(Bundle 14, Volume 1, Page 379)**. You would not see this information in an HTM because that is an English document. In Scotland, it is the SHTM which applies, but there is also a SHFN. In the email he stated *"I'm equally left why we didn't do this if we or some of the team knew we should. My understanding is the complete hospital build and all validation and commissioning was by the external contractor, which is different to a new unit."* That is not the case. That would only be the case if it was a PFI building. There is no difference in terms of commissioning requirements between either a new unit or a refurbishment. It is still the same process. It confused me because Prof Williams had been undertaking air sampling in the paediatric BMT unit, which is part of the commissioning and validation process, but we were not undertaking the same process for the adult unit. I couldn't understand why we had different processes in place for what was effectively the same type of unit.

223. The CEL in 2007 went to all Chief Executives and all ICMs, detailing the roles and responsibilities of the IPCT throughout a project. Therefore, I would have expected Tom Walsh, as an ICM, to know the role of the IPCT and to follow up and ensure that the proper processes had taken place. That would have been in keeping with the CEL and SHFN 30 roles and responsibilities **(Bundle 14, Volume 1, Page 8)**

224. In fact, there are minutes that subsequently came to light from BICC meetings where Tom Walsh was referring to commissioning and validation and the involvement of IPCT. At an SMT meeting dated 29 April 2015 **(Bundle 27, Volume 7, Page 12)** , Tom Walsh is minuted as saying that at that time the issue of theatre validation was outstanding. Further, in minutes of an earlier BICC meeting held on 28 July 2014 **(Bundle 27, Volume 7, Page 7)** in relation to the new hospital, Dr Armstrong is recorded as asking if IPC were involved in the commissioning group. In response, Tom Walsh confirmed that Fiona McCluskey was liaising with Sandra about this. Rosslyn Crockett asked that Tom and Sandra were part of the commissioning group and Dr Armstrong asked for an update at the next meeting. She also requested that commissioning become an agenda item at subsequent meetings.

225. These minutes demonstrate that Tom Walsh did know about the role of the IPCT in the commissioning process. However, as is evident from these minutes and the information in this statement, a recurring theme was IPCT senior management telling ICDs that they have no knowledge or recollection of certain matters when in fact it is clear that in fact they were involved.

Closure of Adult BMT in 2015, attempted move back in late 2015 & reopening in 2018

2015

226. Following the movement of patients from Ward 4B back to the Beatson in July

2015, I was not involved in any further discussions about the Ward. However, on 30 October 2015, I was informed by Prof Williams that I, as the sector ICD, would be leading on a plan to move the unit back to the QEUH.

227. It transpired that the move was imminent and an email forwarded to me from Melanie McColgan, who was the General Manager for Oncology, stated that her understanding was the wards were to be handed back over to the service on 28 October 2015 **(Bundle 27, Volume 7, Page 395)** and she was looking for it to be signed off from an IPC perspective.

228. By the time I was emailed, the ward had been handed back to the service from contractors. I immediately emailed Prof Brian Jones and Isobel Neil expressing my concern that I was leading on this move, having had no recent involvement and again no information with regards to the specification, commissioning, validation or air sampling results . Isobel Neil emailed Tom Walsh and set out information I required which was (1) what remedial work had taken place and who from IPCT had been involved and signed it off, (2) what was the specification of the unit, (3) what validation had taken place, and (4) had any air sampling taken place and what were the results. She requested he intervene to properly equip me to lead. **(Bundle 27, Volume 7, Page 395)**

229. Tom Walsh wrote to Melanie McColgan to say that I had several questions around the remedial works which could hopefully be addressed at the meeting that was due to be held **(Bundle 27, Volume 7, Page 397)**. I subsequently had a verbal conversation with Tom Walsh the content of which I escalated in an email to Isobel Neil, Brian Jones and Anne Cruickshank. He told me that no one had been involved from the IPCT and he was unable to tell me about the specification or if air testing had taken place. Once again, I requested the information I needed and highlighted SHFN 30 and the need for the IPCT to be involved. Again, I emailed Tom Walsh repeating my request for information, he replied stating my concerns were noted and Prof Williams would meet with me. **(Bundle 27, Volume 7, Page 397)**

230. I was very surprised at Tom Walsh's response, given everything we had been through only a few months before around commissioning, validation and specification. I was surprised that his response was that these issues would be addressed at the meeting. All of these issues should have been in hand well before any meeting to talk about the transfer back to the QEUH. At this stage, I think they actually had the keys for the unit, so the work had been done. A failure to follow the carefully delineated process in SHFN had happened again. This was despite all the emails I had previously had with Tom Walsh

231. Melanie McColgan sent my queries on to Peter Moir, who was Project Manager at the time **(Bundle 27, Volume 7, Page 399)**. He did send me some brief information, around the ceilings that had been sealed, but not much more than that, and certainly not enough to enable me to sign off this planned move.

232. Prof Williams met with the lead ICN Lynn Pritchard and I on 10 November 2015. At the meeting, we all agreed we would have to seek clarity from Brookfield and Estates about the specification, agree a programme of air sampling and discuss ongoing building works/dust management. I felt that I was being put in a position where I was expected to sign something off with no information. I am not sure why I was put in that position when Prof Williams, as the lead ICD, who had actually been involved, was not prepared to sign off.

233. The only discussion I had with Prof Williams about the refurbishment of Ward 4B was at the meeting on 10 November 2015. He mentioned that the ceilings had been converted to solid ceilings. I did not have any discussion with him about IPC being involved in the refurbishment. He forwarded an email to me about discussions he had had with Peter Hoffman **(Bundle 27, Volume 7, Page 401)**. I think I asked for this email to be sent to me because I was aware that he had been discussing matters with Peter Hoffman.

234. From these emails it appeared that, on the 23 July 2015, Peter Hoffman emailed

Prof Williams with comments on a proposal that Prof Williams had put together **(Bundle 27, Volume 7, Page 403)**. Peter Hoffman highlighted various pieces of information that were missing in relation to the pressures, ceilings, air-handling unit, filters and other questions. I did not see any response from Prof Williams. There was outstanding information that had not been made available to Peter Hoffman as an external expert. Peter had suggested input from HPS as he stated he had no remit to advise.

235. I attended a meeting about the proposed transfer of the BMT unit back to QEUH on 12 November 2015 **(Bundle 13, Page 845)**. At this meeting, I requested input from HPS and Peter Hoffman. Melanie McColgan discussed this with Tom Walsh and Prof Williams as they had to approve this input. I sensed resistance from Prof Williams and Tom Walsh. Tom Walsh responded by saying that he was unsure what advice HPS could offer as he understood it to be a specialised area and that Prof Williams had discussed it with HFS. I do not have knowledge of what those discussions entailed and what HFS's involvement was.

236. There is an email trail from Tom Walsh dated 12 November 2015 which states: *"I don't see any problem whatsoever with this if it's what Dr Inkster feels appropriate. Any additional assurance/advice can only be helpful. We've already contacted HFS and Prof Williams has updated Dr Inkster with the response."* **(Bundle 27, Volume 7, Page 405)** At that point, all I had been told from Prof Williams was some advice on air sampling as opposed to any advice on specification or validation had been obtained from HFS. That suggested to me that HFS were consulted about air sampling as opposed to anything else. The email concludes by saying, *"I'm unsure what, if any, advice or information HPS could offer, as this I understand is a specialist area for HFS".* In fact, HPS became involved and provided us with a full specification with expert input from Peter Hoffmann.

237. Ultimately, while there was a bit of pushback, I was able to proceed with a review from HPS and Peter Hoffman. I contacted them and passed on information to the relevant nurse consultant, Annette Rankin. I would have expected the move back

to be delayed until the process with HPS was complete. However, the meetings about the move back continued. I continued to raise concerns which are documented in the minutes of the meetings dealing with the move. These concerns included the validation of rooms against the wrong guidance document /specification, suspended ceilings in the bathrooms, presence of hatches/vents, presence of air conditioning units. I think I asked HPS to attend the third meeting to back up what I was saying.

238. The meetings about the planned move were called “BMT Unit Transfer to QEUH meetings”. They were chaired by Melanie McColgan as the general manager for oncology/haematology and we had clinicians present. John Hood was there and I had two microbiology colleagues attend supporting me. I should stress that this was not just my view. Brian Jones, who was the clinical lead for BMT for microbiology and John Hood, with his past experience, were also at the meetings. They both agreed with me.

239. A draft report was produced by HPS dated 7 December 2015 **(Bundle 13, Page 849)**. In this report they validate my concerns about the BMT unit. The key issues were inadequate air changes, unsealed bathrooms and inappropriate validation testing. A desired design specification for the unit was included.

240. On 7 December 2015, a meeting was held to discuss the proposed move back to Ward 4B. Concerns were reiterated at this meeting by Annette Rankin, who was present for HPS, and I. At this meeting, Ian Powrie highlighted that it was still unclear what specifications the original design team worked to. It was agreed that Melanie McColgan would escalate these concerns to Tom Walsh and Jennifer Armstrong.

241. A further meeting was held on 14 December 2015 **(Bundle 13, Page 850)**. It was at this point that the decision was made to postpone the move back. A feasibility study was going to be undertaken into the HPS requirements. There was confusion regarding roles and responsibilities and who should formally accept

the HPS recommendations. This was in relation to the financial implications of such a project and it seemed that it was expected I would sign off on a change order. This was not my responsibility as an ICD and I did not do it. The sign off on the change order was for someone much more senior within the organisation. It must have ultimately been signed off by someone more senior.

242. I was fully involved in the refurbishment of Ward 4B from that point onwards until I went off sick in June 2017 because I was diagnosed with lymphoma.

2016

243. On 11 January 2016, an email was sent from Grant Archibald, Chief Operating Officer, regarding an MDT meeting that would be set up to discuss the situation with Ward 4B further **(Bundle 14, Volume 1, Page 492)**. In this email he referred to a risk assessment process. I was asked to provide ventilation specification options and constructed a table of three options. The gold standard option included positive pressure of 10 pascals, air changes of 10/hour and additional HEPA filtration in the corridor with fully sealed bathrooms. One option included accepting reductions in air changes per hour and pressures if the corridor in addition to the rooms could be HEPA filtered.

244. I was involved in these meetings and feasibility studies. I think Capital Planning and Estates led on it. They looked at various options around the site for either construction of a new unit or an upgrade of an existing facility. They came back with a list of options which were reviewed and assessed by an MDT as to which might be the most viable. There were a lot of things to consider, such as the clinical risk. One of the options was to remain at the Beatson. With that, there was clinical risk because there was no intensive care unit or renal dialysis on site, nor the support that these patients might need. I think there was discussion about doing something with the top floor of the maternity building. Again, the risk with this option was the time it would take to do something like that. Similarly, I think they looked at the neurosurgical institute and the conversion of a ward there.

Everything was risk-assessed and rated. Out of all the options, the agreed option was that they would upgrade Ward 4B.

245. I was concerned about the process as it appeared the options appraisal process was reaching a conclusion rather than ranking the options for consideration at board level. It was evident from scoring that IC and Estates colleagues involved did not consider Ward 4B as the safest option from a built environment perspective.

246. There was a further attempt to instigate a move back in the spring of 2016 following a benchmarking exercise with other units. The infection control SMT discussed this and we expressed concern because our unit had a lower specification than others and I was mindful that the unit had a planned shelf life of 20 years. I emailed this view to David Loudon, Melanie McColgan Jennifer Armstrong and Gary Jenkins **(Bundle 14, Volume 1, Page 521)**.

2017

247. In February/March 2017, an options appraisal took place, the basis of this was the output from the feasibility study and, in total, eight options were appraised. These were (i) remaining at the Beatson, (ii) returning to level four, (iii) the maternity roof (adding an extra floor there), (iv – vi)) three options within the neurosurgical institute (levels one and two, ground and first, or ground with an extension), (vii) the QEUH laboratory building roof (adding an extra floor) or (viii) the St Mungo Building at GRI **(Bundle 13, Page 877).**

248. At meetings in February 2017 attendees scored each of the options. We went through a process called “benefits criteria weighting”. In this process, things might not be weighted the same. Clinical risk had the highest rating. It is quite complicated to explain, but the document includes the scoring to the extent that it includes the initials of the people and how they scored. The criteria includes things such as improvement of the patient journey, staffing, environmental

standards, service standards, disruption, strategic fit, timescale to delivery and sustainability. They are all ranked and scored. In the options appraisal process undertaken for the adult BMT patients, the option that came out top was the QEUH level four, but that did not come out top for infection control. What came out top for infection control was remaining at the Beatson. It is a compromise, weighing up clinical risk versus infection control risk versus other aspects.

249. Gary Jenkins, who was the Director of Regional Services, wrote a paper that he sent to the Acute Services Committee in March 2017 **(Bundle 27, Volume 7, Page 158).** Within that paper, he described the potential locations, the pros and cons of each, the options appraisal process and the recommendation on which option to proceed with.

250. When the decision was made in terms of options, I still had concerns. It was clear to me that they could not meet the full specification that HPS had delineated in their document. I also had concerns about the options appraisal process and how that had been weighted.

251. I was still concerned that we would not meet the necessary environmental standards in Ward 4B. I rated environmental standards down at one for Ward 4B and for the Beatson I had them up at an eight. I clearly felt that the Beatson was the safest option at the time. I think particularly with regards to pressures and air changes, the decision makers were going to have to accept some degree of compromise. The HEPA filtration was going to be in the bedrooms but not in the corridor. That is important because the way the unit was designed is they did not have the additional protection of what we call an anteroom. An anteroom sits before the patient room, you go in and you close the door which gives you an extra layer of protection.

252. This means that the minute the door opens; the pressure begins to drop and there is a risk of the ingress of contaminated air. The corridor was not HEPA filtered. Had they been able to provide a HEPA filtered corridor, I would probably

have accepted a lesser degree of air changes and pressure because I knew that the standard of air coming in was of a high quality. I was still worried that it was not as protective as the Beatson, which was entirely HEPA filtered throughout. We also had an additional layer in the Beatson of an airlock entry. When you entered the ward, you came through a set of double doors and you could not proceed into the ward until those doors had sealed shut behind you. You then go through a second set of doors, and this stopped any contaminated air from the corridor coming in. I did not think that the proposals for Ward 4B would meet the specifications set out by HPS.

253. There was an email dated 2 March 2017 from Tom Walsh, Sandra and me back to Melanie saying that our understanding of the process was that the multidisciplinary group's function was to rank the options for consideration at Board level rather than reach a definitive recommendation **(Bundle 13, Page 886)**. We felt that we were being pressurised into making a recommendation which we, from an IPC perspective, did not necessarily agree with.

254. On Sunday, 5 March 2017, Jennifer Armstrong sent an email to me saying that she was meeting Melanie and Gary Jenkins **(Bundle 13, Page 888).** The email stated *"I note the paper which you've given me in advance",* this was referring to the options appraisal, *"and all the issues with all the options. I note the group came to the conclusion about temporary relocation to QEUH Ward 4B with some provisos. Is this something you can support?"* I sent the email to Tom Walsh to which he replied *"Difficult, although I thought the recommendations were clear that service needs were being prioritised over IC concerns. I'm not sure if anything more can be said other than repeating this."* We were not happy at that point to support a temporary move back.

255. The recommendation of the options appraisal was that the adult BMT should be moved back with some mitigations and without any improvements made. We were clear that we felt we were not taking part in the recommendation at that point, but just going through the scoring and presenting those to GGC. In March

2017, Jennifer Armstrong requested an opinion from HPS about moving the patients back to the QEUH ward with mitigation in place. She asked me to email Michael Lockhart, who was the Consultant Microbiologist at HPS. I emailed him on 13 March 2017 with the options appraisal and stated that Dr Armstrong was requesting an opinion from HPS and that the proposal was to move the patients back **(Bundle 13, Page 902).**

256. In March 2017, HPS confirmed they were not happy to support a move back and they supported the infection control view. One of the issues they raised was inconsistency in information being supplied by Estates, for example in relation to specification validation. Therefore, the patients stayed where they were.

257. Around May/June, I asked HPS to come back on site to go over things with me and to go through the specification again in order to give me some more support. They were not content to support a move back and raised a number of concerns. Around this time, I got my lymphoma diagnosis and had to go on sick leave.

258. I am not sure exactly what happened after this but my colleagues could speak about this in more detail. My understanding is that it was not an ICD person standing in for me who approved the move back, but rather that the decision was made by the Acute Services Committee. The Acute Services Committee are not an infection control committee. I am not familiar with their function as it is not a committee I would attend. They approved the move back to Ward 4B and they chose to upgrade the ward. When I returned from sick leave in January 2018, they were just starting the air quality monitoring following the upgrade. I was not there when the final decision was made to proceed with this option. HPS were not involved in the options appraisal. That was purely Board staff, and clinical and infection control staff.

259. When I returned to work, I learned that colleagues had been on Ward 4B during my absence and had come across a meeting for works which were about to start. They asked for the HAI Scribe document and saw my signature on it. I think my

signature was dated towards the end of June or July 2017. It had been cut and pasted into the document. It was impossible for me to have signed the document on this date and at a meeting within the laboratory building because I was off sick.

260. There was a suggestion by Sandra Devine that this signature was just a mistake or an oversight. However, this problem was not a one-off. I have emails and documents which show that my name was on two other subsequent SCRIBE documents when I was not there and not present at meetings **(Bundle 27, Volume 7, Page 415)**. There was a SCRIBE that happened in relation to the paediatric ITU upgrade when I was on annual leave in the summer of 2019 and there is one very recently where my name appears on SCRIBE documents concerning the placement of thermostatic mixer valves and taps. My name appears on these documents despite having given up the role two years before. This is a governance issue. The HAI- SCRIBE is an important document in terms of the work going ahead from an infection control perspective. By signing a SCRIBE, it almost implies that you have knowledge of the work and the specification because you should have that knowledge to sign off the relevant control measures. Although I did not officially sign off, it looks like I supported what was taking place because I have signed off the SCRIBE. This is why I was particularly concerned about my name being on the document because it implies that I was happy for the work to proceed and I knew what the work entailed.

261. Whilst I was off work, a meeting about the relocation of the BMT unit took place on 3 October 2017 where the works, validation and air monitoring were discussed **(Bundle 13, Page 852)**. There was HPS involvement, but I do not know to what extent. I am aware another SBAR was produced. A validation report had been issued in early November 2017 **(Bundle 27, Volume 7, Page 243)**. I am not sure who reviewed and approved this. Normally, it is external contractors who come in and do the validation for us. Again, I did not have any involvement in this as I was off sick at the time.

2018

262. When I returned to work in January 2018, I was told that Prof Jones now had IPC responsibility for Wards 4B and 2A and would continue to do so even when I was reinstated as lead ICD. The only explanation I got from him was that he had been involved when I was off sick so it made sense for him to continue. I suspected at the time, and now, that in fact he assumed responsibility for these wards because he (along with Tom Walsh and Sandra McNamee) wanted to keep me away from areas of potential controversy.

263. Within a few weeks of returning to work, I raised concerns about the environmental standards of the work going on in Ward 4B and that there were inadequate control measures. At this point, the refurbishment work was complete and there were some minor works going on. I was concerned about the water and I put all my concerns in writing to senior management. Responsibility for Ward 4B was then handed back to me in January 2018. I think this was because I was raising concerns about the lack of water testing and Prof Jones was worried about that and wanted to pass responsibility for it on to someone else.

264. Of relevance is that when I was off sick, a BMT unit relocation meeting took place on 3 October 2017. It was chaired by Melanie McColgan who was the general manager for the area. Brian Jones and Sandra Devine were in attendance, as were persons from HPS. At the meeting, questions were asked about air sampling and Brian Jones indicated that advice was required from HPS. This prompted HPS to generate a second SBAR which included an additional section on how to do the air sampling **(Bundle 13, Page 874)**. When I went up to the ward on my return to work, I only saw minor works, not the full refurbishment. The patients were still at the Beatson at this point.

265. A meeting took place in March 2018 to discuss air sampling, air permeability testing and contingency planning for air handling unit failure. Following this a relocation meeting was held on 18 May 2018 which was chaired by Melanie

McColgan **(Bundle 13, Page 858)**. I was present and we reviewed the air sampling results, which were satisfactory. It was at this point that the patients were moved back.

266. I did not feel that the work done was adequate. They had obviously made changes to the ceiling, and they had made efforts to increase the pressures and the air changes but they were not able to deliver on the HEPA filtration in the corridor. I did not feel that it met infection control standards for that type of unit and it was still inferior to the Beatson. I thought that a brand new and apparently state of the art unit should be at least as good as the unit it was replacing. However, by the time I came back to work, the work had been done and Sandra Devine expressly told me that she and Brian Jones had signed this off. I have an email to that effect dated 12 January 2018 **(Bundle 14, Volume 1, Page 705).** This is important because in September 2019, the Scottish Government asked if all the October 2017 SBAR recommendations had been met. In her response, Sandra said she did not have that information and that she was passing the question on to me as the lead ICD involved in commissioning. This was an odd response, given that she had attended the October relocation meeting and she told me that she had signed off the work. Validation reports and air permeability results were sent to Sandra, Brian Jones and others on 6 December 2017. In my view, this situation is similar to the one [redacted] found [redacted] in when Sandra Devine and Tom Walsh claimed to know nothing about Ward 4B when I was off sick.

267. The ultimate decision to proceed and not to meet all the recommendations for Ward 4B made by HPS was made by GGC. HPS do not really have any recourse in relation to the decision GGC makes. They can only advise and assist. They cannot dictate what a Board must do. All I know is that before I left, I raised concerns with HPS and they were not prepared to sign off or agree that the risk mitigation was sufficient. Annette Rankin could speak in more detail about this.

Paediatric Bone Marrow Transplant Unit, Ward 2A

Background

268. The children's BMT unit (Ward 2A) was always going to be in the RHCG. However, the children's BMT unit is not exclusively for BMT patients. In the adult BMT unit, every patient is having a bone marrow transplant. In contrast, the children's ward has to accommodate BMT patients as well as general haematology patients, solid organ tumour patients and oncology patients. There is no requirement for oncology patients to be in a specialist environment. Normally, what you will find across the country is that a proportion of the rooms will be for BMT patients and the rest of the ward is a general specification ward. That is why, although there was always supposed to be a children's BMT unit only eight of the rooms were designated as BMT rooms and the rest of the ward was a general ward. I would expect there to be specialist input into such a unit. I am not aware if that input was there at the design and planning stages. It would have been for Prof Williams to satisfy himself that the required input had been obtained for the RHCG, and indeed, the QEUH.

269. I have been asked if the rooms required for BMT patients are different from those required for general haemato-oncology patients in terms of specification. We have a specification for what we call neutropenic rooms. BMT patients will fall into that category but so will other types of haematology patients. In particular, patients with acute leukaemia who are on quite toxic chemotherapy regimens and have prolonged episodes of neutropenia require a particular type of room but not all haematology patients require that specification. Some haematology patients have anaemias, but not prolonged neutropenia. Not all haematology patients require the same specification of room. I would have designed the ward in the same way as Ward B7 at the Beatson. Ward B7 is the general haemato-oncology ward. In Ward B7, a proportion of the rooms are of a higher specification and we put the high-risk acute leukaemics in those rooms. The rest of the general haematology patients are accommodated in the other rooms. John

Hood chose to do it differently, with all rooms at six air changes per hour, air pressure at six pascals and HEPA filtration. I would have included a few higher specification rooms for the more vulnerable acute leukaemics.

270. There was a mix of patients on Ward 2A including haemato-oncology, BMT and solid tumour oncology. There were rooms that were built to a different specification from the BMT rooms. However, the BMT rooms were not built to a neutropenic room specification. They should have been built to the neutropenic room specification set out in SHTM 03-01. Instead, they were positive pressure ventilated lobby rooms and built to the specification set out in SHPN 04-01 Supplement 1 **(Bundle 1, Page 252)**. SHPN 04-01 Supplement 1 contains an exclusion for severe immunosuppression and for airborne infections for PPVL rooms. Therefore, PPVL rooms were the wrong type of room for BMT patients. As far as we were aware, the rest of the rooms on Ward 2A were built to a general ward design. There are no requirements to validate or commission a general ward design. At that point, we were not aware of all the ventilation issues that would transpire in late 2018 onwards. We assumed that they were built to a general ward specification.

271. While the adult BMT unit was being moved back to the Beatson in July 2015, there was a public announcement about the ventilation system in the paediatric BMT unit that seemed to suggest that there was no issue there. This was not accurate. I was not involved in that statement, but I would have expected it to go to IPCT for approval. Usually, there is quite a widespread distribution of such a statement before it is made. I do not think I was copied into any emails at the time. I was unlikely to have been as Prof Williams was still the lead ICD and also ICD for the RHCG. Dr Christine Peters and I had no remit at all for paediatrics. Therefore, it would be highly unlikely that we would have any input into any statement around that.

272. Before we became involved, air testing was on-going in early June 2015 in the paediatric BMT. Patients were already on the ward when the testing was being

undertaken which should not have happened. Air quality should be assessed before patients move in to make sure that it is safe. Prof Williams told Brenda Gibson by email dated 22 May 2015, and copied to Janet Young and Claire Mitchell, that the unit was safe to use, but the air sampling happened after that email **(Bundle 14, Volume 1, Page 264)**. You cannot possibly tell if a unit is safe before air sampling has been carried out. To be satisfied about safety, you would have to understand the original specification and see all the validation and commissioning reports, alongside the air sampling results.

First involvement with Ward 2A - 2015

273. My first involvement with Ward 2A ventilation was in early June 2015 when I received an email from Sandra Devine stating that none of the BMT rooms in Ward 2A had HEPA filters **(Bundle 14, Volume 1, Page 263)**. Prof Williams was on leave that day and I was asked whether this should be escalated. I agreed it should be. There were no patients in the ward at the time.

274. It was subsequently confirmed in an email from Ian Powrie on 7 June 2015 that HEPA filters had now been installed and tested **(Bundle 14, Volume 1, Page 267-8)**. I was also aware that microbiological testing had taken place in early June and that the results were not as expected as particle counts were elevated. Further, there was an email on 8 June 2015 from Ian Powrie stating that two rooms required fabric repairs **(Bundle 14, Volume 1, Page 267)**.

275. The fact that at such a late-stage HEPA filters were missing was crucial because at that point you would expect all the validation and commissioning to be done and to be moving into a period of air monitoring. It was just a week before patients were moving in, so that was very late in the day to be picking up on a serious omission. HEPA filtration is one of the most crucial aspects of a BMT room. I became concerned about the ward then and my concern only grew after I visited it.

276. I first visited the child BMT unit in person on 1 July 2015 with Pamela Joannidis. Brian Lavery, the biomedical scientist, had asked me to attend. Brian's request was prompted by an email he received from Alannah McVeigh, who was the quality manager for Ward 2A, which contained queries about air sampling. The email also advised that a patient was due to start transplant conditioning and advice was required on which room to use.

277. During this visit, I noticed issues with the build. When I arrived on the ward, there was work ongoing whilst patients were present. There were holes in the ceiling and I had dust falling on top of my head. Workmen were drilling holes with the most immunosuppressed children in the hospital present. I was appalled.

278. I was thinking back to what had taken place in my experience in the north of the city. There would never have been patients in a facility that was not complete and that had holes in the ceiling with workmen there. In my view, something had gone horribly wrong.

279. As mentioned above, I believe air sampling had started within this ward a few weeks before my visit. I do not know what state the ward was in when the patients were moved in. As also mentioned above, Prof Williams had told Prof Gibson on 22 May 2022 that the unit was safe to use. I vehemently disagreed with Professor Williams' assessment of the safety of the unit.

280. I should explain that Prof Williams' email of 22 May 2015 was forwarded to me by Janet Young, who was a manager in the microbiology lab. I am not sure when Janet forwarded the email to me but it must have been in the summer of 2015 because I can see that I forwarded it to Dr Peters on 16 September 2015.

281. Pamela Joannidis shared my concerns about the children's BMT unit and I asked her to set up a meeting for the following day. The purpose of that meeting was to discuss with the clinicians what was going on in the ward. By the time we had had a look round and tried to risk assess, it was seven o'clock at night.

Therefore, the key people were not present. That is why we had a meeting the next day with Dr Anna Marie Ewins.

282. At the meeting, Dr Ewins said that she had been told by Prof Williams that it was safe for transplants to go ahead. She did not say anything more specific than that. This meeting was difficult. I was challenged about giving advice which conflicted with that received from Professor Williams on 19 June. I explained that the rooms had holes in the ceiling and were, therefore, unsealed (sealed rooms are a required specification for any BMT unit). The elevated particle counts and the fungal growth were discussed. I also advised that I had not seen crucial documentation on validation and did not know if the BMT unit met the CDC specification. In addition, I could not guarantee water safety as I had not seen the Legionella results despite requesting them.

283. While no children were undergoing transplants at this point, one child was due to undergo a transplant and had been given induction chemotherapy. The problem then became assessing what was the greater risk – this child not proceeding with the transplant or a child proceeding with the transplant in a room that was sub-optimal. That is a very difficult position to be in. As the process had already started for this child, the clinical decision was made that it could not be stopped.

284. As a result of this decision, I had to quickly instruct that certain works be carried out to make the room as good as it could be. In an email to clinical staff and estates and facilities colleagues, I explained that I could not state that one room was safer than the other **(Bundle 14, Volume 1, Page 272)**. I also highlighted that following discussion with Ian Powrie, sealed light fittings would be installed in rooms 17 and 18 and one of those would be used, given the clinical decision to proceed. Sealed light fittings were to be acquired as soon as possible for the other rooms. Due to direct contamination with the ceiling void and the risk of dust and fungal spore ingress, I also advised that the anti-fungal prophylaxis Ambisome be used with the transplant patient and the children already in the rooms.

285. I was really worried about fungal infection. I had air sampling results and I knew there was aspergillus in the unit, so obviously they were at risk of invasive aspergillosis. I was really worried that, in at least two rooms, there were connections with the ceiling void. I also suggested a possible relocation to Edinburgh to allow for deep cleaning of the rooms, urgent particle counts and urgent sealing of the light fittings. I sent these requests to Estates. As far as I am aware, all my requests were carried out. Fortunately, that child got the transplant and I'm not aware of an adverse outcome. This may have been because of the prophylaxis. However, this did not really allay any of my concerns because I knew that the rooms were not the design I expected them to be. I was still not happy with the outcome.

286. On 3 and 6 July 2015, I forwarded the email trails to Tom Walsh and Prof Williams **(Bundle 14, Volume 1, Page 280)**. I highlighted to Prof Williams that I had not seen any specification for the unit, any validation reports or any water sampling results.

287. I was never able to obtain the correct information to carry out a full risk assessment on these rooms. What was clear was that it was not a traditional BMT positive pressure room, it was a PPVL room. As explained above, there is an exclusion in the guidance for PPVL rooms to be used for severely immunosuppressed children, or adult patients, which would include BMTs. So, not only were there holes in the ceiling, but they was the wrong sort of rooms.

288. By way of explanation, the difference between PPVL rooms and positive pressure rooms is that PPVLs work with an anteroom. The air supply comes into the anteroom and it's positively pressurised at ten pascals. Some of the air goes out the door and some of the air goes into the children’s room which is at a neutral pressure. Then, the dirty air is extracted up, usually via the ensuite or sometimes through an extract grill in the patient room, depending on the setup. These rooms are not considered suitable for the severely immunosuppressed.

There is a problem over time, with inadequate sealing and leakage of these rooms. The optimal design that I am aware of for these rooms is what we would call either a positive pressure room by itself with ensuite, or a positive pressure cascade. If there is an anteroom present, there is positive pressure in the anteroom relative to the corridor and then there is positive pressure in the patient's room relative to the anteroom and then relative to the corridor as well. The design which was selected did not offer the best protection for immunosuppressed patients.

289. When I received the air sampling results from the child BMT unit, they were concerning but it was not a surprise. I did not actually need particle counts to know that there was a problem, because I had witnessed a direct connection with the ceiling void. Ceiling voids are the perfect place for fungal growth. The particle counts just confirmed what I already knew; it was not safe.

Legionella concerns in the paediatric BMT unit

290. I also had concerns about water safety in the paediatric BMT unit at this point. I asked if there had been any water testing, specifically for legionella. In the Beatson we had state- of-the-art water control for legionella and did regular water testing. I asked about legionella results and did not get any. I sent an email to Prof Williams asking for these **(Bundle 14, Volume 1, Page 392)**.

291. At an IPC SMT meeting a couple of months after this, in early 2016, I highlighted the lack of risk assessments with respect to legionella **(Bundle 13, Page 533)**. I think Prof Williams was present at this meeting but I would have to check the minutes. When I asked for information about specification, validation and commissioning data and ongoing monitoring of the air and water quality, I was told by Mary Anne Kane (who was minuted to this effect at the Water Safety Group) and Tom Walsh that Prof Williams had dealt with the water and the message was very clear. It was not clear at all for the other areas.

292. From the minute I was involved with Ward 2A, I was concerned about it. I was covering for Prof Williams at this point. He did not give any indication that there were any issues with the ward. I was still based at GRI which is where the environmental lab was based. I knew from the biomedical scientists that there were problems with the air sampling and they had been trying to contact Prof Williams about it, but I was not responsible for the results.

293. At this stage, we had grown aspergillus from air sampling, but there were no infections on the ward. I was highlighting to Prof Williams that I had not seen any specification for the unit in the validation reports and no water sampling reports. Prof Williams returned to work on 10 July 2015 which was when he confirmed that all of the light fittings on the ward had been replaced **(Bundle 14, Volume 1, Page 281)**. He informed me that there was going to be repeat air sampling.

294. My next involvement with Ward 2A was on 9 September 2015. I am aware that microbiology colleagues, Brian Jones, John Hood and Pauline Wright, were involved with ongoing issues between July and September.

295. On 9 September, an email was sent from Jamie Redfern to Pamela Joannidis which listed a number of actions for Prof Williams arising from a meeting that had been held on 7 September 2015 **(Bundle 14, Volume 1, Page 300)**. The email stated that Jamie was looking for IPCT approval to feed into a process to facilitate Director approval that two rooms (18 and 19) were suitable for transplanting patients. Prof Williams was on annual leave so this request was forwarded to myself and Dr Alison Balfour as the covering ICDs.

296. At that point, I was ICD for the south of Glasgow, which was still nothing to do with paediatrics and I had no background information whatsoever. An email came in from Jamie Redfern saying we needed an IPC decision. One of the days was being covered by Alison and one of the days was being covered by me. We got together to review the air sampling results and came to a consensus around that. I emailed Brian Jones and Anne Cruickshank **(Bundle 14, Volume 1, Page**

299). Anne Cruickshank was the clinical director for IPC at that stage. In that email I indicated that Prof Williams had asked me to cover for him and he had given me no indication that there were any issues. I also indicated that I had been put in a position, once again, where I was being asked to make major decisions about patient safety with no handover and no involvement in the background, which I was not prepared to do. Alison Balfour then forwarded me the draft minutes of a meeting that took place on 7 September 2015 which was chaired by Jennifer Armstrong **(Bundle 14, Volume 1, Page 297)**. In the meeting they discussed issues with the paediatric BMT rooms. She also forwarded to me what appeared to be Prof Williams' summary of the meeting where there was reference to a risk assessment and it states: *"It was agreed that risk to patients was higher if transplants were further delayed than proceeding in fully sealed rooms."* There was no documentation as to who had undertaken that risk assessment. However, it was now me and Dr Balfour who were being asked to provide an opinion on patient safety.

297. It was clear that, at this point, there was an awareness by very senior staff that there were issues and there were meetings taking place. This meeting on 7 September was not the first meeting. I subsequently received minutes from two earlier meetings held to discuss Ward 2A. The first was held on 10 August 2015 and was chaired by Grant Archibald. Jennifer Armstrong, Brenda Gibson, David Loudon, Alan Mathers, Sandra Devine, Tom Walsh and David Stewart were all present. It was a very senior level meeting. The two microbiologists present were Prof Brian Jones and Dr John Hood. The meeting was called to discuss concerns with the ward and there were a series of actions for attendees. Mainly, these actions were concerned with obtaining information about design, guidance, and specification and commissioning. As explained above, Alison Balfour forwarded to me the minutes of the meeting held on 7 September 2015 at which one the topics discussed was the progress made in resolving the issues with the BMT rooms. At this meeting, it was confirmed that Brookfield could retrofit eight of the rooms. From reading these minutes, it appears to me that was confusion at this meeting because two different guidance documents were quoted – SHTM 0301 and SHPN

04 suppl 1. The rooms had in fact been designed as PPVL rooms as per SHPN 04 and not SHTM 0301 guidance for neutropenic rooms as was stated.

298. At this meeting, there was specific mention of rooms 18 and 19. A few days later, I was being asked to approve them. The conclusion of that meeting was a three-way directorate sign-off, which we were then asked to approve.

299. Given the information in these minutes, it is clear there was knowledge at a senior level about the issues with the BMT rooms. However, when I then met with Sandra Devine, Jamie Redfern and Alan Mathers, there was no acknowledgement by any of them that these meetings had taken place. The reality is that there was action being taken at a senior level, but there was no communication or sharing of information with the ICDs. We were then being asked to make decisions without this information.

300. On 10 September 2015, I met with Pamela Joannidis and Alison Balfour and we reviewed the air sampling results. They were still elevated in rooms 18 and 19. Pamela had visited the unit and was concerned about infection control practice there. It is not unusual to have this concern when you move a whole ward of patients into a new facility because staff are unfamiliar with the layout. Sometimes there are lapses in infection control because they are busy. Therefore, I think that was part of the issue, but she also noted in an email that there was outside construction work in close vicinity to the unit. I am not sure at the time what that was, but there was still ongoing construction and demolition on the site at the time that patients were moved over.

301. I wrote to Sandra Devine on 10 September 2015 highlighting these discussions and our recommendation that the unit was not safe to undertake transplants in **(Bundle 14, Volume 1, Page 302)**. In my email to her, I highlighted that I had not been involved in any discussions or meetings and I had not had a hand over. I talked about air sampling, Pamela's observations and then I asked for validation reports or minutes from relevant meetings along with the most recent report and

recommendations from Dr Hood. I asked that Prof Williams and John Hood be involved with any decisions. Dr Hood had been called in. He had been at the first meeting and he had been doing his own pressure checks and I think checking the ceilings of the rooms. He could speak in more detail about this. I wanted to access the results of his own investigations as well. I think Sandra Devine must have been covering for Tom Walsh because normally Sandra would not be involved in these email trails. However, I would not expect her to be able to give me those reports. She would have to go to the Estates or Facilities director to get those reports.

302. On 11 September 2015, Jamie Redfern emailed requesting to meet urgently with the microbiologist working on this, which was myself **(Bundle 14, Volume 1, Page 451)**. This was in relation to air sampling but also the fact that I still did not have details on the specification. Obviously, I knew that the rooms had not been designed to the appropriate specification. They were PPVL rooms and there were issues with the ceiling of the rooms in particular. I attended a meeting with Jamie Redfern, Alan Mathers and Sandra Devine later that day where I gave my opinion that the unit was not safe. I received a follow up email from Alan Mathers requesting a list of fungi grown and asking for a view on the effectiveness of antifungal prophylaxis ahead of a meeting to be convened on Monday, 14 September 2015. My response was that I could not state if the rooms were safe and that I could not comment on the haematological risk of not proceeding with transplants. I also highlighted that antifungal prophylaxis was not 100% effective and that its efficacy would be reduced if there was a high fungal burden. I mentioned that the prevention of fungal disease was achieved by the provision of both prophylaxis and a clean environment. I attached a spreadsheet and lab reports of fungi grown from June onwards to him. He acknowledged my email and thanked me for my input. He stated that the clinical risk outweighed the infection control risk. I did not attend the meeting on 14 September 2015 and was not given any information at the time regarding the outcome.

303. Paediatric patients do get an anti-fungal prophylaxis as a matter of course,

especially if they are undergoing a bone marrow transplant. There is variation nationwide as to what they do with paediatric prophylaxis. Some units follow the adult protocol and give all their high-risk patients prophylaxis. Other paediatric centres, and Glasgow is one, do not give as much prophylaxis as other places. That might be because they are concerned about using these drugs. My view is that certainly any child undergoing a bone marrow transplant, for the same reason as an adult, should really be on antifungal prophylaxis because, even with the best environmental control, there is still a risk of invasive fungal infection. It would be a ward clinician that would prescribe a prophylactic.

304. A decision was made that four out of the eight BMT rooms would be upgraded. I do not think that this decision was made because of the issues I was raising, I think it was made because senior management already knew there were issues with the rooms, as was discussed at the meetings on 10 August and 7 September 2015. I was not involved in that decision. When I became lead ICD in April 2016 and Prof Williams handed over to me, he told me about it. It was reiterated by Prof Brian Jones at an AICC meeting on 6 November 2017 that four rooms were to be converted and that there was significant expenditure required to change all rooms to positive pressure **(Bundle 13, Page 94)**. The chair of that meeting, Dr Chris Jones, asked whose risk register this would sit on and Tom Walsh advised it would be the Women's and Childrens Directorate.

305. In the period before the four rooms were upgraded, I assume they were still used on the basis that the clinical risk of delaying transplants was deemed higher than the IPC risk to transplant patients in the meantime. I don't know what discussion took place with patients and families about this. I think the sign off for the use of the rooms in the meantime was above my head. I am not sure if a decision was made by Alan Mathers and the clinical team that day or whether Prof Williams made the decision. All I know is that I said that I could not say they were safe.

Plans to upgrade the Paediatric BMT rooms, 2016 and 2017

306. The plan to upgrade the BMT rooms was made before I became lead ICD and there had been prior discussions about what work was required. Within the 7 September 2015 meeting minutes there is discussion that the suite configuration of the former BMT in Yorkhill was consistent with the suites in Ward 2A, in that there was a lobby, an inpatient room and an ensuite **(Bundle 13, Page 843)**. That is correct, but what is not the same is the ventilation specification within it. The minutes state *"From an engineering perspective, the BMT suite conditions within the new hospital provide no lesser standard by comparison to the Yorkhill…".* What is being said is that they were comparable, but in fact they were not because they were a different design in terms of ventilation.

307. Within the minutes, there is also confirmation that Brookfield could retrofit air handling unit modifications to eight rooms. There is reference to the cost of [redacted] per room and a timeline for completion. The group agreed to explore this option in more detail. There is reference to validation being undertaken and, again, it's the HBN O4 Supplement 1 which is being referred to, which was the wrong guidance document. I think they thought they had built the paediatric BMT rooms to an appropriate specification because they were following HBN 04-01, but they should have been following SHTM 03-01. I don't think they understood that they hadn't followed the appropriate guidance when they were having these discussions and that is why they were saying was that the unit was comparable to Yorkhill. However, Yorkhill was built to the SHTM 03-01 guidance.

308. In April 2016, I was contacted by Ian Powrie about the specification for the BMT rooms and I was asked to select a preferred option for a retrofit **(Bundle 14, Volume 1, Page 539)**. He had been instructed by David Loudon to prepare this specification option paper to meet recommendations discussed at a meeting with Robert Calderwood and the senior management team in February 2016. Ian Powrie had put those options together in the "Proposed Revised Specification" dated 16 March 2016. I am limited in that I am not a ventilation engineer, but I

certainly agreed that Option 2, bringing it into accordance with the appropriate SHTM, was the right way to go. This would provide a design based on SHTM 0301 for neutropenic rooms which would entail a positive pressure cascade with both the anteroom and patient room at positive pressure. The aim was for a 20 pascal positive pressure differential between the bedroom and the ward corridor. Option 1 had been to bring the rooms up to the specification in SHPN 040. I did not consider this option appropriate.

309. I was told at a design meeting that there was funding to retrofit only 4 rooms and the other 4 would remain as PPVL rooms. The retrofitted rooms were also to include local and remote alarm monitoring such as at the nurse's station and interlinked to the building management system. This was to include electronic digital gauges outside the rooms.

310. Once the decision had been made to upgrade the rooms in Ward 2A, consulting engineers Hulley and Kirkwood came in to conduct a review. The scope of this review was the conversion of four PPVL rooms in Ward 2A to positive pressure cascade rooms and a review of the PPVL isolation rooms in the Adult ICU and PICU. The Hulley and Kirkwood report summarised several issues with the existing PPVL rooms, to be discussed further below. This report was issued in 2017 **(Bundle 14, Volume 1, Page 550)**.

311. I was happy to sign off the retrofit of four BMT rooms and asked a colleague Dr Peters to review the specification for a second opinion.

312. The retrofit did take place, although I was off sick at the time. Brian Jones was dealing with it in my absence and he brought in HPS to assist. They developed a very similar SBAR to the one they had prepared for the adult BMT unit **(Bundle 3, Page 57)**. I understand this supported option 2 as set out in Iain Powrie's specification document. Discussion took place regarding this issue and the expenditure required to upgrade more than four rooms at the AICC during my absence in November 2017 by Prof Brian Jones. I believe the retrofit was to the

specification of option 2.

Further investigations regarding the ventilation in Ward 2A following the decant to Ward 6A, 2018 onwards

313. Aside from the BMT rooms, the rest of the paediatric unit did not have specialist ventilation in place. As will be discussed in detail in Chapter 12 below, during the Cupravidus incident, patients in Ward 2A were decanted to Ward 6A on 26 September 2018 because of the ongoing risk to patients and to enable further investigations to be carried out and control measures to be implemented. During the decant, the opportunity was taken to instruct Innovated Design Solutions to assess the ventilation system on the ward. A report was produced by Innovated Design Solutions on 24 October 2018 **(Bundle 6, Page 674)**. This report highlighted that the existing ventilation strategy was likely to promote the risks associated with uncontrolled ingress of infectious aerosols into patient areas. Amongst other issues, the general ward ventilation was assessed to be 2.5 air changes per hour. Supply and extract air handling units were fitted with thermal wheel heat recovery units and the supply air handling unit was cross connected to the toilet extract system via the thermal wheel. It was deemed by Innovated Design Solutions to be a very “abnormal strategy”.

314. Prior to this report being produced, I did not have any reason to suspect there were issues with the general ventilation in Ward 2A because I expected it to be built to normal ward requirements. Therefore, I was not expecting the results of the Innovated Design Solutions report. I had never come across an “abnormal strategy” before. I was quite shocked when I saw that report. This report came about because somebody at an IMT suggested that it was possibly a good idea to look at the ventilation because of the number of outbreaks that we had been having.

315. We had been struggling with numerous outbreaks on that ward from 2016 onwards including gastroenteritis outbreaks and various other organisms that,

despite a lot of infection control measures, we were not getting under control quickly enough. Thinking about it now, that abnormal ventilation strategy may well have been contributing to those outbreaks given the set-up of the toilet extraction, the nature of viral gastroenteritis and the mixing of dirty and clean air. However, I felt that I could not prove that the ventilation abnormalities were a factor in how those outbreaks evolved.

316. The specification that a general ward should be built to is six air changes per hour. I had not come across thermal wheels before either. Such a system was new to me, but I am not a ventilation engineer.

317. As a result of the Innovated Design Solutions report, an SBAR was written by Ian Powrie and sent to Tom Steele summarising the situation and recommending a full feasibility study and redesign **(Bundle 4, Page 132)**. This redesign was to include HEPA filtration, positive pressure of 10 pascals and 10 air changes per hour in all rooms, along with removal of the chilled beam system and separation of supply and extract systems. It became clear that the Ward 6A decant was going to go on for a long time. At this point, it was thought it would last a year to allow a retrofit to take place.

318. In early 2019 I sent emails to Peter Hoffman for views on the report and work started on developing a specification for the ward with input from Ian Powrie, Peter Hoffman, Steve Russell and Hazel McIntyre **(Bundle 14, Volume 1, Page 648-9)**. However, I resigned from the role of lead ICD shortly after that. Therefore, I don't know the final specification as I was not involved in the final sign off. The specification that I had intended to implement was one which would revert to the requirements set out in SHTM 03-01.

319. I sent Ian Powrie's SBAR to Dr Watson at the HAI Policy Unit in Scottish Government. She was covering the HAI role. Normally, there is a microbiologist as part of the HAI Unit, but Alistair Leanord had given up the role and Dr Watson was covering it on a temporary basis. She was the medical contact within the

HAI Policy Unit. She had come on site to visit the ward and speak to me about the ongoing issues. At that point we were having regular communications with the government. The idea was that this SBAR would be produced and it would be sent to the government. Tom Steele said to me that Jane Grant needed to approve it. I never saw any email correspondence concerning approval from Jane Grant or whether it actually went to government. I was in agreement with the recommendations that were in this SBAR.

320. In June 2019, a report was produced by HPS entitled 'A situational assessment, wards 2A/B' **(Bundle 13, Page 975)**. This was written in response to the significant number of incidents reported in relation to this ward. There had been 15 HIIATs completed since January 2016. There were no significant practice issues identified and it was hypothesised by HPS that the increased number of HIIAT reports was due to environmental factors. One of the recommendations was that a review of ventilation in other areas across RHCG/QEUH should be undertaken, in particular other areas with high-risk patients. I will discuss this further later.

321. I do not know what the current situation is in Wards 2A and 2B regarding ventilation as I had no further involvement after resigning in 2019. I do not know if a programme of air sampling was undertaken prior to patients moving in and whether regular air sampling takes place.

322. I have been asked if I have any views on the decision to refurbish Ward 2A and the way it was handled by GGC. My concern was about how it was communicated, particularly to staff. I was at the staff meeting and it was basically described by Kevin Hill as "*We are taking the opportunity to upgrade the facilities while the patients are out*," rather than reflecting the reality which would have been along the lines of "*actually we really need to upgrade the facilities because the condition of the ward is dangerous.*" I felt that staff were not given accurate information as to why the upgrade was taking place. I think the same unclear messaging may have been given to the patients' families.

IMTs regarding Aspergillus, 2016 and 2017

IMT, 5 August 2016

323. On 5 August 2016, I chaired an IMT to investigate cases of Aspergillus on Ward 2A **(Bundle 13, Page 860)**. Two cases were investigated, one was a possible invasive aspergillus infection, and the other was later confirmed to be a candida infection. Contributing factors to the aspergillus infection were felt to be tears in ventilation ductwork, condensation from chilled beams creating damp conditions and ongoing construction work on the QEUH site. Around ten children were identified for prophylaxis with Ambisome and Prof Brenda Gibson informed their families. Portable HEPA filters were also utilised. Four BMT rooms had to be closed to enable repairs to take place.

324. The aspergillus in this case was not related to the BMT rooms. It was to do with a tear in a ventilation duct. This was in the general ward area rather than the BMT rooms because neither of the patients we discussed at this IMT were actually BMT patients. When you have a case of aspergillus you need to look for any issues with the ventilation system. You want Estates to review that but you are also looking for any evidence of water damage, mould ingress or any evidence of outside construction work and fungal spores coming in. So, that was the focus of the IMT. Estates would have been tasked with reviewing the ventilation and that is why they reported a torn ventilation duct. We also discussed the chilled beams because that was the other concern. Chilled beams really should not have been in that ward, and we had issues with condensation. When there are damp conditions, then there is the risk of mould. Therefore, that was something we were exploring as a potential cause of the infection for this child. We also considered water leaks. There had been a minor water leak on the unit as well and there was ongoing construction work. Therefore, at this IMT we considered all those issues and there were a few potential explanations. We were never going to be able to prove which one was responsible, but there were a few issues that we identified.

325. We identified the issues with the tear in the ventilation duct which was remedied. We identified issues with the chilled beams, which had to be cleaned. We had dust ingress from construction work, so we increased the cleaning on the unit and we also put additional HEPA filters on the ward and recommended short term prophylaxis while we did not have environmental control. This is a standard and accepted infection control measure. It is only really meant to be short term, for a matter of weeks. Therefore, I was content that we had put relevant control measures in place for that particular episode. We had ongoing surveillance and initially we did not have any more cases. This would suggest that those control measures had been effective.

IMT, 7 March 2017

326. A further IMT was held in March 2017 to investigate three cases of fungal infection **(Bundle 1, Page 35)**. Two were probable invasive aspergillus infections, the third was a candida infection. We included the previous case of Aspergillus in 2016 for discussion at this IMT, so in total we had three cases over an 8-month period.

327. During this investigation, a recent water leak was identified and mouldy tiles were removed and replaced. Ambisome prophylaxis was again advised. Ongoing construction work in the vicinity was again noted with a recommendation for children to wear face masks if leaving the building. A draft water damage policy was written by myself with input from Ian Powrie.

328. I was concerned about the number of aspergillus cases in general. Although it was a bit more historic, I included the 2016 case because I felt overall there had been an increase in incidents over the years.

329. Aspergillus is very rare and not something you would expect to find. However, this is the patient group where you might see it because they are immunosuppressed. As already noted, a single fungal spore is enough to infect a

patient. When you do see a case, you are always worried about the environmental control because it is unclear where else they might have acquired it from. Many of these patients have been in hospital for weeks so it is difficult to say it has come from the home environment. Therefore, you are always looking at your surrounding hospital environment.

330. I felt that the number of cases was too many over that period of time. Aspergillus is ubiquitous in the environment. It is everywhere. However, you should not find it in a HEPA filtered environment. If you sample a general hospital ward, you will find all sorts of different fungi because you don't have HEPA filtration or any other environmental control. In the BMT rooms, you should not be finding it.

331. Ward 2A did not have enough designated neutropenic rooms. Therefore, some of the children who I would have preferred to put in a neutropenic room were in the general ward. It is less surprising that they contracted aspergillus as they were not in a protected ward.

332. For this specific IMT, we had a much clearer hypothesis as to what was going on because we had black mould in the ceiling void. There had been a water leak which went up into the ceiling and you could see the black mould. That had not been replaced and repaired. There are various ways the spores could be disseminated around a ward. When fungi proliferate, there is something called the burst phenomenon where, from time to time, there will be a burst or large release of spores. The spores are very buoyant and spiculated so the air currents within the ward will carry them. If there is a high positive pressure, this should work to keep all the spores out of the room. If there is HEPA filtration, this should prevent the spores from coming into the rooms via the supply ventilation. However, if there is neither of those, then the spores will be dispersed throughout the ward. If there is an immunosuppressed child, there are various ways they can become infected. The most common way is that they inhale the spores and they go into the lungs. This is the start of the infection. You can also get cutaneous aspergillus on the skin, but usually it would be inhaled.

333. I have been asked about point 4.2 of this IMT. In this point, I talk about the air quality conditions. I point out that the air quality conditions in the old Yorkhill site and Ward 2 were currently the same and there was nothing that could be done to improve the ventilation specification. I am just reiterating discussions that took place way back in the meetings mentioned above with senior management; that they could only upgrade four out of eight rooms and not the whole unit (for cost reasons). Again, it was not a pure BMT unit, so there was no requirement as such for the whole unit to be at that specification. I have been asked if I was content that the issue that I thought caused the infection was identified and was fixed at that point in time. That was about water damage and once it was identified, it was fixed. We did eventually implement a water damage policy because these things were not reacted to promptly enough. This policy is available on GGC's website. I wrote the policy with Iain Powrie from Estates.

CHAPTER 7: Concerns about other units within the QEUH campus

Infectious Diseases/Negative Pressure Rooms

334. I have mentioned above my concerns about PPVL rooms and my discussions with Peter Hoffman about them before the hospital opened. I have also mentioned my concerns when I visited the ICU before the hospital opened and noted the presence of these PPVL rooms and the presence of en-suites. As explained above, ICU patients are usually ventilated and not using showers and toilets. Therefore, these little used outlets become focal points for stagnation and cause infection risk. This is an issue with the PPVL rooms in particular because the design of a PPVL is that they have an anteroom, patient bedroom and an en-suite. They use the en-suite to extract the contaminated air. This was Peter Hoffman's concern. I do not think they had been tested on patients with airborne infection. In particular, in an ICU where there are en-suites, you would have to have a regular flushing programme in place because the outlets are very rarely being used.

335. I did not become involved in any further discussions about these rooms until I took over as lead ICD in April 2016. In December 2015, I did, however, forward an email to Prof Williams in which Peter Hoffman and HPS had some comments about the presence of the PPVL rooms in the ICU **(Bundle 14, Volume 1, Page 487)**. These comments had arisen when discussing the BMT unit. The email was forwarded to Anne Harkness and Gary Jenkins **(Bundle 14, Volume 1, Page 487)**. I do not recall being copied into any response, neither do I know if any action was taken at that stage.

336. In April 2016, Jennifer Armstrong asked the infection control SMT for a timeline of correspondence relating to the move of the infectious diseases unit to the QEUH **(Bundle 14, Volume 1, Page 82)**. This timeline included quotes from various historical meetings and minutes. I think it was largely put together by Sandra Devine at the time.

337. On 6 May 2016, I was sent a letter from the ID Consultants at the QEUH **(Bundle 14, Volume 1, Page 88)**. In this letter they raised concerns about the management of patients with dangerous pathogens in the QEUH. The letter stated that they had been reassured that they would have access to two negative pressure rooms before moving over and that this had not materialised. They were concerned that the new building was not a fit or safe environment for managing dangerous pathogens. They asked that I resolve some of the concerns as a matter of urgency and say that they would like to see an urgent review. I agreed with their concerns. I had covered IPC at the Brownlee ID unit in Gartnavel for several years and had experience of managing a case of Crimean Congo Haemorrhagic Fever. The Brownlee had four negative pressure rooms at one end of the unit. This was an ideal setup as it enabled them to care for patients with airborne infections. Furthermore, the position of these rooms at one end of the unit enabled them to simultaneously manage both patients with airborne infections or VHF and immunosuppressed HIV patients within this unit. They designed the Brownlee perfectly in that they had one end of the unit with four negative pressure rooms, which

was an area that could be sealed off from the rest of the ward.

338. The QEUH was a less suitable environment. In fact, they had no facilities outwith critical care. The infectious diseases unit were competing with critical care for beds. The only isolation rooms were on critical care where patients required ventilators. They did not actually have any beds ring-fenced for infectious diseases.

339. I believe that the move of the Brownlee beds was a late decision. Therefore, there was no specifically designed infectious diseases unit within the QEUH and no negative pressure rooms. My view is that the QEUH should have had negative pressure rooms regardless of whether there was to be an ID unit or not. It is a busy acute hospital and patients with airborne infections do not know that they must present to the Brownlee centre. They will attend their local hospital or A+E department and might need to be effectively isolated when they arrive there before they can be transferred to a specialist ID unit. The QEUH also had several respiratory wards that in my opinion were not equipped to deal with TB patients due to the lack of negative pressure rooms.

340. My response to the letter from the consultants was to write an SBAR in May 2016 for senior management colleagues regarding the PPVL rooms **(Bundle 4, Page 49)**. In the SBAR, I highlighted the discrepancies in guidance documents. I also discussed the challenges for ID in accessing these PPVL rooms as they were situated in ICU which required infectious patients to be moved through the hospital. I also mentioned the fact that the PPVL rooms in the QEUH had been modified slightly to the original design criteria which, as stated in the HBN 0401 supplement 1 document, would jeopardise the system as a whole. I think people reverted to SHPN 0401 supplement 1 rather than using SHTM or the TB guidance that existed. You will inevitably get TB in a busy acute hospital. They should have reverted to the TB guidelines and had rooms for TB patients. There was a risk of cross transmission or outbreaks of serious airborne infections in patients and staff. There are very specific details in the guidance and the

engineering of these PPVLs for them to function correctly. What was found when HFS came in to have a look at it was that there had been modifications such as extracts in different places from where they should have been. It was not clear what the pattern of airflow within that particular facility was, whether there was any sort of turbulence, what the direction of airflow was as a result, because they had been modified from the original design criteria. Again, I do not know the reason why this happened. There is a clear statement in the guidance that if you do that, it can jeopardise the system as a whole. The room becomes unreliable and, if there is no validation and commissioning, you do not know what is going on in that room.

341. My recommendations were an external review by HFS as to the suitability for airborne infections and a view as to whether the modifications represented an ongoing risk for other patients. I had to ask permission to involve HFS, which I was granted. I did have some resistance from David Loudon as to why we were bringing them in. I also suggested contacting the ventilation engineer involved in designing the concept, Malcolm Thomas. I wanted to know whether they felt the rooms were suitable for airborne infections and what the rooms were suitable for if not. I had two questions: first, could we safely have airborne infectious patients in these rooms – which I doubted but I needed them to back me up because of the resistance I was encountering. Secondly, what patients could we use the rooms for safely?

342. The SBAR was escalated to Tom Walsh, Jennifer Armstrong, Anne Harkness and David Loudon. I emailed David Loudon to request the original specifications and validation reports, an external review and input from Malcolm Thomas. David Loudon responded to say that the design brief did not include an infectious diseases unit. He also suggested that MERS and MDRTB were not known to GGC at the time of sign off. I pointed out that Glasgow had in fact seen a case of extreme drug resistant TB (XDRTB) in the past and other airborne infections such as SARS were known about **(Bundle 14, Volume 1, Page 94)**.

343. The original design had not considered these rooms or these patients or this unit. There was then a late decision to house these patients, but there does not seem to have been adequate consideration of the implications for the built environment and IPC. When Christine Peters and I went to the first meeting in 2015, Brookfield were astonished to hear that there were going to be ID patients on site.

344. I could not undertake a proper risk assessment as to what these rooms were suitable for without actually knowing what the specification was and if they had passed the validation. That was why I needed that information as part of that risk assessment.

345. A report was issued by HFS in late 2016 **(Bundle 14, Volume 1, Page 121)**. The report concluded that without complete information it was not possible for them to provide a comprehensive response. Lots of information that they had requested was missing. I think they had similar issues to me. Looking at Appendix 2 of the report, there is a long list of additional information they were requesting around design parameters such as drawings, specification and commissioning. It is very difficult to do a risk assessment and a report when you don't have that information available to you. On that basis, I think they said that they could not recommend that we use those rooms for infectious diseases patients. They recommended that these PPVL rooms were not used for highly infectious patients and that care for highly infectious patients within the QEUH should be undertaken using a risk assessment for placement until a full appraisal of isolation rooms was complete. The report confirmed and supported my concerns.

346. Subsequent to the report, I met with ID and respiratory physicians to agree a contingency plan. This contingency plan was to send confirmed cases of MDRTB to GRI- and to risk assess suspected MERs cases with the option to transfer to Monklands hospital if deemed high risk.

347. I wrote an SBAR summarising the findings of the 2016 HFS report on the QEUH

isolation rooms and our recommendations for contingency and sent this to Jennifer Armstrong in February 2017 **(Bundle 23, Page 329)**.

348. During the time I was off sick, I am not sure what took place but there appeared to have been little progress made in relation to my SBAR concerning the 2016 HFS report on the QEUH isolation rooms. After agreeing that we would retrofit rooms to negative pressure rooms, and following a request from Jennifer Armstrong, I wrote a second SBAR in February 2018 requesting that the same happen for the RHCG **(Bundle 4, Page 121)**. This risk assessment differed slightly from the QEUH document due to the lack of paediatric ID centres. It was agreed older children with MDRTB could be transferred to GRI or MDGH after assessment by an ID physician. The other patients would stay on site with IPC precautions.

349. On 6 February 2018, a design proposal was distributed for comment regarding the conversion of four PPVL rooms within QEUH to negative pressure **(Bundle 14, Volume 2, Page 16)**. Within this report was a detailed section on the existing systems and the deficiencies along with the plans for modification.

350. Later in February, there was a workshop with Malcolm Thomas to discuss PPVL rooms. As previously mentioned, I had requested his input but decisions had already been made by this time. I was on annual leave at the time of the workshop, but my colleagues Dr Christine Peters and Ian Powrie attended **(Bundle 14, Volume 2, Page 33)**. The plans were later signed off by me in April 2018.

351. In October 2018, I was informed that the project to convert four PPVL rooms within QEUH to negative pressure had been delayed as there were difficulties with fire dampers being installed **(Bundle 14, Volume 2, Page 38)**.

352. In November 2018, I was alerted to failed validation tests of the retrofitted negative pressure rooms **(Bundle 14, Volume 2, Page 36)**. The rooms were not

achieving the specified pressure differentials between the corridor/lobby/room.

353. My concern at that point was that they were trying to do a quick fix to get the rooms to pass validation, which was not the point. The rooms needed to be safe for the long term and I raised concerns, again, about the acceptability of these rooms. I had to halt them opening and that delayed the retrofit further. Further work was required to make them compliant, which was carried out in May 2019.

354. I had concerns about the quality of the external validation reports which were provided because there was a lot of information missing. As standard, the report should have a schematic of the rooms or a drawing showing all the pressures and the direction of airflow. If there are HEPA filters, that information should be there. There should be recordings of all the pressures and all the air changes. All this information which should have been there was missing. There were deficiencies in several of those reports.

355. I escalated this to Tom Steele **(Bundle 14, Volume 2, Page 61)**. It was addressed promptly and the information was added. However, my concern was that it was an ICD who was pointing out these omissions rather than a ventilation engineer.

356. In June 2019, once the necessary information was added, I did ultimately sign off on the validation reports. But I think this experience does raise a question about how external contractors are chosen and whether they have the necessary experience.

357. I suspect that a question raised by HFS in their 2016 report remains outstanding in relation to the suitability of the remaining PPVLs, as they had been modified from the design specification. I raised this at the newly formed Specialist Ventilation Group and was told that Tom Steele had advised that the group was not to review previous reports. I highlighted this issue again in emails between May and October 2019 to Tom Steele and other Estates colleagues along with

my concern about validation reports for some of the PPVL rooms which required urgent maintenance **(Bundle 14, Volume 1, Page 259)**. I don't know if this has ever been resolved.

358. Both Christine Peters and I asked for an expert opinion from Prof Cath Noakes, who was involved in the original design. That is still outstanding because GGC have not requested her input.

QEUH General Wards (Standard Single Rooms)

359. When I started as lead ICD in 2016, I was trying to establish the specification for the general hospital rooms in the QEUH. I had been informed they had 3 air changes per hour when the SHTM 0301 stipulates that they should have 6 air changes per hour. I contacted Ian Powrie, copying in David Loudon, Anne Harkness and Tom Walsh and was told that a typical single room with ensuite had air changes of 3.19 per hour **(Bundle 20, Page 1495)**. The response also stated that GGC had moved away from the SHTM 0301 requirement for 6 air changes per hour prior to the formal contract award. He attached relevant documents and noted that GGC had accepted this proposal with the caveat that negative pressure would be created in the design solution. The documents confirmed this decision. They state the modelling found that the temperature requirements, i.e., that rooms should not exceed 26 degrees Celsius, could not be met and that chilled beams would be incorporated as a low energy solution.

360. As a result of this information, in June 2016, I wrote an SBAR in relation to air changes and the fact the rooms were neutral, rather than negative, pressure **(Bundle 4, Page 52)**. This meant that there was slower dilution of microbial contamination and potential escape of air out of the rooms. I identified that some areas were higher risk than others, such as respiratory and infectious diseases. Risk mitigation included door closures and an extension of the time taken post aerosol generating procedures for the removal of PPE by staff or occupation by another patient. The SBAR was sent to Jennifer Armstrong, David Loudon and

Anne Harkness.

361. In December 2018, after receipt of the Innovated Design Solutions report for Ward 2A, I included the wards housing infectious diseases and respiratory patients in those requiring review as to the ventilation strategies. Dr John Hood and I checked pressures in some of the rooms and found those in the wards housing infectious diseases patients to be neutral or slightly positive. I escalated these results to Tom Steele and Andy Wilson **(Bundle 20, Page 1506)**. I also contacted Kenneth Fleming in Health and Safety as I was concerned about potential staff exposure to TB. If they had rooms at positive pressure with TB patients, this would mean that the infectious aerosols were coming out so staff going into the room wearing PPE and masks would be protected, but staff or patients walking in the corridors might be exposed. He referred this to Cameron Raeburn to discuss at a meeting regarding recent HSE issues in one of the wards housing infectious diseases patients. I do not know the outcome of these discussions. I also informed infectious diseases physicians.

362. They did bring in an external company to undertake verification. I think the pressures were confirmed and there was an issue with dampers (vents) being closed and that was rectified. They subsequently repeated the pressures and found they were sitting slightly neutral or negative. The respiratory wards also required rebalancing. I do not have it confirmed in writing whether the abnormal ventilation strategy present in Ward 2A was also present in these wards. I requested this in an email to Tom Steele copied to Tom Walsh in December 2018 (**Bundle 20, Page 1508)**.

363. In January 2020, I sent Prof Marion Bain a copy of my SBAR and the CDC guidance about airborne contamination removal **(Bundle 20, Page 1513)** I was concerned that the situation in Ward 2A was hospital wide.

364. I have discussed in detail above the PPVL rooms in critical care. In HBN 04-01 suppl 1 there is an exclusion for critical care and other settings. In this setting, isolation rooms and the unit itself should be subject to annual verification **(Bundle 1, Edinburgh Hearing (Feb 24), Page 2859)**. Critical care settings are recommended to be designed as per SHTM 0301 with 10 air changes per hour and a positive pressure of 10 pascals. Patients in ICU have a degree of immunosuppression and, therefore, ICUs should be at a positive pressure relative to the external corridor to protect against contamination. This is especially important due to Aspergillus and organisms such as Acinetobacter and Staph aureus. There is also a need to have isolation rooms within an ICU setting for patients with more severe immunosuppression and those with airborne infections. The number and proportion of each will depend on the patient population served, therefore clinician input into design is very important.

365. From the annual verification reports that became available issues were identified with SCBU/NICU (as above) and also PICU in RHC.

366. In June 2019, I was given verification reports for PICU isolation rooms but not the whole unit **(Bundle 14, Volume 2, Page 67)**. Therefore, I requested that this was undertaken. When we set up the Specialist Ventilation Group (see below), there were obviously areas that had not had annual verification and PICU was one of them. They undertook notification for the isolation rooms, but not for the unit as a whole, which they had to go back and do because a unit in a hall also has a ventilation specification of 10 air changes per hour and 10 pascals.

367. When they did that, the unit failed its annual verification **(Bundle 14, Volume 2, Page 542)**. I was on annual leave and there was remedial work that needed to be done which required infection control measures to be put in place. Whilst I was on annual leave, this HAI scribe emerged with my name on it as having authorised the work. I do not know who wrote this particular HAI SCRIBE. During

my absence my colleagues Dr Pepi Valyraki and Dr Christine Peters reviewed the verification report as the unit failed. Issues included problems with the pressure differentials and not achieving the desired 10 pascals with pressures recorded as low as 1, 0 and -1. Air changes were also reduced.

368. A detailed SBAR was produced by my colleague Dr Peters **(Bundle 4, Page 161)**. The SBAR was in relation to the failure of the PICU. It included what the specification should be, what the specification was and what needed to happen. I also asked colleagues to look for a verification report for adult ICU at QEUH but they were told that there was remedial action required before the report for that area could be issued.

369. In August 2019, a PICU ventilation report and options study was produced **(Bundle 27, Volume 6, Page 158)**. This was in relation to the field verification report and the need to upgrade the PICU. I think the issue of PICU goes right back to the beginning in the design. The SHTM 0301 states that if there is a BMT unit onsite, the ITU should have at least 50 per cent isolation rooms in case you need to house these patients in it. With paediatric ITU in particular, we also have frequent ITU admissions with respiratory viruses such as RSV. Therefore, there is always a need for isolation rooms. I do not think they had specified sufficient isolation rooms within that unit. It was not as straightforward as bringing the unit up to the SHTM 0301 standard because we did not have enough isolation rooms. We had to do something called a cohort, usually in the winter, which involved grouping patients with RSV into the same cubicle. If you follow the SHTM 0301 and put positive pressure of 10 pascals, that means everything is coming out the way which potentially puts other patients at risk. In the neighbouring four-bedded bay, you might have patients who have had cardiac surgery and have open chest wounds. Therefore, due to the original design and the lack of isolation rooms, we had to, in my view, do a bit of a hybrid upgrade and convert part of the unit to meet the SHTM requirements but keep part of the unit for isolation of infectious RSV patients.

370. I had some input into the report, highlighting issues with validation and lack of information with regards the original specification. With a paediatric BMT unit onsite, the unit should ideally have 50% isolation rooms. In this report, I highlighted the numbers of patients infected or colonised with an organism called Acinetobacter. We had investigated several incidents in this PICU relating to this organism. Given that there is scientific literature supporting airborne dispersal of Acinetobacter my concern was that the suboptimal ventilation specification was playing a role in ongoing transmission. We had an ongoing issue for a number of years and I wonder whether it was because the ventilation specification within that unit was suboptimal. As far as I am aware, there have been upgrades and I am not aware of any subsequent issues with Acinetobacter. If that is the case, that strengthens the hypothesis that actually it was the ventilation that was the issue. As I am no longer involved, I cannot confirm that.

371. As noted below, in January 2020, I was aware of more cases of Acinetobacter in the unit and forwarded information and my concern regarding ventilation to Professor Marion Bain.

Ward 4C

372. Following the Innovated Design Solutions report and the HPS situational assessment in late 2018, I decided to look at the ventilation in other high-risk areas to ascertain whether the abnormal strategy in Ward 2A was replicated elsewhere. One of the first areas I looked at was Ward 4C which was housing haematology patients. This was before I was aware of the adult cryptococcus patient in this ward.

373. In terms of background information, I have already mentioned there was a clinical output specification for Ward 4C, written in 2009 with input from Dr John Hood **(Bundle 27, Volume 3, Page 157)**. The ventilation specification was for positive pressure and highly filtered air (probably HEPA), with an adequate number of positive pressure sealed HEPA filtered side rooms, as in the Beatson

ward. There were to be no opening windows or chilled beams. In 2013, a change order was signed by Jonathan Best detailing changes to this specification because BMT patients would be moving across. This decision meant that the haematology cohort originally planned to be in Ward 4B was moved to Ward 4C, which was designed as a general ward with chilled beams, no HEPA filters and no significantly positively pressurised rooms.

374. The first thing I did in 2018 was email the head of department, Dr Alistair Hart, to establish whether this ward housed any high-risk patient groups **(Bundle 27, Volume 7, Page 376)**. These groups included patients with a recent history of neutropenia (less than 0.5) for more than 10 days, allogeneic stem cell transplant patients, patients with a prolonged use of steroids, i.e., more than 3 weeks, and patients who had received treatment with T cell immunosuppression during the past 90 days. I wanted to establish how high-risk the patients were as part of my risk assessment into that unit and what needed to be done. What I was not sure about was whether they were housing acute leukaemics next door in the more protected BMT or whether they were in this general ward. I asked him about specific high-risk patient groups' fungal infection. He confirmed that they would see them, but the stem cell transplant patients would only be on the ward if there were bed pressures. The other groups would be patients in that ward. This information confirmed to me that they had patients who were at high risk of fungal infection and that we should be doing a similar upgrade as in Ward 2A. In my view, the patients in Ward 4C were in a less protective environment than their counterparts in the north of the city. Alistair Hart confirmed that allogeneic stem cell patients would rarely be in the ward.

375. On this basis, I emailed Estates colleagues Andy Wilson and Ian Powrie, copying in Tom Steele to recommend a feasibility study to improve the specification **(Bundle 27, Volume 7, Page 378)**. In addition, I asked for confirmation of the current pressure regime within the patient rooms and confirmation of the duct work configuration. I proposed a specification similar to the original devised by Dr Hood and recognised this would be a retrofit. Ward 4C was included in escalation

emails I sent to Jennifer Armstrong and Tom Walsh in December 2018 and January 2019 **(Bundle 27, Volume 7, Page 379)**.

376. At an un-minuted meeting about water and ventilation on 10 December 2018 I was advised by Tom Steele, the Director of Facilities, to stop sending emails and not to put things in writing. He stated that this meant '*they were out there*'. I stated that I did not work like that and that accurate documentation was essential. I stated I would be writing an SBAR assessment on Ward 4C, which was the ward that was the subject of an HSE investigation. I was told by Tom Steele not to send it via email but to print and hand to him. I stated I would not do that. As a consequence, I wrote a reflective note on the whole meeting and the culture within that meeting **(Bundle 14, Volume 2, Page 258)**.

377. In December 2018 I wrote the SBAR regarding the Ward 4C situation and recommended a feasibility study for the ward to improve the specification. I also noted the lack of capacity to isolate a BMT patient with an infectious disease as compared to the old unit at the Beatson **(Bundle 27, Volume 7, Page 380)**. This SBAR was tabled at the next meeting of the Specialist Ventilation Group in July 2019 where the group agreed to endorse the recommendations **(Bundle 4, Page 156)**. Alan Gallagher agreed to discuss with Tom Steele what the escalation plan should be to progress these recommendations **(Bundle 27, Volume 6, Page 190)**.

378. I had no further involvement with Ward 4C, but I did raise concerns regarding the ward and the media statement in relation to the HSE investigation **(Bundle 27, Volume 7, Page 374)**. I have been asked if I agree with the outcome of the investigation. They talk about bringing the ward into line with SHTM 03-01 as a result of the investigation which I would agree with. Bringing the ward into line would involve the provision of neutropenic rooms and contingency for specialist ventilation failure. I don't know what happened as a result of the investigation. At present the equivalent patient populations in the adult haematology ward in the Beatson and the paediatric setting are housed in rooms which comply with a

superior specification.

Facilities for Cystic Fibrosis Patients

379. There were no negative pressure rooms on the respiratory wards for the appropriate isolation of patients with TB and mycobacterium abscessus. Mycobacterium abscessus is an infection that cystic fibrosis patients can suffer from. It is an, aggressive infection in cystic fibrosis patients and it is spread by the airborne route. Occasionally, cystic fibrosis patients with that infection need to be admitted to hospital. These patients need to be in an appropriate isolation room. Because of TB, respiratory wards should always have negative pressure rooms. I think these days it would be good practice to include those in a cystic fibrosis ward too. At the time the original ward was designed, I am not sure how much we knew about mycobacterium abscessus but we did know a lot about TB.

The Maternity Unit/NICU

380. I was not involved with the design of this unit, however, I have managed several outbreaks in the NICU. Even though the NICU is joined to the new build, it is still part of the retained estate. I think the outbreaks in NICU are related to the environment. I am not sure how much ventilation has contributed to this. However, there have been quite a lot of environmental outbreaks within the neonatal unit including organisms such as Serratia and Stenotrophomonas. NICU has been a problem area for several years. I became aware of issues with Serratia as the Regional ICD but minimal information was shared with myself and colleagues as Prof Williams was the ICD at the time for the children's hospital. I mention elsewhere in this statement that one of my first tasks as lead ICD was to review the 2015/16 Serratia incident and capture the learning. My concern was that after this incident, routine screening of neonates was discontinued. I asked that it be reinstated. From 2016 until my resignation in 2019 I managed recurrent outbreaks of Serratia in the unit and it is my view that there was an unrecognised environmental source. During IMTs concerns about the adequacy of the cleaning

provision was often discussed and additional cleaning including the use of hydrogen peroxide vapour was deployed. In February /March 2019 for the first time we found an environmental source of Serratia in the drains of the trough sinks in the unit.

381. Several swabs grew the same predominant strain that was found in patients. Myself and Ian Powrie looked closely at the trough sinks and he had plans to make modifications to them to reduce the risk from the drains. He was also keen to trial a heat/vibration device on one of the sinks in the single room. Access to a busy NICU to undertake modifications was challenging and before that could happen, he retired. After I had resigned, I was aware of ongoing issues with Serratia in the NICU and emailed all the discussions re sinks to the ICD. I was informed that others in estates deemed the modifications to not be required.

382. I became aware of IMTs held dealing with these problems when I received a bundle of evidence from this Inquiry. I note that it was not until the 3rd IMT in 2021 that the previous issue with drains was discussed. This was because an ARHAI colleague enquired about sampling them. It is not clear whether the drain modifications suggested by Ian Powrie have ever been undertaken. I note with interest that at these IMTs there was a request from ARHAI to look at environmental triggers and do more work on this. ARHAI recently offered GGC the opportunity to be a pilot site for environmental surveillance using the NICU data. However, GGC declined citing concerns re the methodology, organism classification and the triggers in their view being oversensitive.

Operating Theatres

383. My main involvement with operating theatres was in relation to the theatres in the RHCG. When I took over as lead ICD in 2016, an outstanding action was the air sampling of theatres which appeared to have been missed from the commissioning and validation process. I actioned this. There was also a

requirement for haematology JACIE accreditation to have these results as this patient group attended theatres to have procedures undertaken such as line insertions and lumbar punctures. For JACIE accreditation, you have to demonstrate that the air sampling extends to other places the patients might be treated – for instance in the theatres.

Specialist Ventilation Group

384. As far back as 2015, Professor Williams had been discussing establishing a Specialist Ventilation Group. We already had a Theatre Maintenance Group but it is a requirement of SHTM 03-01 that all specialist ventilated areas be subject to annual verification. This means that, every year, any specialist ventilated area has to undergo annual verification performed by an external contractor to make sure it is still meeting the specification. If it is not, then the issues must be rectified. However, that process was not in place at the time.

385. The intention was to establish a separate group to review these specialists ventilated areas which would include haemato-oncology units, endoscopy, bronchoscopy, critical care and interventional radiology.

386. When I took over as lead ICD in 2016, I tried to progress this further. With input from other ICDs I compiled a list of such specialist ventilated areas in the city and sent those to Tom Walsh who asked for a meeting to be set up with Alan Gallacher and Ian Powrie to progress **(Bundle 14, Volume 1, Page 237)**. I recall attending a meeting but there was little progress and I resurrected the discussion when I came back from sick leave in 2018, as there had been issues with annual verification in some areas. This went round in circles and there was no agreement about who would chair such a meeting.

387. In December 2018, I highlighted a number of concerns regarding ventilation to Jennifer Armstrong in an email and I copied in Tom Walsh **(Bundle 27, Volume 9, Page 441)**. My concerns included: issues with pressures in infectious diseases

and respiratory wards, ongoing problems with the negative pressure rooms, Ward 4C, endoscopy units and the ongoing issues in Ward 2A. I explained that I felt that, with the number of issues, we required a project manager and IPCT and Health and Safety to be involved for the clinical teams. Jennifer Armstrong agreed to discuss this with Tom Steele.

388. On 8 January 2019, I emailed Tom Walsh to reiterate the concerns I had raised by email to Jennifer Armstrong in December 2018 **(Bundle 27, Volume 7, Page 379)**. I knew he was meeting with Tom Steele to discuss ventilation and I asked that he raise the following: clarification of pressures in ID and respiratory wards, a timescale for the feasibility study in Ward 4C, risk assessment of endoscopy issues and updates on outstanding validation reports for these areas, an update on the negative pressure rooms upgrade and timescales. Again, I raised the question of a specialist ventilation group and highlighted my concerns about the lack of documentation or discussion relating to ventilation **(Bundle 27, Volume 7, Page 481)**.

389. On 15 January 2019, a draft annual verification SOP was circulated for comment by Ian Powrie **(Bundle 14, Volume 1, Page 237)**. This described the process of the group and what was involved. I responded to Ian Powrie, Tom Walsh and others proposing a number of additions to the document and also once again asked how the planned ventilation group was progressing. I also commented on the quality of reports received from contractors as some contained inadequate information and no conclusions. I do not know the status of this SOP. The plan had been for AICC to approve it but, at the July 2019 AICC at which I was not present, it was agreed that it would be taken to the Built Environment Group **(Bundle 13, Page 169)**. The Built Environment Group was going to be a new group dealing with all aspects of the built environment and GGC. I never made it to any of the meetings because I resigned, but I believe it does exist. I think it would pull in some of the water issues as well. It is a high- level group but there will be input from ICD and IPC as well.

390. In May 2019, I received an email from Darryl Connor establishing an Isolation Room Steering Group. The first meeting was held in June. I suggested in subsequent email trails that we should also be reviewing areas such as endoscopy and radiology, not just isolation rooms and I provided a list of outstanding verification reports which included PICU, NICU and the special care baby unit ("SCBU"). The NICU report was inaccurate as it had been validated against a SCBU specification and not a critical care area. The air changes and pressure were not in accordance with a critical care specification as per SHTM 03-01. Also notable was the presence of a negative pressure bay in the SCBU. We would not normally expect airborne infections in a special care baby unit and the risk is that these rooms would pull in contaminated air. It was agreed these areas would be reviewed.

391. Since resigning, I have had no further involvement with this group and I do not know the status of these areas discussed.

Specific technologies which may increase risk to patients

392. I have been asked about specific technologies and have provided my comments on them below.

Positive Pressure Ventilated Lobby (PPVL) isolation rooms

393. I have discussed PPVL rooms above, including the risk these rooms pose in relation to infectious disease and isolation rooms. I don't think there is scientific disagreement in relation to these. Rather, I think it's a misinterpretation of guidance. I think what happened is there was a statement about further guidance to come within the SHPN 04 Supp 1 document, it didn't come, so people just deferred to that document rather than the actual SHTM 03-01.

Thermal Wheel Technology

394. I have been asked about the risks posed to patients by thermal wheel technology. I am not a ventilation engineer; therefore, I have limited understanding of the engineering aspects. The Innovated Design Solutions report commented on the presence of thermal wheels and identified these as a potential risk of cross contamination. The report recommended further investigation.

395. SHTM 03-01 states that thermal wheels are appropriate for most systems in healthcare but it does not further define these.

396. My understanding is that there is a risk of mixing supply and extract air, although this is likely to be a small amount. Such mixing would not be desirable in wards housing immunosuppressed patients. I have been asked what happened in the QEUH and RHCG in relation to thermal wheel technology. I cannot comment further than the Innovated Design Solutions report and the situation on Ward 2A. I have asked whether the ventilation strategy in Ward 2A was replicated elsewhere and I have not received a written response to this question.

Chilled Beam technology

397. I discuss chilled beams throughout this statement. There have been several incidents in QEUH and RHCG where condensation has been dripping from chilled beams **(Bundle 12, Page 958)**. This is known as ‘internal rain’. There was also a leak from the pipework system in 2019.

398. As discussed in Chapter 13 below, in June 2019 a significant number of patient rooms were affected with water to varying degrees from minimal droplets to some rooms requiring bowls to collect the water. Three rooms in Ward 6A were affected during this incident. Haemato-oncology Wards 2A and 4C also reported issues with condensation. At times, the water leaking was reported as being

dirty.

399. My view is that chilled beams represent a risk in hospitals particularly to immunosuppressed patients. The risk arises from dust accumulating on the beams and then dirty water contaminated with that dust dripping from the beam as a result of the damp conditions that moisture creates. There is potential for mould formation.

400. I discussed chilled beams with HPS and HFS and got some advice on sampling sites. This was in relation to the second incident covered by the Ward 6A IMT in 2019 (see fuller discussion of this incident below). There had been leaking from the chilled beams and we wanted to sample them. I had to send Ian Storrar from HFS information on the design of the beams and he suggested which points within the ceiling to take samples from **(Bundle 12, Page 1250)**.

401. Whilst we did not directly link any infections to chilled beams, there are pitfalls to environmental sampling which can mean that pathogens which are present are not detected. Swabbing the beams did identify several pathogenic bacteria. However, whilst I think environmental sampling is helpful if it is positive, it may easily miss things because of the massive surface area. You can only sample from a small area, and a negative swab doesn't mean the pathogen isn't present. Due to adherence of organisms it can be difficult to get them on the swab and even if you do it can be difficult to culture them in the lab. These are all recognised pitfalls of environmental testing which is why it cannot be relied upon to confidently exclude a source. The real value in environmental surface swabbing is when it is positive.

402. Therefore, it cannot be used to rule out the chilled beam as an infection source. Full details of risks and local findings are in a published paper that I wrote with Dr Christine Peters and one of our trainees on chilled beams which highlights the technology and the risks in hospitals **(Bundle 20, Page 1540)**. I will discuss chilled beams later when discussing the Ward 6A IMT in 2019 where there was

disagreement as to the source of dripping water.

Other risks related to ventilation

Vents – cleaning and maintenance

403. There were reports that air conditioning vents in wards were dusty and not cleaned frequently. I cannot recall the specifics of which areas. There are lots of bacteria that survive well in dust. This includes Acinetobacter, Staph aureus, MRSA and fungal spores. There is a risk of these bacteria from dissemination of dust.

Ongoing building work

404. For several years after opening, the QEUH/RHCG site had demolition and removal of cladding taking place. Both activities represent a risk to immunosuppressed individuals and require additional control and risk mitigation measures. These measures include dust dampening methods, cutting tools which reduce dust, use of antifungal prophylaxis, and face masks to protect patients and changes to patient flow such as alternative entrances. Any ongoing work requires completion of the HAI SCRIBE documents and contractors should provide methods statements with details of control measures.

405. Initially, when I first moved over to the QEUH, there was still quite a lot of work going on. There was a lull in this but then we found out about the removal of cladding. We were never informed about the huge skips with all of the removed material in them. Therefore, we had to implement measures at that point very quickly and there was no opportunity to carry out the required risk assessment.

Air sampling

406. I have been asked about the air monitoring and sampling regime at QEUH and

information sharing among departments. Air sampling took place within both Ward 4B BMT and Ward 2A on a monthly basis **(Bundle 27, Volume 7, Page 130)**. Rooms were sampled on rotation. Results were sent to me as lead ICD to interpret and provide advice if out of specification. I undertook this role whilst covering the Beatson as well. Whilst there is no national guidance on the air sampling of BMT units, this is a useful assurance measure. There has been a lot of comments about air sampling and whether we should be doing it or not because there is no guideline that says we should. The reason there is no national guideline is that the only BMT units are in Glasgow. Therefore, there is no need for a national guideline. Dr John Hood developed a local guideline with input from Andy Striefel, who was an expert from the University of Minnesota. I have found John Hood's local guideline really useful over the years. It has led me to identify issues early when the particle counts have been high. This includes things such as ongoing construction with inadequate measures or water leaks or inadequate cleaning. I have not had any requests for air sampling declined and it would be me rather than Estates that provided interpretation and advice, but clearly there would be a multidisciplinary approach to remediation if required.

CHAPTER 8: Water Systems

Concerns in 2015

407. As noted above, at the meeting on 25 June 2015, Ian Powrie told me that legionella had been detected in the water system. Having heard this, I emailed Ian on 27 June 2015 to suggest that fortnightly sampling should take place in Ward 4B with the potential to reduce the frequency if the results were satisfactory **(Bundle 14, Volume 1, Page 382)**. This suggestion was based on the sampling that Dr John Hood had done at the Beatson. I knew that John Hood and others had designed the Beatson with point of use water heaters and he had regular sampling in place for legionella. I was conscious that Ward 4B did not have this specialist water system in place nor did it have regular sampling. As Ward 4B was

housing a high-risk group, I asked for the same approach to be taken. In the end, it did not take place because the patients were moved back to the Beatson.

408. I was subsequently copied into an email from Christine Peters sent on 30 June 2015 to Tom Walsh, Ian Powrie, William Hunter, Heather Griffin and Maryanne Kane about water testing results which she was trying to obtain **(Bundle 14, Volume 1, Page 390)**.

409. On 2 December 2015, I emailed Prof Williams asking for the results for legionella testing as the planned Water Group meeting at which the results were to be reviewed was cancelled **(Bundle 14, Volume 1, Page 392)**. Prior to the meeting, Christine and I had been sending emails and raising issues about water. In response, Prof Williams told us that there would be a Water Group meeting in December where everyone would sit and go through the results. But the December meeting was then cancelled.

410. By this time in December 2015, I felt that the process around water testing at the QEUH was not as robust as at the GRI. At the GRI we had a very clear exception reporting system in place. If anything was out with an acceptable specification, Estates would fill out a form and send that to me as the ICD and I would undertake a risk assessment. This system was not in place in the QEUH. Therefore, I could not see how results in the QEUH were being communicated between Estates (who received the results) and the ICDs. I wanted a similar set up at the QEUH as was operating at the GRI, which did eventually happen in 2016 when I became the lead ICD.

411. On 8 December 2015, I contacted Ian Powrie and William Hunter suggesting that reports similar to those in GRI should be put in place **(Bundle 14, Volume 1, Page 393)**. These reports would detail on a monthly basis the number of outlets tested, results and actions. In this email, I requested backdated water results for the QEUH to the date when sampling commenced. I did not receive these water results until much later at the Water Technical Group ("WTG") in around April

2018 **(Bundle 10, Page 14)**. This was because some of the commissioning and validation reports surfaced from the ZUTEC system.

412. Once I received the back dated water results, I could see that the results at the time of commissioning had really high Total Viable Counts ("TVCs"). There was a high general count of bacteria including E. coli in the water. If I had had those results at the time, I would have been very concerned to see such high TVC results in a new build hospital. I would have asked a lot of questions. I would also have wanted to see the water system design, all of the risk assessments and what control measures, if any, had been implemented. This would include things such as the system being flushed with biocide. However, I did not get this information until 2018. It was contained within the DMA Canyon report.

413. There is an email that I sent shortly after coming back from sick leave in January or February 2018 which pointed out that water testing should be taking place **(Bundle 14, Volume 1, Pages 701-2)**. It still did not appear to have happened at that stage when there was a plan to move patients back from the Beatson to Ward 4B. However, my concerns about water testing were superseded by the water incident in February/March 2018 (which is discussed in more detail in Chapter 11 below) when we started all the water testing anyway.

414. In terms of my reflections on the water concerns which emerged in 2015, as explained above, despite asking for more information about the legionella water testing results from June 2015, I did not receive them until about a year later when I was lead ICD. When I found out that legionella had been found in some relative's rooms, where there probably hadn't been flushing taking place, I was not too concerned, but I would have preferred to have had that information in 2015 to allow me to make a proper risk assessment.

415. There is guidance on legionella in a code of practice document called "Legionnaires' disease, The control of legionella bacteria in water systems", L8 (Fourth edition). There is also HSE documentation on legionella. Most health

boards, including GGC have their own water systems safety policy and written schemes policy. There is a description within this policy of the procedure that should take place with regards to Legionella.

416. If, at the time of commissioning, legionella serogroup 1 (the most pathogenic strain) was found, I would have expected the site ICD to be notified and a risk assessment to be undertaken. There should be a multidisciplinary approach including input from Estates and from clinicians, to implement appropriate remedial measures.

417. I don't think this process was followed in 2015. If it had been, I would have expected there to have been a communication to the microbiologists and we might have had to alter our prescribing if we knew that there was legionella in the water.

Known specific issues

Single room design

418. With single room design the number of water outlets increase and, therefore, there is increased risk with 100 per cent single rooms. There are at least 3 outlets per room, namely two taps and one shower, all of which require regular flushing and maintenance. This requires adequate resource to do so. Failing to flush leads to water stagnation and proliferation of micro-organisms. Some (including particularly in the ICU as discussed above) can become what we refer to as "little used outlets" and these need to be identified by staff because of the risk of stagnation and the formation of biofilm. I was aware that the single room design might create issues in terms of the water outlets because at the water groups we discussed flushing and the resource required in a new build hospital with all single rooms to go round and ensure that these outlets are flushed. We were aware of the challenges of that in a new build with 100 per cent single rooms.

419. I have a document from Brookfield on the design of the renal system dated 2012 **(Bundle 27, Volume 7, Page 29)**. I was under the impression this was a separate water system but that some emergency dialysis points in critical care came off the mains loop but those were a problem if disinfection was to occur. I think the exact design would need clarified by Estates. My understanding was that there was not supposed to be aluminium in the system and that that was heavily corroded. That was not listed on the ZUTEC system as being a component.

Water ingress and mould

420. There were several issues with mould as detailed in the paragraphs below.

421. In May 2017, a senior nurse in the ICU reported water leaking from a dialysis point to the IPCT. Inspection of the area revealed water ingress and mould which involved a proportion of a wall within the unit. Three beds were taken out of use to undertake repairs. The leak appeared to be a slow drip related to poorly tightened connections. In light of this, other dialysis points in the hospital were reviewed and the problem was found to extend to ten others in Ward 4D and the level 2 dialysis centre. An incident meeting was held and the matter was escalated to Jennifer Armstrong and David Loudon **(Bundle 14, Volume 1, Page 621)**. All of these dialysis points were repaired and mouldy material was safely removed. RHCG dialysis points were reviewed and were not affected.

422. In March 2018 we also found issues with water ingress in Ward 4D renal involving 3 rooms **(Bundle 14, Volume 1, Page 625)**. Water was discharging from both the dialysis drains and toilets with flooring breached. This was remedied and flooring replaced with HAI scribe control measures.

423. In October 2018, there was a significant sewage leak in Ward 2A which also involved the level 1 canteen area and ground floor atrium. A second sewage leak occurred in May 2019 affecting outpatient clinics **(Bundle 14, Volume 1, Page**

627).

424. In January 2019, while undertaking air sampling in Ward 6A as part of the investigation into Cryptococcus, particle counts were higher than expected. On speaking to Angela Howat, Senior Nurse, she alerted us to problems with the showers. The shower join between the floor and wall had weakened and water had ingressed. The gyprock was of the non-water repellent type. I believe this differed from what was requested. This led to mould formation and patients had to move to the RHCG on a temporary basis to address the issues. The problem was replicated in the level 7 respiratory ward which may have explained the increased number of patients we were seeing colonised with exophiala, which is a black mould. My colleague Dr John Hood investigated these showers and recommended repairs **(Bundle 27, Volume 2, Pages 45-46, 51-52)**.

425. In June 2019, I was alerted by Ian Powrie to significant mould behind IPS panels in the vacated Ward 2A. He sent me pictures of this **(Bundle 14, Volume 1, Page 630)**. I have a lot of experience with mould in hospitals but had never seen it as extensive as this before. I think part of the reason it occurred in this instance was due to poor workmanship. There were dialysis points that were not tight enough so there were slow drips from the connections and the materials that they used were not correct. According to ZUTEC, they should have had the water repellent jet gyprock. When we investigated, they did not. Instead, they had the non- water repellent gyprock. My concern was that although the ward was vacated, building materials such as plaster were being stored in it for the retrofit and I asked that all materials be discarded due to possible contamination with mould. It is not clear how this mould arose but it may relate to auto flushing that took place due to the ward being empty which was in excess of normal ward occupation flushing. The force of this water hitting a weak join and non-water repellent gyprock might explain the findings.

The water testing/sampling regime at QEUH and information sharing

Legionella

426. Prior to the 2018 water incident, water sampling for legionella was taking place in high-risk areas defined by the water systems policy. These areas were: transplant units, areas with Chlorine dioxide systems and where there were known historical issues. Therefore, much of this sampling was on the retained site and not the new build. As described above, on arrival at the QEUH, I requested an exception reporting system for legionella similar to what was in place in GRI. This meant that Estates would send out of spec results to ICDs for interpretation and risk assessment.

Pseudomonas aeruginosa

427. On discovering the presence of flow straighteners in early 2016, I discussed the situation with HPS and we started to roll out testing of high-risk areas commencing with the NICU and PICU areas. I am not sure how this was progressed when I was off in 2017.

428. When I came back, the water incident occurred, sampling increased and became widespread as a result. An important observation is that the Scottish Pseudomonas guidance at the time differed from that in the rest of the UK, in that routine testing of high-risk units for pseudomonas was not advocated. This is not the case now. The most recent iteration of the guidance is that Scotland will be testing high risk units for pseudomonas.

Other organisms

429. Aside from water quality indicators such as TVCs, coliforms, E coli and Legionella, at commissioning there was no routine testing in place for other organisms at the QEUH that I am aware of after this. I requested Legionella and

Pseudomonas testing. Hospital water is not sterile and you can expect to find low levels of bacteria. However, you want to put risk mitigation in place to ensure that it does not become out of control, particularly for high-risk patients. Water testing for specific organisms would take place at the request of the ICD or an IMT when investigating an increased incidence of infections due to environmental organisms, e.g., Elizabethkingia in Ward 2A.

430. Since the water incident in Glasgow, there is an aide memoire for water, developed by HPS. **(Page 515, Bundle 19)** There is a list of waterborne bacteria and, if clusters of infection are observed for these bacteria or there is an increase in the number of cases, water testing should be considered. The only organisms routinely tested for are legionella and now pseudomonas.

431. I have already described the emails sent in relation to water testing in 2015 and the responses. As lead ICD in 2016, I did not encounter difficulties with Estates colleagues when requesting testing. I am aware from emails sent to me on my return to work in 2018 that problems were encountered by a microbiology colleague **(Bundle 14, Volume 2, Page 226)**. In the summer going into September/October of 2017, there were cases of Stenotrophomonas. One of my colleagues, [redacted], was asking for water tests and water results but they were not forthcoming. [redacted] will be able to speak in more detail about this.

432. On my return to work in 2018, I saw minutes from the October 2017 Board Water Safety Group **(Bundle 11, Page 77)**. The minutes note a discussion about microbiologists asking for water results. The response was that they should not be requesting historical results and that the matter was to be discussed with Jennifer Armstrong. There was still a reluctance to give microbiology colleagues access to results and historical results, from what I could see when I returned to work.

433. In 2018, extensive testing took place in relation to the water incident. The results were sent to Estates and myself by colleagues in the water lab and added to an

excel database owned by Estates. These results would be shared and discussed at the Water Technical Group during the 2018 incident. As explained below, Intertek had access to these and had undertaken some preliminary analysis.

434. During the Oversight Board and Case Note Review, I was aware of lab data being shared with the investigation teams which included water and drain samples. I was denied access to this data and my request for access remains outstanding. I was concerned about the data that had been received, based on some of the conclusions and discussion in the report. These were not really tying up with what I had seen. For example, they were given a sheet with Stenotrophomonas but no location attached to it. I knew that was from Ward 2A and, specifically, which rooms in 2A, so I do not know why that information was missing. Cupriavidus percentages did not seem to add up to me either. The percentages seemed too low. Therefore, I was worried about the data, how valid it was and whether all the reports had been submitted, including the drain samples and some of the external Intertek reports. I wrote to the Scottish Government to say I was concerned about the validity of the data. I have still not seen the data. I have asked for it repeatedly from GGC.

435. I find it quite astonishing, given that I was the chair of the IMT and the microbiologist in charge of the incident, that the Oversight Board and Case Note Review did not think to check the data with me to make sure that it compares to my database. I offered to send in the data to the HAI Policy Unit but the opportunity was not taken to cross check the data. I believe having that information would have strengthened the findings of the Oversight Board and Case Note Review.

Other IPC concerns

Proximity of the hospital to sewage works

436. I have been asked if I have a view on whether the proximity of the hospital to the

sewage works posed a risk to patients.

437. While the smell of the sewage works at the QEUH site is unpleasant, I am not convinced the proximity of these works is a problem in terms of infection risk. The outbreaks/incidents I managed all had much more viable hypotheses than a neighbouring sewage plant. The type of bacteria we encountered were more typical of the hospital environment and not an excess number of coliforms which we would expect from sewage. While aerosolization of bacteria might occur, this would likely be diluted out and not reach hospital inpatients.

Cleaning

438. Discussions regarding cleaning took place frequently at IMTs with concerns being expressed particularly in NICU, PICU and haematology wards. Meetings were held with facilities staff. At a meeting with Karen Connolly in 2016, I suggested that high risk units required additional resource and more experienced domestic staff. Additional resource in the form of a housekeeper was allocated to the NICU. I emailed Karen Connelly and Maryanne Kane in May 2018 highlighting concerns in relation to level 4 QEUH, Ward 2A RHCG, PICU and Ward 3C reported by staff or IPC colleagues **(Bundle 14, Volume 2, Page 227)**. They met with relevant teams and IPCNs to discuss and thereafter addressed the concerns.

439. In November 2018, I chaired a meeting following concern expressed regarding cleaning standards in Ward 4C and the level 7 respiratory wards **(Bundle 27, Volume 7, Page 570)**. In Ward 4C there was concern about the frequency and standard of cleaning. A clinician from level 7 had raised issues about cleaning since the hospital opened and felt that cleaning improved for a short time after he reported concerns. At that meeting, the dynamic risk assessment was discussed. This is where domestic supervisors carry out an assessment of cleaning requirements during the first three days of a patient admission. A full clean would be undertaken on day four onwards unless otherwise specified. This risk

assessment had been applied to all ward areas but no separate assessment had been undertaken for high- risk units such as haematology. It was reported at this meeting that chlorine was not being used routinely on floors as the vinyl on them could not withstand heavy use of chemical agents. Microfiber mops had been introduced after an HPS review but it was felt that the mops were limited as to how much debris they could pick up. These mops could only be used with water as detergent would damage their integrity. It was reported that domestics were bringing their own cleaning products into work. It was agreed that the mop issue would be escalated by Karen Connolly to Maryanne Kane, that HEPA vacuums would be procured and that extra domestic resource would be allocated to these wards. The cleaning issues were taken seriously and responded to when reported but resource appeared to be an ongoing issue. Therefore, the response in my view was reactive rather than proactive.

Plant room infestation and pest control

440. I first encountered the plant rooms when investigating cases of Cryptococcus in late 2018/early 2019 **(Bundle 27, Volume 2, Page 34)**. At the time and as discussed in more detail in Chapter 13, in the level 12 plant room, there was evidence of pigeon ingress with visible guano, there was also litter such as coffee cups and popcorn bags.

441. During the water incident, I also visited the basement plant room where the water storage tanks were. In this plant room, there was a storage area where tap components were being stored. This room had a door to the outside which was not closing properly and there was evidence of water ingress with a strong smell of mould. The room felt damp and there were cockroaches on the floor. I requested that an alternative storeroom be found for the storage of tap components.

442. Plant room hygiene appeared to be poor. In my view this was a neglected but important area as plant rooms house the ventilation and water systems supplying

all patients, staff and visitors.

443. There was not enough resource. It took people to raise concerns for extra resource to be put in. I think there was an underestimation of the requirement for domestics and estates and facilities personnel in this new build with all the single rooms just in general. It is much more resource intensive to clean all these isolation rooms versus the old style of ward, like a 4-bedded bay or a Nightingale ward. I do not think that had been factored in.

CHAPTER 9: Key Points in Dr Inkster's Professional Career, 2015 to 2018

Dr Inkster's resignation, July 2015

444. As a result of my major concerns described above regarding the specialist ventilated areas, and in particular the adult and paediatric BMT units, I attempted to resign as an ICD before I even moved from the north to the south sector. The reasons for my resignation are set out in detail in my letter which I emailed to Professor Brian Jones, Isobel Neil and Anne Cruickshank.

445. My collective experience of all those issues, the culture at the time, the dismissal of what we were seeing, the stalling efforts and then being asked to effectively lie to the Medical Director and provide false assurances that the adult BMT unit was safe for immunosuppressed patients was why I felt I couldn't continue in the role. It was quite complicated because alongside that, I also had the issue of the paediatric BMT unit.

446. Alarm bells were ringing about the culture and the situation that we found ourselves in, and we were worried about patient safety. I felt at that point that I didn't want to take on the ICD part of the role when I transferred over to the south sector.

447. Initially, I emailed my resignation to Prof Jones and Tom Walsh and it appeared

that my resignation had been accepted **(Bundle 14, Volume 1, Page 419)**. I received an acknowledgement of sorts from Tom Walsh thanking me for the years I'd done as an ICD. About a week or so later, Brian Jones told me that there had been discussions with the BMA and, in the interests of patient safety, I had to stay in the role. I also had discussions with the BMA, but I think that their recommendation was that we couldn't just have these sessions removed from our job plan. The plan was that I could negotiate my ICD sessions at my next job plan meeting. I knew that would not happen as it would be dependent on colleagues being willing to take up the role and, with everything that was going on at the time, I knew that wasn't an option.

448. As a doctor, it was very difficult to argue against the interests of patient safety. They absolutely had a point, because an IC service needs to be run. However, the atmosphere in which we found ourselves working was very difficult.

449. It wasn't just Christine Peters and I. Dr Pauline Wright also indicated that she wanted to resign. She was the only one that was able to resign and give up her sessions. There were other members of the team that we were aware were meeting with the ICD, Prof Williams, the ICM and the Associate Nurse Director quite frequently. We were being labelled as risk averse and overreacting, hysterical females requiring high standards. This information was being fed back to us by other microbiology colleagues. This created a difficult working environment when we heard that this was how we were viewed within the team.

450. Christine and I were advised by Anne Cruickshank not to go to meetings alone. To me, such an approach was not working towards a solution within the organisation. I felt at that point that the ICD team in particular became quite fragmented.

451. Shortly after I attempted to resign, I think in August 2015, we were informed that there was going to be an HR investigation into the issues raised by Christine and I. I recall attending a meeting with Dr David Stewart, who was the Deputy

Medical Director, and Bridget Howitt, who was fairly senior in HR **(Bundle 14, Volume 1, Page 474)**. I was asked about all the issues. I raised a lot of the cultural issues but also patient safety issues. I didn't feel they were taking the issues on board completely, and I remember saying there would be a repeat of the Vale of Leven Inquiry if these issues were not resolved.

452. I understand there is a report from that meeting, but I never saw it. We then got a letter inviting us to take part in organisational development **(Bundle 14, Volume 3, Page 71)**. To me, the message was that this was all about personalities, team working and differences of opinion, but there was nothing to address any patient safety issues. I emailed David Stewart to ask him how the patient safety issues that I'd raised would be addressed. He didn't respond, and that was the trigger for the more detailed letter that Christine Peters and I wrote in November 2015 and which is covered in more detail below **(Bundle 23, Page 195)**.

453. During this time, we did have a lot of support from Anne Cruickshank and had regular meetings with her. Anne Cruickshank was the Clinical Director for Diagnostics, but also had a temporary role as the Clinical Director for Infection Prevention and Control. Prof Brian Jones, who was Head of Service, at that point was relatively supportive. We had this HR process that I don't think adequately delivered, and then we had the organisational development sessions. Overall, I didn't think that we were well supported.

454. I didn't really think that the sessions improved the culture. Instead, Christine and I found ourselves being excluded. For example, we would meet with our sector ICNs fortnightly. Those meetings would have ICNs from the QEUH and the RHCG. Prof Williams rarely attended. Previously, the ICNs had brought up all the issues in both hospitals. But the ICNs were then told by Sandra Devine, "You're not to bring up anything to do with the Royal Children's Hospital at this meeting with these two doctors." As a result, we were not informed about what was happening in the Children's Hospital at that time. I think we were excluded from a lot of discussions. It all became very fragmented and it was not a good working

environment to be in.

455. The relationship with Tom Walsh was quite fraught as well. The most contact I'd really had with the ICM was during the BMT issue and I felt that Tom was stalling. I also felt that he was going above our heads, sense-checking things with Prof Jones, who although Head of Service, wasn't an ICD. Perhaps he was going to Prof Jones for a different opinion, but Prof Jones supported what we were saying about the BMT unit, so I didn't feel supported by Tom Walsh during the incident. When we attended the meetings with Gary Jenkins, I didn't feel that Tom Walsh was supporting our view. I felt he was more aligned with Gary Jenkins and other senior management colleagues and that was a concern.

Letter to David Stewart, November 2015

456. Despite my attempt to resign in July 2015 and the resulting HR involvement, I was not content that the concerns I had raised in my resignation letter were in hand. Therefore, along with Dr Peters, I proceeded to set out these ongoing concerns in a letter to Dr Stewart in November 2015. The concerns were about the adult BMT unit, the paediatric BMT unit, the isolation rooms, other clinical areas and problems with the old estate. In addition, we expressed concerns regarding the management of outbreaks and incidents and the lack of planning for viral haemorrhagic fever ("VHF"). In this letter we requested an external expert opinion.

457. Dr Stewart responded suggesting that the majority of the issues raised were in fact estates issues, not infection control ones **(Bundle 14, Volume 1, Page 474)**. I would contest that view. In fact, we wanted an external expert opinion because we were aware that there were differing views and we were quite happy for external people to come in and give their opinion, but that never happened.

458. Around this time in November 2015, one particular area of concern was my involvement with the adult BMT unit. As described in more detail above, I was

asked to take control over the Unit's move back to the QEUH, despite having had no input and no information about what work had been carried out. My experience with the adult BMT unit confirmed to me that none of the issues that I had raised in July 2015 had been taken on board. Particularly concerning for me at this stage in late 2015, was to be, once again, in the same position that I'd been earlier in the year, and it was clear that in relation to the building, there hadn't been any lessons learned. We still didn't have vital information about the state of that unit.

459. I was again being labelled risk averse. However, you can only adequately undertake a risk assessment if you have all the information to hand. If you are not in possession of all the necessary information to make a decision, you are obviously going to be cautious. I felt I had to fight for the external input. The resistance was clear and I had to be really persistent.

Appointment as Lead ICD, Spring 2016

460. Prof Williams left the organisation abruptly in the spring of 2016. I was interviewed for the position of lead ICD along with another microbiology colleague and was successful at interview. I recall a last-minute attempt by a senior microbiology colleague, who did not support my vision, to sit on the interview panel but the attempt failed **(Bundle 27, Volume 7, Page 389)**.

461. As lead ICD, I had a significant workload. My first task was to write a report on the management of a Serratia outbreak in the neonatal unit in 2015, which I had expressed concerns about to Dr Stewart. I was not involved in this outbreak but I was aware that the Scottish Government had concerns about its management and that members of the IPCT had met with them to discuss. Learning points in my report included late declaration of the outbreak, an emphasis on waiting for typing results before declaring an outbreak and late screening of the environment as a possible source. At the time of writing the report, I was concerned that screening patient samples for Serratia had been discontinued. I, therefore,

reinstated it. The screening revealed that the issues had not in fact been addressed and that the organism was endemic within the unit with subsequent outbreaks occurring during my time as lead ICD.

462. One of the actions I put in place following the Serratia incident was to put triggers in place for the most common environmental organisms to alert the IPCT to potential outbreaks. These triggers meant that, any time we had an HAI or a cluster of HAIs, we would be able investigate, put measures in place and report it. When I started as lead ICD, it was interesting that it was referred to by the ICM as a different way of working for the team, quite different from how it had been done by my predecessor.

463. The triggers are basically a tool to help ICNs know when to investigate; a certain number of organisms within a defined period will trigger an incident review. The purpose of the triggers was to enable the early recognition of outbreaks, particularly of environmental organisms, like Serratia.

464. Each Board has discretion on triggers, so they would not be laid down in a national manual. However, I adapted them from work that had been done south of the border by Bharat Patel and his and others work on neonatal units. The triggers are based on his experience of dealing with outbreaks in such units and the triggers that he developed. I adapted these triggers slightly for local use.

465. Initially, I thought that the new triggers worked well, but when I was off sick, there were some email trails around the triggers. There was a perception that we were reporting far too much from the Children's Hospital because the triggers were too sensitive and, as a result, we were reporting too many HIATs. I would contest this view and believe that the triggers were doing their job because there were too many issues with the Children's Hospital and the environment. However, there was a perception that I was overreporting and over investigating, and the triggers that I'd put in place were too sensitive.

466. My vision was for the IPCT to operate in an open and transparent fashion and to make it a more cohesive team. I was also keen to have more involvement from the sector ICDs which would give them experience in specialist areas and have them working with other team members outside of their sector. There was not much interaction with ICNs on other sites and I wanted us to share learning. I sought volunteers to sit on the various IPC groups such as colleagues from policy development, education and theatre ventilation. I was probably on the way to achieving that. I certainly had ICDs on all the different groups.

467. As lead ICD, I also sought to address the many problems with ventilation that I felt were outstanding. Early in my appointment, I received a letter from the infectious disease physicians expressing concerns about their isolation rooms **(Bundle 23, Page 1018)**. I produced an SBAR which was sent to senior management and requested support from HFS in this regard **(Bundle 4, Page 26)**. I also produced an SBAR about the low air change rates in patient rooms and began working closely with HPS with respect to the optimal specification for the adult BMT unit. I also became involved with the plans to upgrade 4 rooms in the children's BMT unit which involved the conversion of PPVL rooms to positive pressure cascade rooms. I sought to progress the creation of a respiratory decontamination facility and to establish a specialist ventilation group. Retrofitting a hospital build is something that takes time but I felt that throughout 2016 and into 2017 progress was being made. I did feel that there was some resistance to what I was trying to achieve mainly from the then Director of Facilities, David Loudon

Relationship with Estates/Facilities

468. After I took over as lead ICD, I think the relationship with Estates improved. I did not experience any issues. For example, I asked for water testing and met with Ian Powrie. We had a conversation about the flow straighteners as I was worried about them. He agreed that we would start testing water and we would start rolling it out in high-risk areas. I think we started looking at the NICU and perhaps

the Paediatric ICU. Testing did start but I don't know how far the roll out got because I went off sick, but there wasn't any resistance about having the testing done.

469. I do recall there being some resistance from the chair of the GGC Water Safety Group who asked why we were carrying out this testing because it was not in the guidance. This was a common theme in the Board; if something was not in the guidelines, questions were asked as to why we were doing it.

470. I did not receive any resistance to air sampling because it was the microbiology laboratory which dealt with that.

471. Once I was lead ICD, I also took the opportunity to discuss with Ian Powrie the issues with legionella in the water that he had raised in 2015. Eventually, I did find out where the legionella was in the building, albeit it was a couple of years later. He showed me where he had found it in the building just as the building was opening. It was in relatives' rooms on some of the wards. A relative's room is where you might find what we call a "little-used outlet", because relative's rooms are not used all the time. If there were sinks in the rooms, these were not being used with the frequency that they should, so it probably wasn't surprising to find legionella in a room where there might be stagnation of the water. Ian was able to show me that they treated it, I think with silver hydrogen peroxide, and the repeat results were fine and they had implemented flushing.

Relationship with IPC SMT and Senior Management/the Board

472. When I became lead ICD, I think there was a better relationship with IPC SMT, senior management and the Board. However, I think I could have been supported better when I was writing the SBARs. I felt that things were only getting done due to my sheer persistence and determination and because I constantly chased things up. Even things like the HFS report into the negative pressure rooms required constant chasing. I felt that certain people who could

have been helping to facilitate that were not supportive enough, but, overall, I didn't experience what I'd experienced in 2015. I didn't experience the previous level of obstruction and exclusion. I think that may have been because my predecessor had left, so personalities were different.

Absence from June 2017 to January 2018

473. Following my diagnosis of lymphoma, I was off work between June 2017 and January 2018, during which time I had a vague awareness of what was going on at the hospital. I know that there were issues with providing infection control cover when I had to take sick leave and who would take on the role and who would cover the sessions, because I had been doing a lot of sessions and those gaps had to be filled.

474. I was also aware that there were some issues around the adult BMT Unit that colleagues had come across. On work being undertaken on the unit, they'd found one of the HAI SCRIBE documents with my name on it dated 19 June 2017. Next to my name was a box for my contact email address but [redacted] email address was there. It was impossible for me to have agreed the document because I was off sick. I know that colleagues raised the issue up the organisation, and tried to get more information which was not forthcoming. I was conscious of that and, as I started to feel a bit better, I sent them an email handover of that particular unit, but I was aware that they were coming under pressure to sign off the unit in my absence **(Bundle 14, Volume 1, Page 582)**.

475. The other thing they told me about, a bit later on, was a case of Cupriavidus in a child. They knew that I had published an abstract on a previous case in 2016. I sent that to them and said that we found it in the water in the aseptic pharmacy. I think I may have suggested they look at the water.

October 2017 SBAR and Subsequent Action Plan

476. I was off sick when three colleagues proceeded to a Stage 1 whistle blow in autumn 2017. I am aware that they attended a meeting with several senior management colleagues which was chaired by the Medical Director. I understand that my colleagues produced an SBAR and that following the meeting an action plan was developed **(Bundle 3, Page 57)**. My understanding

is that Prof Brian Jones and Sandra Devine from the IPCT contributed to the action plan and it was presented to the Clinical Care Governance Committee on 5 December 2017 by Sandra Devine and Billy Hunter **(Bundle 14, Volume 1, Page 719) (Bundle 13, Page 960)**.

477. Just before I returned to work in January 2018, Dr Penelope Redding emailed senior management colleagues to state that she was considering escalating her concerns to Stage 2 of the whistleblowing policy as she felt more progress should have been made **(Bundle 14, Volume 2, Page 71)**.

478. When I returned to work in January 2018, I noted that the action plan was to be circulated and discussed at the AICC meeting. I was concerned that whistleblowing colleagues had not been updated, despite an action plan being presented to the committees which included other microbiology colleagues. They did not appear to have been sent a copy of the action plan so I endeavoured to do so and emailed Jonathon Best and Chris Jones as the chair of AICC to request this. My email was referred to Mary-Anne Kane. I was concerned as there were some inaccuracies and missing information in the action plan, which I chose to amend before sending to colleagues **(Bundle 14, Volume 2, Page 100)**. These inaccuracies related to cases of Aspergillus in Ward 2A of the RHCG and also to the status of ventilation upgrades.

479. In my view, they had not gone into enough detail as to what the issues actually were with aspergillus, despite the fact that we had found reasons and environmental issues that accounted for these cases. There were plans in place for various ventilation upgrades, for which I had written SBARs. Whoever updated the action plan didn't seem to have the relevant, up to date information about this. I don't think they realised that there were plans to upgrade rooms to negative pressure rooms and that there was work ongoing in both the BMT units. There was a lot of missing information. Basically, the action plan was not up to date and it was not open and transparent.

480. I amended the version of the action plan which I had received to include the points that I had identified. I am sure I copied it to Tom Walsh. I believe that my version was presented at a committee, which I understand was the AICC meeting in May 2018.

481. In February 2019 I was forwarded an email by Sandra Devine asking for comments on the updated action plan **(Bundle 14, Volume 2, Page 353)**. Margaret McGuire, Director of Nursing, appeared to be coordinating this response and had sent the action plan for comments to several senior management colleagues. I had not been included in this email but Sandra Devine and Tom Walsh were. I had very little time to look at the document as it was due back that day. I alerted the PA involved, Imran Sharrif that we were working from an outdated version of the action plan and not the one I had made amendments to. I also alerted Sandra Devine to this. I was subsequently informed by Imran that, although it had been recognised that the wording was incorrect by some people, we had to adhere to the version that had gone to the Clinical and Care Governance meeting on 5 December 2017 as part of the audit/governance process **(Bundle 27, Volume 4, Page 90)**.

482. This caused me to question the accuracy of the document and the version control, because they decided that they were sticking to the version that had originally gone to the Clinical and Care Governance meeting in December 2017 rather than my updated version. The action plan that was submitted to the meeting was not, in my view, accurate as to where we were. It looked like things had not proceeded and did not recognise the work that had been undertaken. I was worried about the aspergillus and the fact that it was not open and transparent. We were basically saying it was no different from Yorkhill, when, in actual fact, we had reasons why these patients had aspergillus. We were not reporting the incident in an open and transparent fashion.

483. I recall texting the Medical Director about this as she was returning from holiday. I do not recall if I got a reply. With all of the above, I was puzzled when the

Independent Review referred to this action plan as belonging to me. I explained to them that I was off sick at the time the action plan was produced and first presented to a governance committee. I was also not initially included in emails about updating versions, so it was not clear to me how this could be construed as my document.

484. In 2020 my colleague Dr Redding (then retired) proceeded to a step 3 whistle blow **(Bundle 27, Volume 4, Page 126)**. I'm not sure why but I was sent a copy of the report. In my response to those dealing with step 3, I once again alerted them to the different iterations of the action plan. I did not receive a response in this regard.

485. There was a meeting of the Board Clinical and Care Governance Committee on 5 March 2019 **(Bundle 27, Volume 7, Page 484)**. I attended as the lead ICD. The Medical Director presented the original action plan at that meeting, which is another example of how inaccurate information was being used. I was asked by a member of the Board, I think his name is Ian Ritchie, if colleagues were content with the action plan. My response was that one colleague had retired and the other had not raised any issues with me. Penelope Redding had retired but, unknown to me, was going through a Step 3 whistle blow. Christine Peters had not raised any issues with me because it wasn't my action plan. She was raising issues with Jennifer Armstrong.

486. However, what was noted in the minutes of that meeting is that I agreed with the action plan. That is very different to what I actually said. The first I saw the minutes is when they appeared in draft form in the public domain as part of the board papers. Prior to this, they had not been sent to me for comment. I only came across them when I was looking for something else and I wrote to the person who had taken the minutes and sought amendments **(Bundle 14, Volume 2, Page 466)**. It appears from the subsequent minutes that my amendments were noted and agreed.

487. I felt that that meeting was an attempt to put words in my mouth and put that out into the public domain, but I got the record changed because it did not reflect what I said.

488. As far as I am aware, the action plan is still not complete because it was mentioned again in 2021 when we started working with Angela Wallace and Jenny Copeland, who both came in from Scottish Government to do organisational development work. The action plan was one of the things that we highlighted to Jenny. During our work with Jenny, a more detailed action log was created. This more detailed action log comprised of some actions from the original action plan that were not yet completed plus more recent issues which we were concerned about. It was an extension of the action plan developed as a result of my colleagues' whistle blow. The work on the more detailed action log halted when Jenny retired. Angela Wallace was supposed to continue with that work but it never happened.

489. We did have a meeting with Angela Wallace, Jenny Copeland and Tom Steele, as the Director of Facilities, to progress some of the issues. The work on the PPVL rooms was still outstanding in 2021 and I haven't seen the action log since. That detailed action log is probably the most accurate and up to date plan showing the position by 2021.

Resignation in January 2018

490. In October 2017, while I was still on sick leave, I became aware that structural changes to the IPCT were being discussed. I did not really know what was meant by that other than that there was to be a meeting to discuss ICD sessions and the team's structure. Rachel Green asked that I be invited to that meeting, but I was still undergoing treatment and so was not fit to attend. Until I went back to work in January 2018, I did not know anything further about the proposed changes.

491. I recall my first day back after returning to work. I was only in for a couple of

hours because I was doing a phased return. Those two hours were quite unbelievable. The first person to speak to me was the Head of Service who told me that everything was awful when I was away, that the structure was changing and I would have to report to him. I would sit at Head of Department level instead of Lead ICD level. I would report to him and then report to the Clinical Director for Labs before the ICM. He could not really explain to me why that was to be the case. On leaving my room, he said that I would have to give up the TPD role. He said there was a conflict of interest, although I did not believe there was. Within my first hour back, I found myself potentially being stripped of both roles.

492. Subsequently, a couple of months later, one of my colleagues told me that the changes to my role and the team had been planned as far back as October 2016, and that a colleague had said I was "an empire builder" and that they had to have the new structure in place before I came back. Christine Peters phoned the BMA on my behalf as I was not a member and sought advice on this change in structure. They stated that it was viewed as a demotion whilst on sick leave, which should not happen. I mentioned that in my eventual resignation letter to Jennifer Armstrong.

493. I didn't agree with the new structure. I felt that, as a lead ICD and an expert in IPC, I needed to be very closely linked to the ICM and the HAI Executive Lead and this was too far removed. I could not see what benefit this new structure had for IPC within the organisation.

494. Over and above the news delivered to me about the restructuring, my return to work saw a steady stream of medical colleagues coming to me to tell me how awful it had been in my absence. People were being put in positions like I had with the BMT unit, expected to sign things off under pressure with no information forthcoming, claiming that they didn't have the information. Even though people like Sandra Devine and Tom Walsh had been sitting in meetings with me about the options appraisal for the BMT and I knew they had all the documents, these were not being passed onto colleagues such as [redacted] who was being

asked to sign off without the full picture. It was like they were just trying to force people to put a signature on a piece of paper and take responsibility. People described bullying and intimidation. Three ICDs had resigned, so I didn't have an ICD team. People also described how it had been like working to a different doctor every day. The situation was that, whoever the duty doctor was, they were covering IC. This is not a good way to cover IC because no one really has direct responsibility for any particular area. They are basically just firefighting for that particular day and then handing over to the next doctor.

495. I felt like everything I had developed and progressed had been stripped right back. ICDs were not attending the groups that I had arranged for them to attend, such as Education Policy, Board Water Safety, and Sector Water Safety.

496. Colleagues were really worried about Ward 2A due to the number of infections that were being seen. There were many more infections on the ward than had been seen before I left in June 2017. Colleagues were continually raising issues about the ward but senior management were not listening to them.

497. All of the above prompted my further letter or email of resignation in January 2018 where I objected to the structural changes that were due to happen **(Bundle 14, Volume 2, Page 10)**. I also raised concerns about ICDs not going to the groups I had arranged for them to attend, and that I was concerned about my signature being on the HAI-SCRIBE document. My issue regarding the HAI-SCRIBE was not resolved.

498. As a result of my letter, I had a discussion with Jennifer Armstrong. I discussed all of the concerns raised in my resignation and I also mentioned the Equality at Work Act. Jennifer advised that she had spoken to various people and that she had made the decision that my role would remain as it was and the previously agreed structure would continue. I was never given an explanation about why this decision was made.

499. I did not raise the comments I had heard suggesting I was an “empire builder” with Jennifer. I think I discussed them with Christine Peters, who was my Head of Department at the time for microbiology. She attended many of the meetings where this was discussed and can provide more information about what was taking place at these meetings when I was off sick.

500. There was also a suggestion from the acting lead ICD at the time, Brian Jones, that actually the IPCT service should be nurse led and that doctors were just on the periphery and advisory only. I did not agree with this assessment, especially given all the issues that we had had with the new build and ventilation and water. My view was that the ICDs needed to be right down the middle of infection control, providing expertise and leadership. I did not believe in stepping back from the role at all. It is not something I aspired to. But everything was stripped back. I don’t think it should have been stripped back to the extent that it was because I was only one person missing. The rest of the ICDs were still there, but none of them were attending these meetings. It was almost like a complete withdrawal and a different doctor everyday service, which actually can be dangerous because things can get missed.

501. In an effort to restore the IPC service, I had to persuade colleagues to return to their roles. It was a dire situation, but I managed to persuade Alison Balfour, who’d been in the role before, and Pepi Valyraki to take on some sessions, and I filled in the rest myself. This was really challenging because I worked reduced hours from January to July.

502. There was not a great deal of support from senior management in relation to the issues that I had found when I came back. Sandra Devine forwarded me information which provided me with a handover of information that I asked for. She forwarded me as much information as she could. I found minutes that were not complete from meetings that had taken place as far back as September 2017. It was in complete disarray, various matter had not been progressed in my absence and that made my job really difficult.

503. It is my view that the three ICDs who resigned did so because of the culture. I think that one of them in particular was put under extreme pressure to sign off the work in the BMT unit without being provided with the necessary background information; exactly the situation I found myself in late 2015. He felt bullied and intimidated and resigned as a consequence. I do not believe that there were any HR exit interviews or anything like that for the three who resigned.

CHAPTER 10: Incidence of HAIs from 2015 to 2019

Introduction

504. The following section provides a summary of incidents/outbreaks which I chaired the IMTs for. The summary is not comprehensive because it does not include incidents which were chaired by other ICDs and incidents which occurred during 2017 when I was absent.

505. Cumulatively, the number and types of these incidents caused me concern. As early as June 2016, there was water ingress in the ITU. At that point, the QEUH was a new building so to have water leaks at that stage suggested there was something wrong with the building.

January 2016

506. Nature:

Cupriavidus pauculus bacteraemia identified retrospectively in response to water testing results.

- It is a rare bacteria which we would not expect to see in a new build hospital.
- There was an error in the HPS report. The water result came first. The aseptic pharmacy had its own guidance for water testing. They tested their water monthly. They noticed their TVCs were too high. The ICD at the time was Prof Williams but he felt that the responsibility was with Estates. The water lab did the repeat

testing and asked me to consider the results no one was supporting the pharmacy in interpreting the results.

- The normal reasons for the TVCs to be high were not present such as Legionella and there were only a very small amount of Pseudomonas.
- The water lab identified the other bacteria as Cupriavidus.
- We identified two sinks as the source. One was little used so it was a risk. It was removed and we used chemical dosing. The problem went away. The theory was it was localised to taps and that they were the source of contamination.
- As part of my investigation, I checked to see if there had been any patient cases because the aseptic pharmacy supplies medication to the hospitals. As a result, I found a case in a child a few months before in the RHC. When I sent them for typing, the typing did match. The theory at the time was that somehow there had been a breakdown in infection control precautions and the water from the tap had made its way into the product that was then infused in to the patient. We had several months of repeat testing and with the removal of the sink and the dosing it had just gone away. At that point in time, it looked like an isolated incident.

Link to Environment: Proven. Patient isolate matched water isolate on typing.

Which area: Aseptic pharmacy RHC

Sampling /testing: Water testing – routine testing for this area detected elevated TVCs. Typical water quality indicators were negative, e.g., coliforms/E coli/Legionella. I asked for TVCs to be identified. Water results were positive for Pseudomonas and Cupriavidus

Internal: Infection control SMT, Pharmacy senior management

External: Nil

PAG/IMT/BICC/AICC: PAG & IMT

Response: Removal of little used outlet, a sink in the changing room within the unit

Control measures: disinfection with silver hydrogen peroxide, identification and removal of little used outlet, regular flushing, follow-up testing, several walks round of the unit by IPC with observation of practice and feedback of findings.

Preventative medications: Nil

Concerns: lack of responsibility for water testing results. I did not cover this area at the time but was contacted by the microbiology laboratory as others were not taking action. Lack of clarity as to roles and responsibilities for water testing and response. This changed when I became lead ICD. After that I had sight of results from that particular area.

June 2016

507. This IMT was chaired by Anne Harkness rather than IPCT.

Nature: Increased incidence of Aspergillus

Link to environment: Strongly suspected, water ingress associated with bed space 34

Which area: Critical care, QEUH

Sampling/testing: nil, risk of mould obvious

Internal: IPC SMT, AICC, board CEO via A Harkness

External: HPS

PAG/IMT: IMT

Response: Repair of window frame and investigation of water ingress

Control measures: repair of window and removal of water damaged material, three beds closed to do so safely

Preventative medications: I cannot recall specifically but believe we advised for high-risk patients to be identified by clinicians

This incident was to do with material around the window frames. It was a specific matter but it was an indication of issues with the fabric of the building. At that point in time, it was localised and there was good reason for it. We had sufficient evidence this was the source within that unit.

August 2016

508. Nature:
Two cases of suspected Aspergillus infection, one subsequently identified as **Candida sp** so discounted

Link to environment: Strongly suspected. Tears identified in ventilation ductwork, condensation from chilled beams creating damp and dust, onsite construction/demolition work
Which area: Ward 2A

Sampling/testing: air sampling, surface sampling of chilled beams

Internal: IPC SMT, AICC, BICC, HAIRT

External: HPS

PAG/IMT: PAG (4.8.16) **(Bundle 2, Page 11)** + IMT (5.8.16) **(Bundle 13, Page 860)**

Response: ventilation repair works

Control measures: Use of portable HEPA units, increased cleaning of chilled beams and ward environment

Preventative medication: yes, prophylactic Ambisome (antifungal)

509. A number of potential hypotheses were considered at that IMT. However, Estates advised that there was a tear in the ventilation duct. This issue seemed unusual so early after the construction of the building.

510. We also had the chilled beams in that ward (Ward 2A) and we were having issues with condensation and dust on them. There were also still works going on at that stage in 2016 around the rest of the hospital site. Therefore, there were three potential reasons. I do not know which one it was. In relation to the steps which were taken, the prophylactic mediation was prescribed usually for high-risk patients whilst the incident was ongoing. This is a common short terms response.

511. At that point, there were discussions that that whole ward was not up to scratch. There was further discussion about plans to do the upgrade. There were two options on paper. One was to upgrade the ward to the standard specified in SHTM 03-01 and one was not. In this IMT, Jennifer Armstrong was still to approve the one I had put forward. I think in this case the child was not in a BMT ward.

512. The in-depth review was not done in this ward in 2015 because the adult BMT is entirely BMT. The paediatric ward is a combined BMT and haematology ward. Often wards with both populations are designed for a proportion of the ward to be BMT. They had eight BMT rooms and the rest was standard spec. The focus back then was on the BMT rooms because we knew they were not up to spec. There was no reason to think there was anything wrong with the rest of the ward.

513. The issues with the duct work were fixed and all of the chilled beams were

cleaned. Onsite construction was a risk and clinicians were aware of that. The measures which were put in place to deal with those issues were water dampening methods and the use of prophylactics. After these measures were put in place, there were no subsequent infections. It felt like we had a localised explanation and it was resolved.

August 2016

514. Nature:

VRE colonisation – increased incidence. VRE is Vancomycin-resistant enterococcus.

- Enterococci are organisms that people carry in their gut but they sometimes became resistant to antibiotics. Antibiotic resistance is something that we worry about because there are limited treatment options.
- We screen certain high-risk populations for this organism such as renal and haematology patients. I have found it to be a marker of environmental cleanliness and infection control practice. Usually, when we see an increase, it is due to one or both of those things. We had a lot of issues with it in an older renal unit in the Western Infirmary and that was due to a very cramped environment, insufficient cleaning and poor practice. It is not so much linked to the fabric of the building but more to do with cleanliness and insufficient space/storage
- It's appearance was something that surprised me because in the renal unit in the QEUH we had much more space and more single rooms, there was no clutter. In this children's ward we were seeing more.
- Following a visit to the ward, its appearance was no longer a surprise. There were frequent issues with cleaning, particularly high-level dust with the chilled beams. There were also issues with the Hickman lines. They had a dedicated Hickman line nurse who had retired. The surgeons had started using a new line type without any sort of training around it. I felt the explanation for VRE was practice and environment.
- I did not know about the ventilation at the time which could have been a factor in not only VRE but also in the viral gastroenteritis infections that were taking a long time to control. I do not know if this mix of dirty and clean air was happening at the

time. If you think about these organisms being gut organisms and the toilet flushing and extract vent of the toilet- was the dirty and clean air being mixed? It is possible that the ventilation exacerbated that outbreak and others.

Link to environment: Cleaning likely a factor, increased dust levels noted due to chilled beams
Which area: Ward 2A Sampling/testing: Nil Internal: IPC SMT External: nil
PAG/IMT: PAG
Response: enhanced environmental cleaning, ongoing surveillance
Control measures: cleaning as above, increased number of Gram-positive line infections noted, could prescribing be driving VRE - reviewed, discussed with surgical team who had started using a new line type - was the reason for an increase in line infections due to inadequate training on a new product
Preventative medication: nil

515. I felt infection incidents were occurring more than I would expect and also taking longer to resolve, despite the ward being a high-risk area. Children often have outbreaks of diarrhoea and vomiting which can be challenging to control. Despite this, I still felt there were too many. I was also concerned about the cleaning. There were a lot of issues with cleaning staff off sick and having to use bank staff. I felt the highest risk unit should have experienced staff. Often the regular cleaner was not around. I did have huge concerns about cleaning in the RHC and NICU. People did not anticipate the resources that the new build would take in terms of cleaning and estates.

516. I attended a few meetings about cleaning. I did feel that when I raised the issue they would listen and get extra resource in. For example, in the NICU, an external company came in to do a deep clean and a housekeeper was also employed While issues were addressed, the approach was passive rather than proactive. You had to raise the issue. But then things would slip back afterwards.

October 2016

517. Nature:

Serratia marcescens. Six cases.

- Serratia can survive well in dust and the general environment but it can also be found in water.
- In PICU, they had trough sinks in the corridor which was not a good place for them. They were positioned in the corridor next to the cardiac arrest trolley. Therefore, water could splash on to the trolley and its contents. They were not used that
- much either so presented a risk as a little used outlet.
- One of my first reactions was to remove them. This was when we first encountered issues with the drains which we thought was localised to that area. We decided to swab the drains. There were bits of plastic coming back up the drains and they were gunky. This was within the sinks within the six bedded bays in that unit. It was a busy PICU and I think staff were decanting things in the sink, which is common practice in all hospitals, but it is a problem as the drains will become colonised with bacteria which can be resistant. Decanting fluids etc down drains provides a source of nutrition for these bacteria.
- The trough sinks were not removed. I don't even know if it has been done to this day.

Link to environment: Highly likely. This cannot be proved definitively because we did not grow it in any of the samples we took. We are sampling a tiny area at a time different from when they acquired the infections. There had been a deep clean in between so the conditions were not the same. It was the same with the water. There were so many different environmental sources and products that these patients might have used. It was like searching for a needle in a haystack. It did not mean it was not there.

Again, there was an issue with cleaning and staffing issues. From what I saw in the PICU and NICU, they have pendants which are high up and difficult to access so

you would have to stand on a ladder to clean them. From speaking with domestics, there was some anxiety about doing this with children underneath them. So that was a neglected area. There would be a high level of dust gathering and coming down on top of things.

Which area: PICU

Sampling testing: Environmental surface swabs (negative), water sampling (other environmental Gram negative pre flush) patient screening samples

Internal: IPC SMT, AICC, BICC, HAIRT

External: HPS

PAG/IMT: PAG + IMT **(Bundle 1, Page 131)**
Response: Recommended removal of trough sinks

Control measures: Increased environmental cleaning, hand hygiene education and audit, identification and requested removal of little used outlets, review of backshift cleaning schedules to ensure cleaning complete, antimicrobial review, twice daily cleaning of sinks, six monthly water sampling, coordinated deep clean of bed bays, staff education re practice in relation to sinks (plastic identified in drains), disinfection of all taps and repeat water testing, review of BAL technique with feedback of findings

Preventative medication: nil

Concerns: Staffing levels reported as low, staff were not confident twice daily cleans were taking place. There was reluctance to discuss staffing issues but this is an important consideration.

Things did improve with control measures in place. They would deal with the

issues raised.

January and March 2017

518. Nature:
Serratia marcescens

Link to environment: highly likely

Which area: PICU

Sampling/testing:

Internal: IPC SMT, AICC

External: HPS

PAG/IMT: PAG

Response: Request removal of trough sinks again

Control measures: Equipment and environmental cleaning, education on hand hygiene

Preventative medication: nil

Concerns: Issues with cleaning of pendants and access to those, trough sinks still to be removed – delayed action, incubator lamp lights dusty, IPCT to meet with facilities manager to discuss cleaning concerns, not enough mops available, floors being cleaned with paper towels

519. We thought this outbreak of Serratia marcescens was linked to the previous outbreak. Once environmental organisms get a foothold, they are very difficult to get rid of. They can become endemic in that area. Things did improve with extra cleaning and control measures.

March 2017

520. Nature:
Elizabethkingia miricola bacteraemia, 3 cases
Link to environment: highly likely, known waterborne organism. Again, cannot get a definitive link because of difficulty in testing.
Which area: Ward 2A

Sampling/testing: water testing, sampling of chilled beams and vents. This specific testing was carried out because of condensation on beams and vents. The organism E miricola was first discovered in condensation. That is why I went beyond just testing the water from outlets.
Internal: IPC SMT, AICC

External: HPS

PAG/IMT: PAG **(Bundle 2, Page 16)**. An IMT was not required because, although there were three cases, one of the cases had this organism back in Yorkhill. That took it to two cases. Both patients were well, so we rated it as a green at HIATT. Therefore, it was just a PAG that was required.
Although we did not have an IMT, it would still be reported to HPS. I think we had managed to deal with all the actions within the PAG. At this point the infection control team were worried about the overall picture of incidents. We were concerned about the number of bacteraemia and outbreaks. Around about that time, it was mainly gram-positive organisms so we were worried about the lines. Lines as well as the environment were my main concern around infections in

Ward 2A at that time.

Response: review of vent/chilled beam cleaning and maintenance

Control measures: increased cleaning, ongoing surveillance

Concerns: Chilled beams – concern this organism was from condensation although testing was negative. Staff had reported condensation and high temperatures/humidity

521. Nature:
Increased incidence of line infections.
Link to environment: at this stage felt not to be as Gram positives
Which area: Ward 2A

Sampling/testing

Internal: IPC SMT, AICC

External: HPS

PAG/IMT: PAG **(Bundle 2, Page 22)**

Response: request for vascular access group

Control measures: vent cleaning, review of decision to change lines, quality improvement group established, and review of practices on ward with feedback of issues identified
Concerns: change of product without training/education, loss of vascular access nurse

522. By way of background, it should be noted that in August 2016, there was an issue with line infections in Ward 2A, which I raised with Jamie Redfern and Jennifer Armstrong.

Initially, it was predominantly a skin related bacteria which, at the time, coincided with a change in the type of line they were using. I raised my concerns with the surgeons about the introduction of a new line without training staff how to manage the line because I thought that might have been a factor.

523. In early 2017, we started to see a couple of environmental organisms causing line infections along with the skin flora. At the time, the ICNs had been doing regular reviews of Ward 2A and they were concerned about the cleanliness of the environment. We also had quite a few outbreaks related to gut organisms that had been difficult to control.

524. The number of outbreaks and the focus on that particular ward, Ward 2A, was taken seriously. I had discussions with Jamie Redfern, who, in turn, had discussions with Jennifer Armstrong. They wanted to set up weekly multidisciplinary team meetings with the clinical team and with Infection Control to review the situation on the ward. The plan was that the output from the meetings would be escalated to Director level. I then went off sick in the third week of June. I don't know what happened to these meetings.

525. Nature:

Increased fungal infections. 3 patients with Aspergillus since July 2016 (this IMT included the case identified in 2016)

Link to environment: strongly suspected, link to a new chemo trial was explored as Lothian had experienced an increase in cases and this was a hypothesis, Prof Gibson felt not enough evidence to support this.

Which area: Ward 2A

Sampling/testing; air sampling, water sampling,

Internal: IPC SMT, AICC, BICC, HAIRT

External: HPS

PAG/IMT: IMT **(Bundle 1, Page 35)**
Response: removal of mouldy ceiling tiles

Control measures: face masks when leaving ward for patients, control of source, increased cleaning, drafted a water damage policy in response

Preventative medication: antifungal prophylaxis for acute lymphoblastic leukaemia patients

Concerns: concerns re cleaning and management of water leaks

526. Of the three cases, one had been included in a previous IMT. However, we had found a reason for that case in the mouldy ceiling tiles. Water leaks do happen, so we had a localised reason for it rather than an overarching one. Again, there was a response with the removal of the mouldy ceiling tiles and other control measures. At this point, I drafted the Water Damage Policy in response to this **(Bundle 27, Volume 7, Page 239)**. It was not put in place until Marion Bain came along. I was worried about the number of water leaks and people not knowing how and when to report these. It should be the responsibility of Estates when a leak is reported. If they find things, then that should be reported to IC. With the measures that were put in place, the incidence of aspergillus resolved itself. At that point, I did not have any indication of a wider problem with mould within the unit. I was concerned about water leaks in the hospital because they were happening elsewhere. I remember seeing the pipes within the adult BMT

unit and they were corroded. They should not have been so corroded given it was a new building. I commented on this.

April 2017

527. Nature:
Viral gastroenteritis, cases of **Astrovirus** and **Rotavirus** (this IMT was initially chaired by [redacted] with support provided by me)

Link to environment: possible – cleaning a factor. Abnormal ventilation strategy may have prolonged this incident.
Which area: Ward 2A

Sampling/testing

Internal: IPC SMT, AICC, BICC,

External: HPS

PAG/IMT: IMT **(Bundle 1, Page 40)**

Response: Increase domestic hours, deep clean by external contractor

Control measures: enhanced cleaning, education – hand hygiene, review of practice

Preventative medication: nil

Concerns: poor level of cleaning, nursing staff shortages, nursing staff resource struggling to implement IPC precautions at weekends.

528. This incident was another example of gut infections that were difficult to get rid of. I did not expect to see these viruses in April as they tend to be seen in the winter. However, sometimes we do have norovirus seasons that are all year round.

529. Nature:
VRE colonisations, may have been as a result of increased testing due to viral gastroenteritis outbreak

Link to environment: partial, cleaning a factor and again abnormal ventilation strategy may have contributed.

Which area: Ward 2A

Sampling/testing

Internal: IPC SMT

External: No

PAG/IMT: PAG **(Bundle 2, Page 34)**

Response: Action plan developed for VRE and bacteraemia including review of aseptic technique, review of environment, prescribing, lab monitoring, education, research/product review
Control measures: as for GI outbreak above

Preventative medication: nil

May 2017

530. Nature:
Norovirus
Link to environment: cleaning felt to be a factor

Which area: Ward 2A

Sampling/testing: environmental samples

Internal: IPC SMT

External: HPS

PAG/IMT: PAG **(Bundle 2, Page 37)**

Response: follow-up cleaning issues with facilities dept

Control measures: Education for staff on SICPs, increased cleaning

Preventative medication: - nil

531. Between 3 March 2017 and 30 May 2017, we had 7 PAG/IMTs for Ward 2A. These were collated into a document by Susie Dodd, lead IPCN – summary of incidents and outbreaks on ward 2A **(Bundle 27, Volume 3, Page 626)**.

532. In terms of my experience as an ICD, the number of PAGs and IMTs were more than I had experienced in other jobs. In terms of the ward and patients that were within it, it was worrying that there were so many incidents in a brand new hospital. The number of incidents supported the concerns that my colleagues and I had about the building. However, the difficulty was that it was suggested

that the reason we reported so many incidents was that my triggers were too sensitive. A discussion about these triggers happened when I was off sick. They wanted to remove the triggers. Perhaps my colleagues could elaborate on this. I do not support this claim. I think all the incidents transpired to be outbreaks. We found issues and when we resolved them the outbreaks were controlled. .

February 2018

533. Nature:

VRE – 13 cases, 12 colonisations, one infection

Link to environment: partial and linked to cleaning

Which area: Level 4 renal wards QEUH 4A/D

Sampling/testing: environmental samples

Internal: IPC SMT

External: HPS

PAG/IMT: PAG **(Bundle 2, Page 84)**

Response: follow-up cleaning issues with Facilities Department

Control measures: increased cleaning, focus on hand hygiene, antibiotic review, arrange deep clean of wards

Preventative medication: nil

May 2018

534. Nature:
Acinetobacter baumannii, predominant strain linked to cluster in Oct/Nov 2017, 7 cases
Link to environment: Highly likely linked to ventilation, cleaning also possible factor

Which area: PICU

Sampling/testing: environmental swabs, water sampling negative.

Internal: IPCT SMT, AICC

External: HPS

PAG/IMT: IMT **(Bundle 1, Page 105)**

Response: Removal of trough sinks still not occurred.

Control measures: Staff education, enhanced cleaning, review of BAL practice, guidance for tracheostomy care, ensure cleaning of shared equipment e.g., ultrasound, drain cleaning, procedure trolley for BALS too close to sink – ensure distance
Preventative medication: nil

Concerns: staffing issue raised by clinical team

535. This outbreak persisted over a number of years and may be related to the ventilation issues within PICU. The ward was non-compliant with SHTM 0301. You can get airborne dispersal of Acinetobacterh so it is possible the reason it was persisting was due to ventilation. We put together a document to rectify those issues. I believe they have now been rectified but I do not have the exact data.

536. Nature:

VRE, 6 hospital acquired cases, colonisation

Link to environment: partial, cleaning a likely factor

Which area: Ward 2A

Sampling/testing

Internal: IPC SMT

External: HPS

PAG/IMT: PAG **(Bundle 2, Page 91)**

Control measures: environmental and equipment cleaning, transmission-based precautions

Preventative medication: nil

July 2018

537. Nature:

Aspergillus

Link to environment: Likely but may have been acquired out with hospital setting. It was a child who was immunosuppressed but they were not always in the ward. I advised the child should be wearing a mask when out and about.

Which area: 2A

Internal: IPC SMT

External: HPS

PAG/IMT: PAG **(Bundle 2, Page 105)**

Response: ongoing surveillance

Control measures: patients to wear a mask if leaving non HEPA environment

Preventative medication: nil

November 2018

538. Nature:

Pseudomonas aeruginosa

Link to environment: Possible. No link was made. It was found in patients who had had appendectomies. However, there were more than would be expected. It is often an indicator of advanced appendicitis. There will be a background rate. But I thought it was too many in an ongoing water incident. There were issues with practice that we found such as baby wipes being used. We found drains blocked with surgical nail picks. Surgeons use them to scrub and had not been provided with anywhere to put them. I was concerned about stuff coming back up through the sinks.

Which area: RHC appendectomy patients linked to operating theatre 6

Sampling/testing: Water testing, equipment and cleaning products sampled; drains sampled (pseudomonas found in one)

Internal: IPC SMT, AICC

External: HPS

PAG/IMT: PAG **(Bundle 2, Page 115)** + IMT **(Bundle 1, Pages 216 and 231)**

Response: drains cleaned

Control measures: staff education – drains blocked with surgical nail picks and other objects, review of theatre practice, baby wipes used to clean patients post-operatively were multiuse – change to single use

Preventative medication: nil

539. After control measures were put in place, I felt the incident was resolved. We were not able to link it through sampling and typing but we definitely found issues with practice.

2019

540. Nature:

Mucor
Link to environment: highly likely

Which area: Critical care QEUH

Sampling/testing: Air sampling, environmental swabs

Internal: IPC SMT, AICC, BICC

External: HPS

PAG/IMT: IMT **(Bundle 27, Volume 7, Page 581)**

Response: remediation of dialysis point plumbing

Control measures: removal of water damaged materials

Preventative medication: nil

541. Dr Peters did the first IMT for this incident. Mucor can be related to ventilation but in this particular room we found a dialysis point that had been leaking. The plumbing was abnormal and it was linked to a dirty sluice. Again, this was an issue with workmanship and it was not the first time there had been issues with a dialysis point. The issues were all rectified. There was one other person effected in a different part of the unit. Mucor spores are really buoyant. They can travel far and wide. In my view, the leak explained the two patients who were the subject of the incident. It was another indicator of there not being sufficient attention to detail.

Stenotrophomonas

542. Before I went off sick in 2017, I believe there had been two cases of Stenotrophomonas that we investigated. I had a discussion with Jennifer Armstrong and Jamie Redfern about Ward 2A and the plan had been to have a weekly meeting to look at the situation more closely. I do not know what happened during the period I was off sick. Had I been there I think we would have gone ahead and investigated it more. However, I don't believe the meetings were held. I don't know why they decided not to hold them. I hope it is not because they thought my triggers were too sensitive.

543. When I returned from sick leave in January 2018, there were concerns from microbiologists about Stenotrophomonas. [redacted] was particularly concerned because [redacted] had been asking for, but not receiving, water testing. Christine Peters also came to me concerned. When I came back off sick leave, it was a matter of weeks before the water incident.

544. Towards the end of 2018, when the water incident had calmed down and I had the DMA Canyon reports, I went through the generic Infection Control email inbox from 2017. I could see all the incidents and all the communications around the Stenotrophomonas incident when I was absent. It occurred to me, from having read the DMA Canyon reports, that the problem with the building had been there from the minute it opened. Although we had focused on the infections in 2018,

the contamination went right back to the beginning. I, therefore, asked our surveillance team to pull out the epidemiology for me, and I received data from 2015 onwards. I also looked back at the Gram-negative blood stream infections.

545. I did not have discussions with Prof Brenda Gibson about Stenotrophomonas until towards the end of 2018. She said there had been [redacted]. She said that to me several times. She would repeatedly talk about one child in particular. I was invited to the Christmas lunch in the unit in December 2018 by Prof Gibson. Prof Gibson and Dr Anna Marie Ewans asked me to go to their office. They brought up a spreadsheet of patients they were worried about that had bacteraemia they thought was related to the water incident.

546. I have my own separate database so I asked Ann Kerr who was our surveillance lead, to download all the bacteraemias so I had a separate database. I was working through those. This was towards the end of the water IMT.

547. I also mentioned that I was concerned about patients affected by the water issue before the 2018 incident was declared, including some deaths, which I felt required investigation. I felt there was a duty of candour to inform other patients and families of waterborne infections. The DMA Canyon reports had confirmed that there were issues with the water system from the outset and the epidemiological data I had obtained from our surveillance team highlighted 2017 as having more cases meeting the case definition than the 2018 incident itself.

548. In early 2019, I discussed my concern with Dr Armstrong that there was a duty of candour issue and that there had been other children who had acquired infections from the water system. I told her we needed to review them and we needed to decide what we were going to do in terms of our duty of candour. Dr Armstrong told me to contact Dr Alan Mathers who set up a meeting with myself and Prof Gibson. I think the database that Prof Gibson showed me was made available to Dr Alan Mathers. Subsequently, Prof Gibson and I met with Dr Alan Mathers.

549. The meeting with Dr Mathers took place on 1 March 2019. An SBAR was produced by Dr Mathers and sent to Dr Armstrong that same day. He blind copied Prof Gibson and I into the email to Dr Armstrong **(Bundle 13, Page 973)**. I felt he had taken our concerns seriously. He had produced the SBAR that night and he immediately escalated it to Jennifer Armstrong.

550. In the SBAR, Dr Mathers highlighted that the background to the meeting was to establish what to do next following a look back at positive blood cultures within the Ward 2A cohort since the hospital opened. Two issues were identified and discussed: 1) A series of cases demonstrating a theme of waterborne organisms; and 2) that earlier identification may have been possible.

551. Dr Mathers requested two actions: first, that Prof Gibson arrange a review of these cases, and secondly, that Dr Armstrong explore with me whether there was an opportunity missed to identify the problem.

552. I think Dr Mathers was asked to produce the SBAR because he was the Head of the RHCG and that it should be his role to investigate that.

553. In relation to the action that Dr Armstrong explore with me if there had been missed opportunities to identify the problem, Dr Armstrong never really followed up on that with me. This highlights a problem. Although Dr Armstrong is the Medical Director, she is also the HAI Executive Lead. There is a conflict of interest between these two roles because ultimately, she had responsibility for Infection Control, so if things were going wrong when I was off sick, she was the HAI Executive Lead. I suspect that is why it was not followed up with me. I am not aware of anything being carried out by Dr Armstrong in relation to this.

554. In my view, in 2017, my colleagues had identified the problem but their concerns were not acted upon by IPCT senior management. I recall meeting Dr Mathers in the hospital atrium a few weeks later when he informed me that there was to be

a group established to review the historical cases and this would comprise of Sandra Devine, Prof Brian Jones, and Dr Iain Kennedy. At a meeting with Dr Armstrong, I expressed concern about this approach because these were the individuals to whom my colleagues had raised concerns in 2017 about the blood cultures. They should not have been tasked to review those cases. I suggested that a microbiologist from GRI who was not involved with these cases should be included and Dr Armstrong agreed to discuss this with Dr Rachel Green, Chief of Medicine for Diagnostics, but I did not get a follow-up from that. I never saw any output from this group and do not know what happened with it.

555. On 27 July 2019, Prof Gibson emailed Dr Mathers to inform him that Dr Chaudhury, Consultant Haematologist, had reviewed the historical cases **(Bundle 8, Page 112)**. She had identified three deaths, details of which were provided in the email. There was one case that she requested should have an independent review; a child from 2017 who had Stenotrophomonas bacteraemia and had sadly passed away.

556. There was no response to that email and Prof Gibson sent a further email prompt to Dr Mathers, Jamie Redfern, and me on 12 August 2019 **(Bundle 14, Volume 2, Page 559)**. I did not see a response to that email either. I was concerned that Prof Gibson and I were not being taken seriously and that there appeared to be no appetite for the organisation to initiate an urgent review of these historical cases and undertake a duty of candour exercise. As a result, I discussed this issue with Prof Fiona McQueen at a meeting on 4 September 2019. I will discuss this meeting further, later in my statement.

557. I have been shown a report that reads, ‘Infection Control instances in Ward 2A during 2017”. I have never seen this report before. I do not know if it is something which arose after the meetings. None of my colleagues know about it - I am sure they would have spoken about it. Clearly some of my colleagues were involved in 2017, so they should have been asked for information if they were going to produce a report. I think the key person to speak to about this would be [redacted]

[redacted]

CHAPTER 11: Incidence of HAIs on Wards 2A and 2B, 2018

Events on Wards 2A and 2B between January and June 2018

558. The Inquiry should be aware that the minutes of the IMT should be read alongside the following:

i. All minutes of the water review meeting **(Bundle 10 and Bundle 14, Volume 2, Page 211)**

ii. All minutes of the WTG and associated papers/reports

- Potable water system outline sanitation paper, April 2018 **(Bundle 27, Volume 7, Page 269)**
- Chlorine dioxide proposed water treatment protocol **(Bundle 27, Volume 7, Page 273)**
- Horne optitherm thermostatic mixing tap paper, 19 July 2018 **(Bundle 18, Page 1028)**
- Proposed sequence of events, 13 June 2018 **(Bundle 27, Volume 7, Page 279)**
- An assessment of the suitability of Clorious 2 for the treatment of hot and cold potable water systems in QEUH, 30 June 2018, Tom Makin **(Bundle 27, Volume 1, Page 503)**
- Manual vs automatic flushing of taps, 1 July 2018, Tom Makin **(Bundle 27, Volume 1, Page 498)**
- Susanne Lee report **(Bundle 8, Page 134)**
- Intertek report **(Bundle 6, Page 632)**

iii. All minutes of the Ward 2A/B progress meeting **(Bundle 27, Volume 7, Page 311)**

iv. All minutes of the Executive Control Group

v. Notes from meetings with haemato-oncology clinicians, infection control, facilities and senior management, 11 June 2018 **(Bundle 27, Volume 7, Page 286)**

vi. Report on water contamination incident at QEUH/RHC, May 2018 for submission to Clinical and Care Governance committee **(Bundle 7, Page 3)**

vii. Updates sent from Jamie Redfern to senior management colleagues (example from 1 June 2018 provided in 2018 IMT docs (3))

viii. IPCT briefing paper to Medical Director, March 2018 **(Bundle 14, Volume 2, Page 77)**

ix. Debrief meeting minutes, 15 May 2018 **(Bundle 14, Volume 2, Page 211)**

x. Full incident team management report, April 2018 **(Bundle 8, Page 53)**

xi. Meeting held 23 August 2018 to discuss Chlorine dioxide plant installation, operational issues **(Bundle 13, Page 940)**

xii. Meeting to review research on waterless clinical environment 12 October 2018 **(Bundle 13, Page 945)**

xiii. Infection control advice regarding lack of water availability during chlorine dioxide dosing in QEUH 16 October 2018 **(Bundle 13, Page 947)**

xiv. SBAR – control of toilet plume by fitting toilet seats, 22 October 2018 **(Bundle 13, Page 949)**

xv. Morris and Spottiswood drainage report **(Bundle 13, Page 952)**

xvi. Notes from haemato-oncology meeting to discuss twelve month use of ward 6A/4B, 19 December 2018 **(Bundle 13, Page 923)**

Phase 1: February to April 2018

559. On 5 February 2018, a Problem Assessment Group ("PAG") meeting chaired by the on- call ICD that day, Dr Christine Peters, was held to investigate a case of Cupriavidus pauculus bacteraemia **(Bundle 2, Page 82)**. It was noted that this was the third case since February 2016. Three was too many cases as it was an unusual organism.

560. At the time of the first case in 2016, a link had been made with the aseptic pharmacy unit. There had been positive water results and, a patient case and

water result had matched on typing. In February 2018, all three cases were noted to have links to the aseptic pharmacy unit but Cases 2 and 3 had also been patients in Ward 2A. Therefore, an action from this PAG was to test water from both the aseptic unit and Ward 2A. Initial results revealed negative results from the pharmacy but the presence of Cupriavidus in outlets (taps) from the treatment and preparation rooms on Ward 2A. These sinks were immediately placed out of use. At a subsequent PAG on 19 February 2018, it was agreed to undertake further water testing of taps and showers in patient rooms. On 27 February 2018, water testing results confirmed the presence of Cupriavidus in patient rooms. These rooms were taken out of use and plans were made for chemical dosing of the water with silver hydrogen peroxide.

561. On 1 March 2018, I was unable to hold an IMT due to adverse weather conditions (the "Beast from the East") but produced a summary report which was sent to key individuals. (See email dated 1/3/18 in 2018 IMT docs (3)) **(Bundle 14, Volume 2, Page 75)**. I escalated the incident to HPS as a HIIAT red before holding an IMT the following day.

562. The first IMT was held on 2 March 2018 **(Bundle 1, Page 54)**. This was a complex and evolving incident which, from an IMT perspective, was managed in three phases. Phase 1 was between February to April 2018 and was concerned with positive water results from outlets. Phases 2 and 3 were in May to June 2018 and August to September 2018 and were concerned with the drainage system. Issues with the ward continued to emerge post decant when problems with ventilation and significant mould were identified.

Initial hypothesis

563. During Phase 1, the initial hypothesis was that the outlets were the source, e.g., taps, showerheads. This was based on the pre and post flushing water results and discussion with experts (see notes from teleconferences March 2018 in pdf advice from external agencies 2018) **(Bundle 14, Volume 2, Page 105-109).**

Initially, the storage tanks tested negative, further supporting the conclusion that it was an outlet issue.

564. There is no guidance about how to deal with Cupriavidus in the water system. We, therefore, reverted to guidance for pseudomonas as it is very similar in how it behaves in water systems. If you look at that guidance, there is a section on water testing where they advise that you take pre and post flushing samples. A pre flushing sample would involve going to a tap early in the morning before anyone has used it and taking a sample from that tap. You then flush it through for a couple of minutes and take a post flush sample. That gives you a clue as to where the issue is in the system. If you have a tap that has been sitting overnight unused you are likely to find a level of bacteria in the water because there has been stagnation. We know that you see bacteria in hospital water systems. They are not sterile. If you then flush that through for two minutes and the problem goes away that suggests it is localised to that tap. If you get the same results post flush then that suggests there is contamination much further back. You cannot resolve this from just flushing locally. The clues that we got were that most counts were coming down post flush. That told us the taps were the issue. To back that up, the initial storage tanks we tested way back in the system were negative. There was discussion through teleconferences with Peter Hoffman and various others over that weekend in March where they agreed that it was likely an issue peripherally with the taps and that was the source.

565. The initial plan was to deal with the taps themselves. That was largely done in connection with advice from the experts. These organisms like oxygen, so that is where they tend to be found. I was particularly concerned with the flow straighteners. I did not think they should be in those taps. From the outset, I was worried they were the issue. That is why at the very early IMT we decided we would take a tap apart and send the components to microbiology to test them. The results of this are included in the full report **(Bundle 19, Page 174)**. It was Christine Peters and a colleague Hannah Soulsby who did all the work. They found the components were heavily contaminated with Cupriavidus and various

other organisms that we went on to find in the water. It became apparent as we were going through that it was widespread contamination. That then becomes very technical and the measures we needed to put in were very technical. Therefore, rather than having busy clinicians such as Prof Brenda Gibson sit round a table and discuss that, we separated with the WTG and employed experts to come into that group. The water review group meetings and investigations continued with a number of external agencies and external experts supporting this work. Minutes from these meetings and various reports are available in the pdfs 'water review meeting April-July' **(Bundle 10)**, 'water review meeting Aug-Dec **(Bundle 10)**', water review meeting 2019' **(Bundle 10 and Bundle 27, Volume 9, Page 94)**, '2018 IMT documents 1 and 2 **(Bundle 27, Volume 9, Pages 91, 93, 97)**', reports are available in pdfs 2018 IMT documents 1 and 2.

566. In addition to Cupriavidus, we detected five cases of Stenotrophomonas maltophilia bacteraemia and one of pseudomonas fluorescens. Water testing was subsequently expanded to include all Gram-negatives and not just Cupriavidus, as these organisms are recognised waterborne pathogens.

Control Measures

567. Initial control measures during Phase 1 were:

- Three separate doses of silver hydrogen peroxide (Sanosil) were delivered between 2 and 16 March 2018.
- Showers and taps on the unit were placed out of use and patients were provided with wipes for hygiene purposes.
- Staff undertook hand hygiene followed by the use of alcohol gel.
- All patients were given sterile water for drinking.
- Bottled water was used for washing and tooth brushing unless the patient was a BMT patient where sterile water was used as usual.
- Portable sinks were sourced and installed on the ward. These were stand-alone units and they ensured a supply of hot water.

- Ongoing surveillance of cases was established by the infection control team.

568. In addition to the water supply, you have to consider how the water is getting to patients. We had to target all potential routes of transmission. Therefore, we had to make sure the surrounding environment was clean by taking the following measures:

- Twice daily chlorine-based detergent (Actichlor plus) cleans were undertaken.
- Increased cleaning took place on the unit and there was intensive input from the IPCT in relation to hand hygiene, Standard Infection Control Precautions ("SICP"s), Transmission Based Precautions ("TBP"s) and central venous catheter line care management.

569. It became apparent that there was a wider issue with the water. The silver hydrogen peroxide dosing, which had previously worked in the aseptic pharmacy, was not giving us the results we wanted. I began to think we would need to decant the ward to the neighbouring ward, Ward 2B, so we could use higher doses.

570. We started testing the water in Ward 2B and other wards in the RHCG and QEUH. They had positive results, which indicated to the IPCT that there was a more widespread issue. When it became apparent from repeat testing that Sanosil was proving ineffective, point of use filters ("POUF"s) were fitted. These were placed on all outlets in all high-risk units and along the haemato-oncology patient pathway.

571. Quite early on in the process, I, along with colleagues, came to the conclusion that we would need to use chlorine dioxide to treat the problem. I recommended that to Jennifer Armstrong and others. In fact, I wrote a paper with this recommendation **(Bundle 27, Volume 7, Page 494)**. I felt the Board were slow to get things underway and should have progressed matters faster. I felt they were waiting too long for external reports.

572. At this point, my initial worry was that the taps had come to us contaminated. We knew it was a modular build. Estates colleagues had told us that taps had been stored outside before being installed. My concern was that the contamination had come from the taps and gone back into the system. I did not think that the filtration was not happening at that point. If I had had sight of the DMA Canyon reports at the beginning of 2015, I would not have opened the hospital. If I had had sight of them at the beginning of the IMT, then we would have got things done a lot faster **(Bundle 6, Page 122)**. There was a lot of wasted resource and a lot of wasted discussion. If we had had that report, we would have known what was going on. We would still have required the WTG but there would not have been a need for all the discussion about the testing we were doing.

573. By the time I did have the DMA Canyon report in June/July 2018, the decision on the way forward had already been made. We had already come to that conclusion ourselves.

IMT 6 March 2015

574. In this minute, I make comments that I had reported concerns to the highest level in the Board and HPS over 2 years ago **(Bundle 1, Page 56)**. I have been asked whether the fact that we are in this position in 2018 is a reflection of the Board not putting in place water testing at that time 2 years previously. In terms of water testing, as at 2015, hospitals in Scotland were only obliged to test for legionella. They would test for legionella if they had a defined high- risk unit, historical issues, or a chlorine dioxide system. With regards to any other bacteria, such as pseudomonas, Scotland went down a different route from England. The Water Group decided we would not follow suit and we would not do regular testing for pseudomonas or any other bacteria. Therefore, in 2015, the expectation was that the Board would test for legionella, apart from during the commissioning process.

575. In April 2016, I was concerned about the flow straighteners. Given their presence in the hospital, I suggested that we start testing for pseudomonas. We started to

do this in the high-risk units such as the NICU, then I went off sick. Other than that, we were not routinely testing for organisms unless an ICD asked for it, e.g., with Stenotrophomonas, [redacted] asked for enhanced water testing.

576. I don't think we could say that the Board was not doing sufficient water testing as they were following national guidance. However, what they were not doing was showing us the results when we asked for them. In 2015, we did not see the abnormally high TVC counts and legionella results. I don't know who did the TVCs, but HPS reported them. I don't know which lab handled them. The legionella testing would have been carried out by DMA Canyon. I felt people were taking concerns seriously in the IMT. They couldn't really ignore the concerns because we had positive water results.

IMT 19 March 2018

577. I told the meeting it is not unusual to see different strains of bacteria in water incidents. Biofilms can form in taps, showerheads and pipework **(Bundle 1, Page 70)**. A biofilm is a complex community of bacteria and fungi. It is like a slime that will line the pipes and the taps. Conditions conducive to the growth of one strain of bacteria will inevitably be conducive to the growth of other strains and it would not be unusual to see different strains where biofilm is implicated. In a biofilm, it is likely there are multiple strains. We were seeing multiple types of Gram-negatives and different strains, which told me there was an established biofilm. This has been reported in other environmental incidents. This is not necessarily a red flag for the whole system; the problem could be localised to biofilm in a tap. The tap had a flow straightener on the end with lots of components and grooves which is perfect for bacteria to stick to. If it was not subject to regular cleaning and maintenance, then this could explain the presence of biofilm. This was confirmed by the Intertek report.

578. At the time, we believed the cause could be complex biofilm but be localised to the taps. As things progressed, we found that organisms were further back in the

system. People volunteered information at IMTs that the pipework had been exposed. We have pictures of the pipework lying open to the elements. During installation, the pipework should be capped off at both ends, but it was not capped off, so everything was being blown into the pipework and contaminating it. In a new build, you would expect the system to be flushed through to prevent biofilm. Inevitably, over time you would have a degree of biofilm. I cannot say exactly how long it would take to build up but you would not expect extensive biofilm in a new build. **(Bundle 27, Volume 2, Page 47)**

579. The presence of different strains suggests that there is an environmental source and not cross transmission between patients where you would expect to see the same strain. A lack of cross transmission does not provide comfort, the aim being to prevent HAI via any route.

- IPC planning for Ward 2A children housed in other areas of the RHCG

580. In the course of the 19 March 2018 IMT, there was discussion of the IPC planning and control measures for immunocompromised patients in Ward 2A and housed elsewhere in the RHCG. I have been asked whether this operated effectively. Regardless of which ward patients are admitted to, standard infection control precautions should be adhered to, and transmission based precautions should be put in place should patients have an infection. What other wards in RHCG did not have was specialist ventilation for high risk haemato-oncology patients, although there were some PPVL rooms outwith Ward 2A. One of the challenges for staff was keeping track of where Ward 2A patients were either admitted to, or boarded to, prior to discharge to ensure that water control measures were in place.

- Discussions with external agencies

581. Also discussed at this meeting was the input from the Public Health, HPS, HFS and English counterparts. Two teleconferences took place on 17 and 18 March 2018 with external agencies. Minutes and email summaries are provided in the

pdf entitled ‘Advice from external agencies 2018’.

582. The meeting on 17 March was chaired by Dr Sonia Scott, a Public Health Consultant. Minutes are available. The key discussion points were:

- Organisms found are most likely to colonise biofilms close to the air/water interface
- Multiple positive samples likely to reflect common environmental conditions and cross contamination rather than a point source
- Plastic piping and flow straighteners may promote biofilm growth
- Need to pay attention to routes of infection of patients from affected water
- Control measures were discussed at this early stage including point of use filters dosing with chlorine dioxide and exploration of alternative taps

583. A further teleconference took place on 18 March 2018 chaired by Dr Armstrong, notes and actions were circulated to senior management, Estates and press office colleagues. Updates were provided on patients, control measures and communications **(Bundle 14, Volume 2, Page 107)**.

IMT 21 March 2015

584. At this meeting, it is noted that I informed the group that the HPS algorithm had been invoked **(Bundle 1, Page 75)**. This refers to the National Support Framework which can be invoked by the Scottish Government HAI /AMR Policy Unit or by an NHS Board to optimise patient safety during or following: any healthcare incident/outbreak(s)/data exceedance or HEI inspectorate visit/report **(Bundle 27, Volume 1, Page 665)**.

585. HPS lead and coordinate all national activity and communicate with the Scottish Government HAI/AMR Policy Unit accordingly. HPS will also provide support with a situational needs assessment, literature reviews, data analysis and site visits. They can access expertise from PHE if required.

586. I have limited experience of this framework. My only comment, as IMT chair, is that during the incident there were lots of questions being asked with strict deadlines for response. Responding to these questions whilst trying to manage an incident can be resource intensive and it may have been more appropriate for members of the HAI policy unit to attend IMTs in this instance.

587. The use of the HPS algorithm and the request for national support did not have any impact on the way I chaired an IMT. The IMT would be run as normal. It does involve a lot more communication. A lot of questions come from Scottish Government via HPS which we have to respond to. It can be challenging to respond in a timely fashion during an IMT. This meant that we did feel a bit of pressure to respond to questions quickly. That was the only thing I noticed as different as the chair of the IMT.

588. There was extensive support received from HPS, HFS and Scottish Government. HPS/HFS attended IMTs and the WTG. Scottish Government held teleconferences. Minutes are available in a PDF entitled 'SG teleconferences 2018' **(Bundle 27, Volume 7, Page 290)**. Communications between Scottish Government and the Board summarising IMTs were via HPS, questions from Scottish Government would be relayed back by HPS. HPS provided epidemiological reports, a situational assessment and an incident report. There were also site visits. Learning from the incident was incorporated into the NIPCM. HFS provided a detailed technical report.

589. HPS were regular attendees at the WTG and HFS attended some of these meetings too.

590. The HPS input continued through the 2018 IMT. It was not a feature of the cryptococci IMT but featured in the 2019 water IMT. The government had knowledge from very early on about what was happening in the IMT. Jennifer Armstrong fed back to me that the government were very happy with the way the

IMT was being run. I have never come across a situation where the Scottish Government step in if an IMT is not being run properly but I would assume they could do this if necessary.

591. I expect this support would have happened even if the algorithm was not in place and HPS were not involved in the IMT given it was widespread contamination. We would have looked to HFS as more technical experts. With regards to the epidemiology, we would have gone to HPS to get the whole national picture. Senior management were very keen to compare with other hospitals. I don't think benchmarking is a very good idea in an environmental incident. However, they wanted to go down that route, and this meant we pulled in HPS for that information. I will speak more about the epidemiological reports further on in my statement but I had an issue with them because there was too much focus on the numbers being comparable to other places, when in fact, I was more concerned about the nature of the bacteria.

- Contingency plans

592. At this meeting, I raised the possibility of a contingency plan for housing the 50 or so immunocompromised children should the POUFs fail. I am not aware whether the clinical service developed a contingency plan at this stage, and whether we should have been looking at moving the children. I remember bringing it up and being faced by blank faces. For me, it was for senior management to decide. It was not something I would be involved in. In my view, they should exist, not only for infection incidents but for others such as floods, fire, acts of terror. This is out with my remit but I was surprised to learn none existed.

- Scottish Water

593. I have also been asked why the IMT did not accept Scottish Water's offer of assistance. Samples taken by Scottish Water were negative or within acceptable limits. Therefore, it was clear that the problem was with the hospital water system

rather than the supply. Experts in dealing with hospital water systems/ incidents were employed instead.

- Advice received from external experts regarding water testing with point of use filters on

594. In an email dated 21 March 2018, Peter Hoffman stated *"filters are an established technology with good production quality assurance. As long as water is not bypassing filtration they can be taken as effective. I can see no point in testing them."* **(Bundle 14, Volume 2, Page 114)**

595. In an email from Susanne Lee dated 21 March 2018, she states *"If PALL their validation data is extensive and as long as you are using the sterilising grade and they fit well they are fine to go ahead."* **(Bundle 14, Volume 2, Page 118)**

596. In an email dated 17 May 2018, Ian Powrie also referred to advice from Tom Makin and Susanne Lee with regards to this matter in addition to a report received from the filter manufacturers, PALL **(Bundle 14, Volume 2, Page 122)**.

597. Tom Makin was one of the experts we utilised once we knew there was widespread contamination. He was instrumental in the installation of the chlorine dioxide system. When we approached Susanne Lee and Peter Hoffman, I would not have expected them to suspect widespread contamination. No one in the UK had any expertise of Curpriavidus in the water system. As I mentioned previously, we reverted to pseudomonas guidance which pointed to the taps being the cause. Therefore, initially that is where everyone's focus was. I don't recall Peter Hoffman being concerned about more widespread contamination. I think by the time Susanne Lee came along we had a bit more information **(Bundle 14, Volume 2, Page 102-3)**.

598. Expert advice continued all the way through the incident and post closure of the IMT via the WTG. Advice was sought on a variety of issues including chlorine

dioxide installation, taps selection, retaining POUFs, and drain cleaning. Investigation into components of the water system was undertaken by Intertek and reports produced which included work on flow straighteners, drains, and findings in storage tanks. These reports have been previously submitted. The advice is extensive and reported in WTG minutes. Due to the technical nature of the incident, lots of discussion took place between Estates colleagues and external experts.

599. Extensive water testing continued after March 2018 and under the direction of the WTG. The aim was to determine the extent of the contamination and further develop hypotheses.

600. The issue was not thought to be resolved. It was clear that long term control measures would have to be implemented. Filters had made the water supply safe but did not solve the underlying issues within the system. The IMT was stood down in April 2018 and a debrief held. Minutes from the debrief and incident report are provided in PDF 2018 IMT documents (1)). **(Bundle 14, Volume 2, Page 211)** The WTG took over the investigation and control measures.

601. Discussion took place during Phase 1 with regards to a decant to enable further control measures to be implemented. It was decided to test other areas of the hospital to ensure that they were safe. It was during this testing that it became evident that there was a widespread issue and not one localised to Ward 2A.

Phase 2: May to June 2018

602. In May 2018, two PAGs were held to discuss an increase in cases of Stenotrophomonas and Enterobacter infections on Ward 2A **(Bundle 2, Page 97 and 102)** . The reason separate PAGs were undertaken was that Enterobacter is not typically found in hospital water supplies and alternative hypotheses were possible for this organism. An IMT was held as staff were reporting issues with

the drains which would explain the increased incidence of both Stenotrophomonas and Enterobacter.

603. The focus of the IMT, therefore, moved to the drainage system. Several abnormalities were detected in the drains and the view was that these were the likely source of patient infections. It was reported by staff that, when they were washing their hands, they could see visible black gunk coming back up the drain. This was in the clinical handwash sinks in the patient rooms. I felt this might explain the increase in Stenotrophomonas and Enterobacter.

604. Inspection revealed visible black grime, corrosion, pooling of water and occlusion due to excessive sealant. These conditions led to obstruction and stagnation within the drain, enhancing biofilm formation and reflux was occurring back into the sinks. As noted above, when we looked at the Zutec system, components had been used in the drains which were not supposed to be used. This links back to poor workmanship. The issue was linked to the overall water system but was a separate problem from the March IMT and one which required different control measures. It was an issue with the build itself rather than the water being contaminated. The mixture of both obstruction and stagnation caused the biofilm to form.

605. The focus for this IMT was the implementation of drain control measures. Corroded components were removed and replaced. Between April and June 2018, there were an additional ten bacteraemias with a greater diversity of bacteria seen. This was in keeping with drains as the source as you would expect to see this diversity. There was also a patient with a Mycobacterium chelonae infection which is rare and which comes from the water. This was discussed as a possible case at the IMT and reported to HPS and Scottish Government. This was another indication that there were issues with the overall contamination of the water.

606. The application of filters likely exacerbated the problem. They were quite large

and they decreased the space between the tap and the sink. This caused excess splashing which dispersed the black biofilm.

Concerns about governance of the IMT and communication

607. In May 2018, I became concerned about the pace of the implementation of the control measures. I felt it was too slow. I was also concerned about the governance of the incident. We had three different groups at that time: the IMT, the WTG and the Service/Clinical practice group. I felt that these would benefit from oversight. I was conscious that these three groups were not communicating with each other that well. There were a lot of conversations happening outwith the IMT. I was also concerned about routes of communication. People would make their own notes during the IMT and send them up the way, before the IPCT were able to put their notes together. I felt that, often, the wrong messaging, or mixed messaging, was going up to the top. I felt the escalation process was messy. I felt there was a risk of the wrong or incomplete information being passed on.

608. I think, as chair of the IMT, I should have been more involved in a lot of the communication. If you look at the guidance for Scotland, and the definition of an IMT, it is supposed to be independent and have a lot of decision-making ability. I did not feel that was the case and I felt that a lot of the communication and decision making was taking place at the level above me, but without including me.

609. IPC are the ones with the expertise and the ones who can best summarise. These concerns were discussed with Dr Jennifer Armstrong (emails provided in pdf entitled 2018 IMT documents 3) **(Bundle 14, Volume 2, Page 92)**. As a result, the Executive Control Group chaired by Kevin Hill was established **(Bundle 14, Volume 2, Page 95)**. It was confirmed at the first meeting that this group would review the three main areas of progress (i.e., the abovementioned three groups) and report jointly to the Medical Director and Chief Operating Officer. (See Executive control group pdf) **(Bundle 14, Volume 2, Page 240).** I

felt this group was not particularly useful because meetings were cancelled or never held. I would have expected to be at these meetings and did attend.

IMT 12 June 2018 **(Bundle 1, Page 119)**

610. I have been asked whether I was still in touch with external experts as at June 2018. As I have already mentioned, the WTG continued to meet throughout the period between March and June and I continued to correspond with Susanne Lee and discussed the drain issues with her. Details are in the pdf, see email dated June 10th **(Bundle 14, Volume 2, Page 124)**. Estates colleagues were in discussions with Tom Makin and Tim Wafer with feedback to the WTG. Later they attended some of the meetings and undertook site visits. HPS and HFS were involved with the WTG from the outset. There was significant input in relation to the installation of the chlorine dioxide system.

- NHS Lothian

611. Also discussed at this IMT were the questions from NHS Lothian. As per the minutes, *"New build in progress and some issues relate to this what are agencies doing to alert NHS Lothian. HPS are not doing anything at the moment until they know what the root cause of this incident. Going through the commissioning period have not requested HFS for advice. Are GG&C not obliged to alert NHS Lothian to potential problems? Jamie Redfern will speak to Kevin Hill to relate to Dr Armstrong (Director) so that a director to director conversation can happen. HPS are not obliged to inform other boards about their problems due to confidentially laws."*

612. I was concerned that information was not being shared at this stage. The agreed action was for senior management to take this forward.

613. I shared information with an NHS Lothian ICD on 5 July 2019 – see email entitled 'ICD building questions' **(Bundle 14, Volume 2, Page 539)**. After I resigned from

the ICD role, I was invited to a meeting with this ICD and the Medical Directors from NHS Lothian and NHS GGC. This meeting was cancelled without explanation.

IMT 18 June 2018

614. At this IMT, I comment that there would be a surveillance trigger for any future meetings. The water surveillance trigger that was agreed was **(Bundle 1, Page 132)**:

- A single case of bacteraemia which would be reviewed by an ICD. Depending on the organism, this would initiate a water safety checklist to be undertaken and possibly water sampling.
- Two cases of bacteraemias in a two-week period or 3 colonisations would require a PAG/IMT.

615. It is important to note that, whilst IMT meetings stopped, the WTG meetings continued to investigate the issues and implement control measures.

- Water Testing

616. Water testing continued after the IMTs ended under the guidance of the WTG and in response to the chlorine dioxide installation. Resource was an issue and my understanding is that Intertek assisted with this.

617. Drain samples did not continue. This is because drains collect wastewater and will always be contaminated and contain bacteria. It is not possible to have a sterile drain. The important thing was to remedy the structural abnormalities that were leading to reflux and aerosolization of material in drains.

618. Between May and June 2018, the drainage was being dealt with. The silver peroxide dosing had stopped by this point and the chlorine dioxide had not yet

been installed. We were cleaning the drains with a cleaning product called hysan. At this point, I did not have any concerns that the issues would continue. The filters were in place to supply a safe supply of water and we had measures in place for the drains. I was not expecting infections to come back. I felt that the IMT had served its purpose and had been carried out appropriately. I felt the WTG was going ahead largely appropriately and they took on the drain issues as well as the water system.

619. The last IMT took place on 12 June 2018 **(Bundle 1, Page 119)**. There was a huge amount of investigative work and experts around the table. I think my main frustration at that point was around drains. I could not get a view from experts what the best thing to do with drain and drain cleaning was. I felt they were being bound by guidance when we were in a situation where we needed to work outwith the guidance.

620. During the IMTs and interim periods, the water review and later technical groups continued to meet to progress investigation and control measures. Intertek were utilised to investigate various components of the system and produced reports on flow straighteners, drains and storage tank findings. Water testing continued with a view to determining the extent of the contamination and also to assess the efficacy of chlorine dioxide dosing. Other sources of water and components were considered at these IMTs, an options appraisal was undertaken for suitable tap selection and attention was given to showerheads, baths and water coolers. The DMA Canyon reports came to light in at the end of June 2018 and these shed light on the issues with the water system.

Hypotheses generated at the IMT throughout 2018

621. The hypotheses that were generated by the IMTs throughout 2018 were as follows:

- Routes of transmission to patients likely to be:
  - direct contact with water, e.g., hands, water splashing on to central line sites,

showering in contaminated water, or

- contact from a contaminated environment or equipment as a result of splashing, or contaminated hands of health care workers, or
- contact with contaminated sinks and surrounding environments due to biofilm disruption from drains

- Contamination of the water system possibly due to:
  - Retrograde seeding of the water system from contaminated outlets, low- level seeding from the incoming supply contaminating outlets, and the possibility of contaminated pipework at installation

622. Hypotheses for the drain problems were disruption and aerosolization of biofilm due to the application of filters on outlets where pre-existing structural abnormalities of drains were present.

623. Consideration was also given to the phenomenon of toilet plume and the potential role of the ventilation system abnormalities in the transmission of waterborne pathogens.

624. Almost certainly there was contaminated pipework at installation. There were images of the pipes uncapped. It wasn't low level seeding because there was a bypass of filtration so it's probably quite a high-level seeding and sticking on the outlet. I think that's been proven. We thought that the problem was that the tap was becoming contaminated and working back through the pipes – this is referred to as retrograde seeding. This was more unlikely but because we did not know about the previously identified issues we thought it was a possible explanation. Given the DMA Canyon report, I think it was bypass of filtration, uncapped pipes and issues at the other end with poor maintenance of taps, and no programme for exchanging taps or cleaning the flow straighteners. I think not having flow straighteners would have helped the situation, but there was still contamination at that side of the system. There were other factors, but I think those taps were particularly high risk and led to high counts of bacteria.

625. During the incident, investigations were undertaken by external agencies and reports from the time of hospital commissioning were accessed. These reports and investigations highlighted a range of issues dating back to the hospital opening in 2015 which included: elevated TVCs at the time of hospital handover, bypass of mains filtration, failure of temperature control, presence of dead legs, stagnation due to early filling of the water system, debris present in water tanks, installation of open-ended pipework, presence of flexible hoses, corrosion within the system, pressure testing of taps off site and suboptimal maintenance post-handover of the building. Components of the system were also found to be incompatible with silver/hydrogen peroxide.

626. More detailed descriptions of the incident can be found in the following reports;

- Intertek lab reports
- HPS situational report/HPS water incident report
- HFS technical report
- Paper entitled 'Investigation and control of an outbreak due to a contaminated water system identified following a rare case of Cupriavidus bacteraemia', Journal of Hospital Infection, Inkster et al, 2021 **(Bundle 6, Page 1236)**

Events relating to the i) Intertek and ii) DMA Canyon Reports

627. I have mentioned both the Intertek and DMA Canyon reports. I have seen both of those reports.

- Intertek

628. Intertek are an external water engineering consultancy. They issued two reports. An early draft was issued on 11 July 2018 which focused on the flow straighteners **(Bundle 6, Page 632)**. A complete report was issued on 4 October 2019 **(Bundle 6, Page 647)**. I got these reports as they become available because I was part of the WTG and it was a very useful resource. They

did a lot of investigation in their lab that we could not do in our own. They were not just doing water testing, but they were doing more investigatory work. They were very keen to look at the flow straightener component and how quickly the biofilm was becoming established on them. This is useful because it tells us about maintenance and how often flow straighteners should be changed if they are present. I do not think they should be present at all, because they are such high-risk components. From these reports, it can be seen how quickly the straighteners became contaminated, just in a matter of weeks. Key findings in the report were the contamination of flow straighteners and how quickly biofilm took to become established. They concluded that flow straighteners were a factor in the formation of biofilm.

629. Intertek also helped with the drain analysis. They took the drains apart and demonstrated corrosion and splitting of components. They tested for biofilm and could show that there was prominent biofilm there.

630. They also analysed debris found in the base of the raw water tank and on sponges found in the cold-water storage tank. Given the extent of the biofilm, it was felt that they had been there for at least two years. These findings indicated issues with the maintenance of the water system as sponges should not be found in a water tank. If the tanks had been regularly maintained, the sponges would have been detected before then.

631. They also carried out analysis of the thousands of water results we had collected. One of the things they highlighted was that they felt that the expansion vessels in the system were a high-risk component. When we looked at these in greater detail, the wrong type of expansion vessel was in the system. This was a higher risk component and should not have been there.

632. Overall, the work they undertook was very helpful in understanding the problems and implementing control measures. The report backed up our hypothesis and what we already knew. The flow straighteners had been largely removed

because we added filters to the taps and they could not be in place with a filter on. The issue with the sponges in the water tanks was something that had not been picked up. We guessed that was an indicator that maintenance was substandard and needed to be rectified. Therefore, the report confirmed contamination issues within the system.

- DMA Canyon

633. I was contacted at the end of June 2018 at 0830 am on a Saturday morning by Jennifer Armstrong, the Medical Director. She called me at home to tell me that she had been alerted to the fact that HFS had found DMA Canyon risk assessment reports. I now understand that HFS had been given access to some of the electronic systems and this was how they found the reports. She was frantic on the phone and really worried about the patient safety implications. She stated that she had established that no one in the IPCT had seen the reports and that she needed a view from me as to whether patient safety was a concern due to the findings. Photocopies of the reports were left on a desk for me. She told me that electronic versions were not available. To read the reports, I had to drive to Tom Walsh's office in the old Yorkhill Hospital where she had told me a copy would be waiting on a desk for me. The first few pages were missing. Over the phone she highlighted to me a few issues from the reports, such as there being uncapped pipes.

634. On 2 July 2018, I was emailed by Tom Walsh to say that his PA was copying the reports for me and attaching an SBAR he had written for Jennifer Armstrong and Jane Grant **(Bundle 14, Volume 2, Page 251) (Bundle 13, Page 921)**. He asked for my input into the review group he was putting together and suggested I contact Brian Jones to release a bit of my time. This was agreed.

635. However, on 4 July 2018, I received an email from Tom Walsh stating that following discussion with Jane Grant, Jonathan Best was leading the external review of water systems and that Tom himself would be the primary contact for

HPS and HFS **(Bundle 14, Volume 2, Page 257)**. He stated the project team approach by Jennifer Armstrong had been deferred and he was working with Maryanne Kane and Jonathan Best on a review of the current position. He said he was not 100 per cent sure why things had changed.

636. Phil Raines from the Oversight Board informed me that the DMA Canyon reports were known about within the organisation in March 2018 and I had to send evidence confirming that I did not know about them at that stage.

637. As described above, all hospitals should be undertaking legionella risk assessments, following the L8. It should be undertaken every two years. The first DMA Canyon Report is a legionella risk assessment dated 2015. It should have been escalated and actioned at the time. I have no idea what happened to that. I believe DMA Canyon then came back and did another risk assessment two years later in 2017 **(Bundle 6, Page 416)**. I was off sick at the time. I gather they found much the same issues and that the matters raised in 2015 had not been addressed. It is a HSE requirement to have a legionella risk assessment every two years. I don't understand how the lack of such a risk assessment wasn't identified in 2015 by those who had not seen the DMA Canyon report. It would have been for someone in Mary Anne Kane's or David Loudon's position to satisfy themselves that the risk assessment had been done by actually seeing the resulting report.

638. There was so much information in the DMA Canyon reports. Some of the issues raised were as follows:

- I think there were issues with the pipes being uncapped and there are pictures in the HFS report where you can see the pipework uncapped. That means there is a risk of ingress of contamination directly into the pipework because there is no protection there.
- There was bypass of the filtration at one point, but I am not sure how long that went on for. That risks contaminated water coming right into the system as there is no filter.

- There were also issues around the temperature control in the report, which is crucial.
  There were a whole range of issues.

639. As regards how the DMA Canyon reports came to light in mid-2018, I understand HPS did a report on the infection control description of the 2018 water incident **(Bundle 18, Page 819)**. HFS were tasked with writing a report on the technical aspects of what had gone wrong. I remember being at meetings and HFS were having problems similar to those experienced in the ventilation investigation with actually getting hold of relevant documents. My recollection is that in April/May 2018, HFS got access to ZUTEC and I think that is where they came across the Intertek and DMA Canyon reports. I think Ian Storrar found them on ZUTEC.

640. I do not know if and when any of the external agencies were informed of the existence of the DMA Canyon reports over and above HFS.

641. Similarly, I am not aware whether any external experts, such as Peter Hoffman, were informed of the existence of these reports. There was no formal input from Peter after the initial teleconferences, although I continued to have email correspondence with him. GGC employed Tom Makin and Tim Wafer as experts at that stage. I do not know if they saw the reports.

642. I did not ask Ian Powrie directly why the reports had been missing for so long, but he did tell me that he felt he was being made a scapegoat for them. He said it was suggested to him that perhaps he should retire and I think he was very upset about it all.

643. As detailed above, I saw the DMA Canyon reports at the end of June/start of July 2018. They were not discussed at any subsequent IMTs, but they would have been discussed at the WTG. As mentioned above, by July 2018 it was too late for the reports to make a difference to what we were doing at the time in terms of control measures. We would have had to have known from the beginning for it to

have made much difference. However, at that point we had somehow got ourselves through, we developed the hypothesis and we had already agreed that we would put filters on the taps and implement all the relevant control measures. It did not change anything but it just confirmed what we had worked our way through in terms of hypothesis.

644. That said, if I had had the DMA Canyon report when we asked for reports back in 2015, and it had been up to me, I would not have opened the hospital. The report shows that there were too many problems with the water system. I absolutely think that the water- borne infections in the children were preventable. The DMA Canyon report could have made a huge difference if it had not been covered up. What particularly shocked me was that when I was running the water incident IMT in 2018, I was trying to work out what had happened in this water system and I was trying to generate hypotheses, when in fact, people in the room had had sight of the report and knew exactly what was going on in the water system and didn't say anything about it. If they had spoken up at that point, then we could have implemented relevant control measures very quickly and we could have removed the children much sooner which in turn would have prevented infections. This had an obvious impact on patient safety and care.

645. When the IMT was re-opened in September 2018 we did not discuss the DMA Canyon reports as this IMT was concerned with issues with the drainage system and the DMA Canyon reports were not relevant to this hypothesis. The DMA Canyon reports were very technical and actions were being put in place by the WTG which was still ongoing in the background of this IMT. Furthermore, there was an investigation ongoing into the DMA reports by Jonathon Best and MaryAnne Kane which had not yet reported.

646. I have been shown a positioning paper submitted by NHSGGC, section 43 of which reads **(Bundle 25, Page 1262)**:

"*At no time was the existence of the DMA Canyon Report concealed by Mr*

Powrie, and on its existence and contents being made known for the first time to more senior management in July 2018, it was immediately shared with a number of organisations including Health Protection Scotland, and Dr Inkster in her capacity as Chair of the IMT"

647. During the oversight board investigation, I was informed by Phil Raines that senior management in NHSGGC had sight of the DMA report in March 2018 and not July 2018. I was asked to provide him with evidence that I was notified about this report and received a copy in July 2018 which I did. Clarification should be sought as to whether senior management were aware of the report in March 2018 and what actions were taken as a result.

CHAPTER 12: Closure of Ward 2A & decant to Ward 6A, August- September 2018

Phase 3: August to September 2018

Control Measures

648. Between August and September, a further 6 patients presented with bacteraemia in Ward 2A. Nursing staff continued to report issues with drains and the trough sinks were highlighted as a concern. No specific issues were reported from a drainage survey, so the issues appeared to be localised to the back of the sinks and the drain traps.

649. During Phases two and three, further control measures were implemented which included drain cleaning, and antibiotic prophylaxis with ciprofloxacin for patients. The WTG was deciding what water testing should be undertaken on the water system. This was all about developing a hypothesis. They were testing various parts of the water system such as: water tanks in various areas, risers, and expansion vessels.

650. With drains we expect to find bacteria in them and I did not see the value in continuing to test the drains. The priority was to deal with the issue of structural abnormalities. I understand that did not give families answers in terms of linking infections to drains, but the priority must be to address the ongoing source rather than continue to sample what was an obvious problem. Swabbing drains when structurally abnormal like ours were and bringing biofilm back up into the sink when doing so was a risk to patients. It was my view that this activity would enhance dispersal of organisms and risk contamination of the surrounding environment and therefore should be limited.

651. A standard operating procedure was developed for drain cleaning. On the haemato- oncology ward, drains were cleaned with Actichlor plus and the initial clean was performed with a wire brush to dislodge biofilm. Rooms were emptied to undertake this clean to minimize risk to patients from any dislodgement of biofilm. Sinks were cleaned afterwards and new POUFs were fitted, we also initiated a full hydrogen peroxide vapour ("HPV") clean method of the room. That was an addition to a domestic clean. The benefit of an HPV clean is that it reaches parts that the human eye might miss. There is an even distribution of HPV and the theory was that it would provide more of a deep clean and it might also provide some penetration into the drains, although we were not sure about that.

652. The replacement of drain components was undertaken to ensure no obstruction or exposed metal. We were quite interested in the trough sinks and the drain traps in the trough sinks and why there was a build up in there. I wanted to remove these sinks completely. I thought they were too much of a risk. An SBAR was put together about this **(Bundle 3, Page 115)**. My feeling was we had too many sinks. In the paediatric BMT unit, we had a sink in the patient room, a sink in the bathroom and a sink in the anteroom. I felt this was too many. I had significant opposition from clinicians about removing sinks. We discussed it at the WTG. The decision was that we would remove the trough sinks, but the decant happened before we could do this.

653. Education took place with regards to sink hygiene, reminding patients, parents and staff not to decant products down drains and to keep sink surfaces free from toiletries. Enhanced environmental cleaning was maintained to address splash risk and a cleaning protocol for POUFs was developed. Peer audits with regular inspections were undertaken including a review of aseptic trolleys setup and line care. Traffic through the ward was reduced with minimal visiting staff from other departments able to enter. Following the decant of the ward to another unit within the adult hospital, no further cases that met the outbreak case definition were detected between September 2018 and April 2019.

654. In September 2018, the IMT met for the third time **(Bundle 1, Page 149)**. Despite the extensive control measures mentioned above, including a focus on drains, infections continued to occur and the problems with drains persisted. Things were unravelling before our eyes. We had less control and more infections were occurring. For patient safety and to enable further investigation and control measures to be implemented, it was felt that a decant was required. Scottish Government were also asking if there was anywhere the children could be moved to. Discussions about a decant took place at the IMTs on 13 and 14 September where several options were mooted.

IMT 13 September 2018 **(Bundle 1, Page 160)**

655. Over and above the discussion about the decant, there were also discussions at this IMT about the typing of organisms.

656. At this IMT, I made a comment that *"typing results in an environmental incident are unreliable".* I said this because biofilms are complex and will contain multiple strains of bacteria. When sending isolates to reference labs for typing, current guidance states that we should select a single colony from an agar plate. It is likely we will miss other strains in taking this approach. The opinion of Susanne Lee was that ideally, we would need 20 -30 colony picks. I agree with this.

657. There is often a delay in time between the patient developing an infection post exposure, the declaration of an incident and taking samples of the environment. During this time, the environmental conditions may have changed and control measures may influence the sampling results.

658. In my view, the presence of multiple different strains during an incident would fit with an environmental source. This polyclonality has been reported in the literature in relation to other water and fungal outbreaks. Typing is used to rule in, not to rule out. We had detected multiple different strains. It had always been my view that with an environmental source you could see multiple different strains; I had highlighted this point in an SBAR in April 2016 about Serratia **(Bundle 4, Page 26)**.

659. Superficial swabbing has many pitfalls. You are swabbing a very small percentage of the total surface area of the environment a patient has been exposed to. Furthermore, it can be difficult to pick the bacteria up from the surface using a swab and it can be difficult to culture them in the lab. Negative results can generate false reassurance.

IMT, 14 September 2018 **(Bundle 1, Page 164)**

660. At the IMT on 14 September, the decant of Ward 2A/2B was discussed in detail.

661. A formal options appraisal took place on 14 September 2018 which was discussed amongst Executives (see notes from Tom Walsh in pdf entitled ward 2A decant) **(Bundle 27, Volume 7, Page 241)**. Members of RHCG senior management, IPCT and clinical staff participated in this options appraisal. This included me, Susie Dodd and Prof Brenda Gibson. The options considered were:

1) a paediatric ward in RHCG;
2) an adult ward in QEUH;

3) a mobile unit;
4) an adult ward in the Beatson;
5) alternative paediatric services outside Glasgow.

662. The initial view from the executive team was relayed by Kevin Hill at the IMT. They wished to wait for the report from an external drain expert. I am not sure what the thinking behind this decision was. However, there was a meeting about this on 14 September 2018. Jane Grant, Kevin Hill and I were among those in attendance. The four main issues they wanted undertaken were:

1) further cleaning of the drains;
2) shock dosing of the water system with chlorine dioxide;
3) endoscopic review of the drainage system; and
4) a review of the ventilation system.

663. I don't believe this was all done before the decant. I do believe there was a review of the drainage system by an external company and we had been cleaning the drains. We could not shock dose the system with children in the ward, so this was not going to be achievable prior to the decant.

664. The options appraisal went through various different impacts for each location. I don't think it made a clear recommendation. Infection control thought we should use the Beatson oncology as it had a fully spec'd BMT unit. The major issue was the clinical risk as there is no paediatric ITU on that site. The decision was made to keep the patients on the RHCG site. A mobile unit was discussed, but we thought we were heading for a short term decant and by the time we had the mobile unit in place, the time would have passed. That left an alternative site in RHCG or QEUH. We excluded other sites as they did not have the capacity or we would have involved sending patients from Scotland down to England. I am not sure of the discussions that took place around another ward in the RHCG. I was not privy to those discussions. The clinical risk for this group trumps all other areas.

IMT, 17 September 2018 **(Bundle 1, Page 169)**

665. I have been asked whether this meeting was particularly fractious and whether the SMT did not approve the IMT recommendation that the decant take place. As chair, I don't recall this meeting being fractious or different from other IMTs, rather the minutes capture the debates. As per the minutes, the feedback from Kevin Hill was that the SMT had made no decision at that stage about the decant. As I mentioned above, they wanted to wait for the findings from a drainage expert. Kevin Hill assured the IMT that a decant was not off the table.

666. At this meeting, there was also some discussion between myself and Annette Rankin regarding water testing. Given that filters had been added to taps, several water experts had supported the position that water testing post filters was not required.

667. We knew about the widespread water contamination, even before the DMA Canyon report came to light, as did the experts, hence the requirement for the chlorine dioxide system. No amount of water testing post filters would change this. We had reports from PALL stating that there was filter integrity. Ongoing testing was still taking place, but the resource was diverted to where it mattered, under the guidance of the WTG.

IMT, 18 September 2018 **(Bundle 1, Page 175)**

668. On 18 September 2018, Grant Archibald attended the IMT and informed members that there would be a decant of paediatric BMT patients to the adult BMT unit in Ward 4B and all other patients would be decanted to a ward in the QEUH, later announced as Ward 6A. I was not involved in the decision to move to Ward 6A. This was made by the executive team. I was involved with the rest of the IPCT in making sure Ward 6A was up to environmental standard.

669. The decant took place on 26 September 2018.

Suitability of Ward 6A

670. I did not have concerns about Ward 6A for a short term decant. At this point, we were aiming to get the children back in Ward 2A for December 2018. With the measures we had in place, I was happy with Ward 6A being used. It was hugely problematic for the children and parents because they did not have a playroom and they did not have a kitchen for parents to go to. However, the overall priority for us was patient safety and we could not leave the patients in Ward 2A.

671. As discussed above, while the children were out of Ward 2A, an opportunity was taken to assess the ward's ventilation system and a report was subsequently produced by Innovated Design Solutions. This report highlighted an "abnormal" ventilation strategy and one that represented risk to the patient cohort. As a result, the decant was extended. We initially felt the solution might only take an extra eight weeks. However, it then became apparent during the cryptococcal IMT that that was not going to happen. At this point, we were running in to issues with the environment in Ward 6A. I started to bring up the proposal that we revisit the options appraisal for a decant out of Ward 6A, but that never happened.

672. On 20 September 2018, I was informed that the executive team wanted a decant as soon as possible. As mentioned above, the decant happened on 26 September 2018. On 13 November 2018, a briefing paper was sent to the Board's Chairman by the IPCT in the form of an SBAR (see pdf Ward 2A decant) **(Bundle 4, Page 133)**. A further update was provided to an informal director meeting on 10 December 2018 by Dr Armstrong. (See pdf ward 2a decant) **(Bundle 27, Volume 7, Page 525)** . Both documents discussed the approval of the decant by the Board's directors.

Steps taken to prepare Ward 6A to receive Schiehallion patients

673. Prior to moving children into the adult hospital, extensive environmental control measures were implemented in Ward 6A. POUFs were fitted to all outlets; drain components were replaced and cleaned and the unit underwent some refurbishment followed by extensive cleaning and use of hydrogen peroxide vapour.

674. Making sure the environment in Ward 6A was ready probably fell more to the nurses. That was not to say I did not go and have a look around and check I was happy with it. However, the nurses had much more input than I did. The physical decant was purely operational.

675. The IMT continued into November and December 2018. There were still investigations going on within the ward. We also wanted to make sure the patients were settled in the decant. The infection aspect had resolved itself at this point. As we had previously shut the IMT down twice in March and June, and then things continued to evolve, we were slower to close it down this time. We were also expecting to be gearing up for patients to be moving back to Ward 2A in December, so it made sense to keep it going.

Communication with patients and families in relation to the decant

676. I discuss communication issues in more detail in Chapter 17 below. However, in relation to this particular incident, there were lines prepared for families and, often, the nursing staff would go round in the evenings and speak with them. As far as we could, Prof Brenda Gibson and I would speak to them as well. It was extremely challenging as we had different patient groups. We had patients attending the day ward and then we had outpatients as well.

677. Part of the challenge was that we struggled to get round all the patients and families ahead of information being released in the press. Often inpatients were finding out about the risk on the ward in the press. I think it would have worked better if there had been a team within the IMT that just dealt with communication.

It was a massive part of the IMT over and above the control measures and clinical aspects. I found the communication process to be quite messy as there were so many people involved. When the lines were constructed, it had to go round various people for review and there were so many minor changes made. I think it would have been better if a small number of key people and a patient liaison officer had done it. I still don't know if that would have helped because not only was information being released to the media, there was also a patient Facebook group and lots of families were posting information there, which was another way that people were finding things out. I had no control over what was being said on Facebook.

678. It was also challenging because for a lot of the time we could not give definitive answers to what was happening. As time went on, I think there was a lack of trust. We had assured families the water supply was under control as we had put filters on, then there were issues with the drains. We assured them we had fixed the issues, then there were further issues with the drains. The decant was only supposed to be temporary, then we found issues with the ventilation. It was rapidly evolving. I think over time the trust just went as new things kept emerging.

CHAPTER 13: Cryptococcus, [redacted] 2018 to [redacted] 2019

Cryptococcus: [redacted] 2018 to [redacted] 2019

679. On [redacted] 2018, I was referred two patient cases of Cryptococcus neoformans (blood culture isolates) by a microbiology colleague, Dr James Cargill. As this is a very rare infection, two cases in a short time period was unusual and warranted further investigation. Both cases were in [redacted] oncology patients, one adult and one child. Sadly, the child had passed away. Up to that point, I had only dealt with one other case and that was someone coming from overseas who had HIV; that was a more typical patient population.

PAG, [redacted] 2018

680. The first response from me was to speak to the ICNs and compile patient timelines. The next question was to ask whether either patient been exposed to pigeon guano.

681. A PAG was held on [redacted] 2018 with clinical and estates colleagues **(Bundle 2, Page 118)**. At the PAG, the patient timelines were discussed. I also did a walk round of the PICU area where the child patient had been. Susie Dodd took some images of window ledges where pigeon guano could be seen **(Bundle 27, Volume 2, Page 137 and 138)**. There were spikes fitted to the window ledges and overhead nets in the PICU so they had obviously had issues.

682. The paediatric patient had been admitted to Ward 2A on [redacted], had moved to Ward 6A on [redacted] and was transferred to PICU on [redacted] 2018. The adult case was a patient in Ward 4C and had been investigated by ICN, Donna MacConnell. She provided information in an email dated 19 December 2018 **(Bundle 14, Volume 2, Page 261)**. This patient had been admitted to Ward 6C on [redacted] November 2018, [redacted] had no reported contact with pets or birds. It was noted there were numerous pigeons outside [redacted] room in Ward 4C QEUH. (See Cryptococcus 1 pdf)

683. Given that Cryptococcus is associated with pigeon guano, members of the IPCT inspected some areas of the building prior to the PAG. (See images PICU area 1 and 2) **(Bundle 27, Volume 2, Page 43 and 44)**. At the PAG, it was reported that excessive volumes of pigeon droppings were noted outside PICU, in external atriums. Pigeons had been reported to be nesting on the sills of the atrium over the summer months and as a result nets had been placed overhead and spikes had been fitted to the windowsills. Pigeon droppings were also noted on overhead canopies at the entrance way to the RHCG. Facilities colleagues had been contacted to query if there were any concerns regarding pigeons in relation

to the duct work.

684. On Wednesday, 19 December 2018, I was contacted by Ian Powrie who informed me that there was a problem in that there was evidence of pigeons in the top floor plant rooms at QEUH. I visited the plant rooms with Colin Purdon and saw pigeon guano and feathers in several areas (see level 12 plant rooms pics TI) **(Bundle 27, Volume 2, Page 34)**. I went to look at the plant rooms. I was in more than one and I saw evidence of pigeon ingress. With all that information, we had enough to say we needed to have an IMT.

IMT, 20 December 2018

685. The first IMT was held on Thursday, 20 December 2018 **(Bundle 1, Page 245)**. It was agreed by the IMT that the two cases were a data exceedance and required investigation.

Hypothesis

686. An early hypothesis was exposure to pigeon droppings within the building. Neither patient had been in protective isolation with HEPA filtration and both had issues tolerating prophylaxis which made this theory plausible. Both patients were patients who were at risk of being exposed to this infection. Further details of site inspections were given at the initial IMT. It was reported that inspection of the plant room showed evidence of birds roosting and feathers present. I voiced concern at that point with regards aerosolization of Cryptococcus and entry into the hospital ventilation system. At this IMT, I felt that the concerns I raised were perhaps not being listen to by Estates. I think they accepted there was an issue with the plant rooms as there was a pest control report. There was an acceptance they needed to be cleaned up, but there was no acceptance they were a risk to patients and staff.

687. The plant room hygiene was shocking. A plant room should be clean. I saw a

desk someone had been working at with empty cups and popcorn bags. It was not what you would expect in a plant room area. I don't think people were taking the need to keep it clean seriously. There was water on the floors of the plant room. I asked about the use of high-pressure hoses which may have disturbed the Cryptococcus causing aerosolization and entry into the ventilation system. It was agreed that air sampling and sampling of bird faeces would be undertaken.

Control measures

688. The most immediate and urgent control measure was to focus on the plant room and clean it. It was also to be surveyed to find out how pigeons were gaining access and to address any access points identified. The HIIAT was assessed as red and the incident was reported to HPS and a HIIORT submitted. (See Cryptococcus 1 pdf) **(Bundle 14, Volume 2, Page 262)**.

689. Control measures were in place in relation to the incident. Control measures were not restricted to Ward 6A/4C. Early in the incident, I met with renal physicians and advised that renal patients on Ward 4C receive Fluconazole prophylaxis and placed portable HEPAs there, recognising that renal transplant patients were also at risk. Infectious disease consultants looking after HIV patients were also informed by Dr Peters.

Communications

690. Under "Communications" at the IMT, the duty of candour was discussed. It was agreed that I speak with the Medical Director, Dr Armstrong, about this. We agreed at the IMT not to release a press statement, this was due to the child's family not being aware of the postmortem findings and the funeral was due to be held. We wanted to speak to the family before putting information into the public domain. Dr Armstrong agreed with this approach. We have been criticised for this approach but I think it was the right thing to do. I would not do it any differently. I don't think it would be fair for a grieving family to find out information

through the media.

691. A further control measure at this stage was the use of antifungal prophylaxis for high- risk groups. The rationale for this was concern regarding an ongoing source of Cryptococcus.

692. Throughout the Cryptococcal IMT, challenges with communication remained. Prof Gibson and I met with many families in both the inpatient and outpatient setting and tried to address their questions. The issue remained that I did not have all the information to hand and that made communication difficult. We struggled to communicate in a timely fashion and ahead of press releases. We were criticised in the media for not releasing information straight away. However, as chair of the IMT, I stand by this decision as there was a grieving family involved. There was no deliberate attempt to withhold a press statement.

External expert input

693. Prior to the next IMT, I contacted Dr Peter Hoffman for advice given this unusual incident. He agreed with my view and stated that buildings were rarely completely sealed and there was the possibility of dust from disintegrating droppings entering the ventilation systems (see Cryptococcus pdf 1) **(Bundle 14, Volume 2, Page 161)**. My theory was that it had got into the air handling units. I was worried about the floor being sprayed with water or people kicking it with their boots. There were various hypothesis that we discussed. I think the key was a lack of HEPA filtration as you would expect this to decrease any risk.

694. Due to annual leave, other microbiology colleagues became involved with the incident, namely Drs [redacted] and Christine Peters. [redacted] visited the plant rooms and Dr Peters had discussions with estates regarding hypotheses and findings from pest control. (See email correspondence in Cryptococcus pdf 1) **(Bundle 14, Volume 2, Page 269)**. In one of these emails there was a map of the plant room layout provided by Darryl Conner and pigeon droppings were

marked in orange. There was also a summary of air handling unit inspections provided indicating dates that these would have been opened. You would expect that when air handling units were opened by Estates that contamination would have occurred then. The reason the location of the pigeon droppings is significant is subsequently there was a suggestion that it had affected only one of the plant rooms. That was not the case. It is very clear from Darryl Conner's markings that it was more extensive in one but was also present in others. I expressed concern in an email to Tom Steele that I had not been sent the information ahead of the IMT, neither had it been volunteered at the IMT.

695. At the first IMT, no mention was made that there were dead birds in the plant rooms. Estates would have known this - they had photos. I do not know why this information was omitted. Maybe they were too afraid. I think for this incident there was a real attempt to state that it was nothing to do with the hospital or the plant room. It was all about organisational reputation. I think there was an agenda that this was not to be about the hospital building and it had to come from somewhere else. This was not explicitly stated, but if you look at the ongoing communications, Tom Steele came to say it was not the plant room and to me that was the narrative that they were going to stick with.

IMT, 27 December 2018

696. At the next IMT on 2018, the pest control, plant room pictures and plant room map were discussed **(Bundle 1, Page 250)**. It was noted at the IMT that there was evidence of pigeons found in plant rooms with extensive droppings seen. A public health colleague, Hilda Cruickshanks, presented the results of a ten-year review. From this initial report, it appeared there had been 20 cases in Scotland since 2009. It was noted that there had been 5 cases of Cryptococcus in Glasgow patients since June 2018 which I commented was an increased incidence. During this IMT, I informed the group that I had spoken with the adult patient and explained to her that Cryptococcus is linked to pigeons. At this stage, we had still not been able to speak with the parents of the child as they had left

after the funeral for some time away. Again, we agreed not to release the press statement as we did not wish the parents to find out via the media.

697. Following receipt of the pest control report from GP environmental, I found it odd that there were pictures of all the plant rooms apart from the level 12 areas where birds had been present. I asked them about this and had a follow up email from David Bryden who sent some photos taken after the clean-up. He reported to me on 9 January 2019 that there were no other “before” photos and that there was a problem with birds accessing the plant rooms in early December 2018. (See Cryptococcus pdf 1) **(Bundle 14, Volume 2, Page 291)** It seemed odd to me that, when it got to the key plant room, room 12, were was a short description but no photos. GP environmental had retrieved dead birds from plant room 12 in December **(Bundle 14, Volume 2, Page 290)**. I never got any explanation as to why this information was not available at the time.

Concerns about culture within the IMT

698. From January 2019, I felt there were issues with culture developing in relation to this incident. Debate is common in IMTs but I felt that there was extensive challenge to the hypotheses beyond what I would normally expect. I felt I was having to repeat myself extensively with regards to the nature of Cryptococcus, it being found in pigeon droppings and the epidemiology. I was concerned that I was not being listened to and taken seriously. In one IMT, Google was used by Iain Kennedy to try and challenge my expertise during the meeting which I felt undermined me as a microbiologist. I took the opportunity in an email to Tom Steele to point out case studies from other hospitals. I recall Prof Gibson backing up the concerns regarding the risk from birds and immunosuppressed patients with a presentation she had been to at an European Bone Marrow Transplant meeting.

699. On 8 January 2019, I sent an email to IMT members reiterating the epidemiology and hypotheses as this was being constantly challenged, often outwith the IMT

environment **(Bundle 14, Volume 2, Page 288)**. Again, I attached information from other centres highlighting the risk from pigeons (see Cryptococcus pdf 1) **(Bundle 14, Volume 2, Page 287)**. A lot of emphasis was being placed on Cryptococcus neoformans not being found in air sampling and bird faeces. This sampling was something that had been requested by the IMT. However, it is important to understand that Cryptococcus neoformans is difficult to grow, even by those with expertise in handling it. Further, the air sampling plates had been incubated for too long over the holiday period meaning that they were overgrown with other fungi and we were unable to determine if there was Cryptococcus neoformans growing underneath. Like the drain situation, the priority was to get the plant rooms cleaned up. Whilst thousands of air samples were subsequently taken, these were taken after the plant room was cleaned up. This was a vital control measure and we could not wait for further air samples to be taken. Pigeon droppings were also negative; however, we initially took surface samples instead of full pots of faeces and with both methods we sampled only a very small surface area of the total amount of pigeon droppings. What was being used to say there was no problem was actually unscientific as it was after the clean-up and not representative of conditions at the time of the IMT investigation.

Concerns about other fungal infections in Ward 6A

700. In addition to investigating the Cryptococcal cases, we had two rooms on Ward 6A affected by water damage which were awaiting repair due to difficulty getting contractors over the holiday period. This raised concerns about fungus other than Cryptococcus.

701. There is misinformation in the public domain with regards to the shower situation. They are not a source of Cryptococcus. The concern from the showers was other pathogenic fungi associated with mouldy environments, particularly Aspergillus.

IMT, 7 January 2019

702. At the IMT on 7 January 2019, there was a discussion about prophylaxis and air quality in Ward 6A **(Bundle 1, Page 255)**. In view of this, it was agreed to employ portable HEPA filters as an ongoing control measure. Jennifer Armstrong wanted assurances that these were working.

703. As regards the use of prophylaxis, Prof Gibson and I were both concerned. Prof Gibson was worried about the side effects and I was worried about the duration because the patients were staying on Ward 6A for longer than planned. It was anticipated that patients would need to be on prophylaxis for as long as they were on the ward due to the poor environmental conditions. One of the options discussed was moving patients out of Ward 6A to a safer area such as the Beatson. Jamie Redfern agreed to report these concerns to directors following the meeting. At the meeting, he queried whether we were robust enough in our decision to move patients to Ward 6A in September 2018. I stated that the Beatson was the preferred option from an IPC perspective but understood that that came with clinical risk due to a lack of paediatric services on site. It was emphasised at this meeting that the plan had been for a short decant but now we were expecting a longer decant of 12 months. (See minutes of IMT 7th January 2019).

704. At the request of Jennifer Armstrong, air sampling was undertaken to demonstrate the efficacy of portable HEPA units. On 16 January 2019, Christine Peters and I did particle count sampling. We had the results that evening and the particle counts were high in my view. I asked the nurses if there was anything they were concerned about in terms of mould or any explanation as to why these might be high. Angela Howatt suggested the showers. When I went to look at the showers, I could see visible mould. This had been looked at and was all fine when the children first moved in. I think these showers were quite high use as the children's families were using them as well. It goes back to poor workmanship. There was a weak join in between where the flooring met the wall.

The water was hitting that join and there was no water-resistant Gyproc beneath. Susie Dodds described it as like Weetabix underneath. Mould was spreading along the shower floor. It was my opinion that this could account for the air sampling findings and that it represented an infection risk to immunosuppressed patients. The HEPA filters then became relevant due to the shower mould as well.

705. On 8 January 2018, Prof Gibson wrote to Jennifer Armstrong and Jamie Redfern stating that the Consultant body were very concerned about the safety of the environment, highlighting the risks with prophylaxis **(Bundle 14, Volume 2, Page 286)**. She requested the attendance of senior management at a departmental meeting to discuss further. I recall attending but I do not know if minutes were taken.

IMT, 16 January 2019

706. At the IMT on 16 January 2019, we discussed the air sampling results that had grown a different strain of Cryptococcus, C albidus which can also be found in pigeon droppings **(Bundle 1, Page 261)**. The expert opinion from Liz Johnson, a Mycologist in Bristol, was that the ductwork was contaminated and would need HPV cleaning. This was logistically very challenging. Peter Hoffman suggested that, with time, any contamination would be diluted out by the ventilation system and that, in his view, we did not need to go down that route. Concerns regarding pigeons on site continued to be expressed and in particular there were emails from Dr Michael Bradnam **(Bundle 14, Volume 2, Page 309)**. He had alerted us to issues in the ground floor courtyard in paediatric imaging. There were piles of pigeon droppings on plant equipment and in the courtyard and dead pigeons on cabinets. (See Cryptococcus pdf 1) **(Bundle 14, Volume 2, Page 315).**

IMT meetings on 17 January 2019

707. There were two IMTs to discuss the issues with showers, held on 17 January

2018 **(Bundle 1, Page 266)**. At the first, it was agreed to move four high risk patients from Ward 6A into Ward 4B. It was also agreed that options would be reviewed for a possible move of Ward 6A into a separate area to enable work to be carried out on the showers. This would be a temporary move.

708. At the second meeting, Kevin Hill provided details from an operational group meeting, this contained an immediate plan to start transferring high risk patients out of Ward 6A and other options including a decant to RHCG, the Beatson, moving adult patients to the Beatson and children to Ward 4B, a mobile unit and hospitals elsewhere in the UK **(Bundle 1, Page 270)**.

IMT, 18 January 2019 – Decision to decant to Clinical Decision Unit

709. At the IMT on Friday, 18 January 2018, high risk patients had been moved to Ward 4B and Facilities had completed a shower survey with work due to start that weekend **(Bundle 1, Page 274)**. I was present on the ward that weekend and saw the condition of the showers when flooring was removed from one of them. My view was that it was not safe to have patients in the ward with that degree of mould. Repairing the showers would lead to the release of high levels of fungal spores and, therefore, the work needed to be done under controlled conditions and HAI SCRIBE completed. At the IMT held on Monday, 21 January 2019, it was decided that the remaining patients should be moved out of Ward 6A to enable completion of the shower works **(Bundle 1, Page 278)**. There were also issues with dirty vents and heavy build up of dust on chilled beams noted. It was suggested patients move to the Clinical Decision Unit in RHCG.

Meeting with Jane Grant

710. There was agreement at the IMT to move patients to the CDU. However, after this IMT I was asked to attend a meeting with Kevin Hill and Tom Steele. Jamie Redfern and Jennifer Rodgers were also present. At that meeting I came under pressure to reverse this decision and there was a conversation regarding risk. Kevin Hill and Tom Steele mentioned that I was risk averse and there was a

suggestion the children should stay in the ward whilst the work took place. I felt intimidated and almost bullied to reverse a decision that had been made as an IMT. I refused to reverse the IMT's decision. I had had difficult meetings before, but I had never had a meeting like that. I was told that the Chief Executive, Jane Grant, would be onsite later that day and would be having a look at Ward 6A. I had previously been told by Jamie Redfern that the Chief Executive only accepted positive news stories. I wonder if it was the fact that she was coming to have a look around that they wanted to say to her that it was safe enough to do the work with the patients in the ward. That is not what had been discussed at the IMTs

711. Later that afternoon, I was contacted by Sandra Devine and asked to attend a meeting with Jane Grant and others. I attended the meeting that evening. There was a heavy presence of senior management staff and a few clinicians. It is an intimidating atmosphere and a spectator sport as most people do not contribute anything. I had to explain my risk assessment to the Chief Executive. I was not backed up by senior colleagues in infection control, namely, Tom Walsh, the ICM, and Sandra Devine, the Associate Nurse Director. They did not disagree with me, but nor did they provide any support. I would have expected them to. I am unclear why I had to justify this position when there were people more senior than me in the meeting who had also been at the IMTs. I think they were trying to convince me to go with their view. There was a lot of discussion about collaborative leadership and no one person was responsible for decisions. I think this was to get me to reverse my decision. I think that was the point of the meeting.

712. I was again called risk averse. I recall saying that the ward was a building site and Jane Grant saying that in her view it was not a building site. We had a bit of a disagreement over that. When I had been up earlier in the day, there were workmen all over the place. It is possible they were not there when she visited the ward. I expect they cleaned up the ward for her arrival.

713. Again, I think a lot of thought was being given to organisational reputation. I recall Jonathon Best and Jennifer Armstrong agreeing with me about the transfer of patients to CDU.

714. The outcome of the meeting was for the IPCT to ensure it was suitable for a decant. There was an instruction from Jane Grant to go to CDU and make sure it was fit for purpose. The ICNs did that the following day. This was the focus of the IMT the following day.

715. Subsequently, it was found that 80% of showers in Ward 6A had problems with mould, due to a weak join and the use of non- water-resistant material.

716. On 24 January 2018, I asked Estates colleagues for details of remedial actions in relation to pigeons **(Bundle 14, Volume 2, Page 317)**. I was supplied with an excel spreadsheet from September 2018 but oddly the call outs to the level 12 plant room in December 2018 were not recorded on this database.

717. Towards the end of January 2019, there was a visit by the HSE to discuss the Cryptococcus incident and plant room issue. There was a reluctance by senior management to have more than one microbiologist present at this meeting. (See Cryptococcal pdf 1) **(Bundle 14, Volume 2, Page 311)**. There were notes produced from this meeting by Dr Peters as I had to leave to chair an IMT before the end (see Cryptococcus 2 pdf) **(Bundle 27, Volume 7, Page 530)**. At the part of the meeting which I attended, I felt that IPCT and Microbiology were doing all the talking and that colleagues from Estates /Facilities were very guarded.

Withholding of information

718. One of the main issues with this incident, which started in the 2018 water incident with the DMA Canyon report, was the withholding of information. People were coming to IMTs and not speaking up. Photos were emerging years down the line. Photos were not even being given to John Hood, as the chair of the

Cryptococcus group. That was a huge issue. I felt that things were being hidden during this incident. As I keep saying, ICDs were expected to make decisions without all the information, then they were labelled as risk averse. We cannot make these decisions without having all the information to hand and I don't know why it was being withheld.

Cryptococcus advisory group, chaired by Dr John Hood

719. After the brief decant to CDU in January 2019 for the shower repairs to take place, patients were moved back in to Ward 6A on 11 February 2019**.** Following the implementation of control measures and a clean-up of the plant room, there were no further cases of Cryptococcus and the IMT was stood down.

720. At the end of the IMT, my conclusion was that there were cases of hospital acquired Cryptococcus linked to a pigeon infestation on site. We had epidemiological links in time, place and person. There were several possible routes of entry into the building but, given the plant room findings and proximity to the ventilation system, this seemed the most likely explanation. My view was that patients had developed infection due to the use of prophylactic agents that did not cover Cryptococcus and due to the lack of a HEPA filtered environment. These points were documented as available evidence in the first meeting of the Cryptococcal subgroup **(Bundle 9, Page 5)**.

721. Other reports that should be read in conjunction with the IMT and expert advisory group minutes include: the SBAR report for Cryptococcus IMT (Dr Peters) **(Bundle 4, Page 141)**and the QEUH Ward 4C Window Survey (J Materne) **(Bundle 14, Volume 2, Page 435)**.

722. A short life working group known as the Cryptococcal advisory group was set up. This was my idea. The intention was that the group would be similar to the WTG. It would further investigate the hypotheses generated from the Cryptococcal IMT, advise on further control measures and report to the IMT. There were a few

hypotheses that had come up that needed to be explored such as the helipad and entry through the void but it was also to look at long term control measures.

723. Due to my workload, I did not plan to sit on this group myself, as I had done with the water group, but requested two microbiology colleagues to take this forward. The group was to be chaired by Dr Hood and Dr Peters would also sit on it. Unfortunately, Dr Peters had a period of sick leave, so she did not attend. I did not consider that any member of this group was a Cryptococcal expert. Many members of the group also sat on the IMT. There were some issues with my involvement in the group which was strange. Obviously, I had been a big part of the WTG and, ordinarily, I could have chaired this group but I elected not to as I was so busy.

724. Initially, John Hood worked very closely with me as the chair of the IMT. He had to get briefings from me as he was not present at the IMT. We had quite a lot of discussion. He was particularly concerned one day in February 2019 because he had received an email from Jennifer Armstrong asking him to attend a meeting with her and Tom Steele ahead of a board meeting to discuss Cryptococcal issues. He was uncomfortable with that as he was not so familiar with the findings of the IMT. He wanted me there. I did attend that meeting with him. Afterwards, Jennifer Armstrong phoned me and said that she and Tom Steele had discussed it and they thought it was really important that I remain independent from the group. I said that I was too busy to attend anyway, so it was not an issue. A briefing paper was prepared by Sandra Devine for Jennifer Armstrong regarding the Cryptococcal incident ahead of a board meeting. (See Cryptococcus pdf 2) **(Bundle 27, Volume 7, Page 598)** .

725. Initially, I was getting meeting minutes sent to me as the chair of the IMT because that group was initially supposed to report to the IMT. Then Sandra Devine phoned me to say I should stop talking to John Hood about the Cryptococcus incident because I could be viewed as influencing him. I thought this was very unusual. I told John Hood and he just shook his head. There were definite

attempts to keep me away from the work of that group and from John Hood. The suggestion that I needed to be independent from it puzzled me because several members of the group had also attended the IMT. For example, the Director of Facilities, who has overarching responsibility for the plant rooms, was there. Sandra Devine was there, along with people from HPS and HFS.

726. The reality was that John Hood was continually discussing Cryptococcal theories with Christine Peters and I and continued to do so even when I told him the details of the conversation with Sandra Devine. I felt the opposite was true, that he was trying to influence our views. For example, at one point we debated [redacted] as the source. I felt this was not plausible, but he was persistent. The adult patient lived close to [redacted] so he thought [redacted] picked it up from there. However, there are lots of [redacted] people who live near there so my view was that we would be seeing more cases. The child patient was not from that area so it did not explain it. He seemed confused regarding the timeline of events and frequently contradicted himself. He was undertaking thousands of air samples which I didn't understand the need for as these were all post clean up. We already had information regarding the ventilation systems in the affected wards and did not need further evidence that these areas were inferior to the Beatson. I felt this was a waste of time and resource. Further down the line, he seemed not to accept that exposure to a large infectious dose in an immunosuppressed patient fitted with the clinical history and suggested cases were reactivation. Whilst reactivation does occur, what was striking in this incident was the epidemiology. There were two cases linked in time/place/person with an onsite pigeon infestation and suboptimal ventilation. He spent hours going over the same ground repeatedly.

727. I anticipated that the short life working group would run for around six to eight weeks, the report would come to me as chair of the IMT, I would take that report to the IMT for comments or questions and then we would have an incident debrief. That has still not happened.

728. We have never had an incident debrief and I have not seen a final unredacted version of the report. It was supposed to come to me in a final version as chair of the IMT**.** I saw the draft version via ARHAI. The reason it went to ARHAI is because they were involved and they should also get the final report. Notably, ARHAI and other external colleagues asked for their names to be removed from this report despite being part of the advisory group **(Bundle 27, Volume 7, Page 532)**.

729. In April 2019, I was forwarded an email from Sandra Devine to John Hood about generating positive statements for a board meeting to ensure that public confidence in the building was maintained **(Bundle 14, Volume 2, Page 440)** . It read to me that she wanted positive messages for the board. She had proposed some statements based on advisory group meetings. She wanted to state that the plant room was unlikely to be the source. In his response, John highlighted that, although there had been no positive air samples, Cryptococcus neoformans was difficult to grow from air. He also commented on whole genome sequencing results of the two cases. They were different strains but it was acknowledged that we did not know how diverse the strains might be in the pigeon population.

730. John Hood continued to discuss the incident with me. In August 2019, he forwarded me an email from Colin Purdon from GP environmental **(Bundle 14, Volume 2, Page 444)**. The email contained a report from them stating that three dead birds had been removed from the plant room on level 12 in early December 2018 and access points had been dealt with **(Bundle 14, Volume 2, Page 445)**. I was very surprised to read this. It was not documented on the excel spreadsheet from Estates and this information was not volunteered at the IMTs and was only coming to light in August 2019. The call out to the plant room from 19-21 December was also in the report which highlighted that birds had gained access via weather damaged cladding and were using pipes and high beams as roosting points. More pictures pre-clean up were provided in this report. It is not clear why these were not shared with me when I asked GP environmental for them previously. On 20 February 2020, an email was forwarded to me by Dr Hood

from Darryl Conner containing yet more plant room images and again these had not been shared with either me or the IMT prior to this point **(Bundle 14, Volume 2, Page 449)**. Dr Hood was concerned that Darryl would get into trouble for sending these but did not say from whom. These pictures included images of bird droppings on plant room floors and a dead bird on the floor. A few days later, Dr Hood sent me an email he had forwarded to Marion Bain in which he discussed his concerns regarding the content of a board meeting which contained information relevant to Cryptococcus despite the work of the advisory group not yet being complete **(Bundle 14, Volume 2, Page 455 and 456)**. This information was in the public domain but was inaccurate and misleading. Statements that were highlighted as misleading included reference to the air from the plant rooms as a source being categorically ruled out and all of the hypotheses considered being ruled out (see Cryptococcus pdf 3). This was not in fact the case and several hypotheses had yet to be explored. In a positional paper I have been shown from NHSGGC section 65 states *'Following the work of the sub-group, the Board was able to publicly confirm in January 2020 that the hypothesis involving the plant room and pigeon droppings had been ruled out.*' **(Bundle 25, Page 1262)** Whilst this was the view of GGC it was not the view of the chair of the Cryptococcal expert group. It is therefore not appropriate for the same positional paper to state that' *it was a theory which was kept alive by the "whistleblowers" long after it had been demonstrated to be without basis in fact'.*

731. On Tuesday, 16 and Monday, 22 June 2020, I received text messages from John Hood asking if we could talk about Cryptococcus. In the subsequent phone calls, he expressed anger at the findings of the Independent Review and their public statements about Cryptococcus. He felt that they had not spoken in depth with him and had not represented his views. Neither had they sought my views, so it was unclear whether there had been any microbiologist input into their conclusions. He was debating whether to go to the press. I suggested he contact Jeanne Freeman instead. Later he told me he had raised concerns with Sandra Devine.

732. We had limited contact during the COVID pandemic and up to the present day.

However, colleagues on the Cryptococcal advisory group told me that the meetings were becoming difficult and their views were not being respected. It appeared to me that the focus of the group became to undermine the work of the IMT, and the hypotheses generated, rather than to focus on future prevention measures. There appeared to be a concerted effort to definitively exclude the plant room as a source.

733. The exact route of entry of Cryptococcus into the building will never be known. However, the epidemiology remains striking. Considerable focus has been on the different strains isolated from patients. Cryptococcus is an organism that is present in the gut of birds. However, as Dr John Hood himself pointed out, we do not understand the diversity of strains in the pigeon population. Different strains are to be expected. **(Bundle 14, Volume 2, Page 464).** An analogy is E coli; we would not expect a group of humans to carry the same strain in their gut.

734. My next contact with Dr Hood was at a virtual meeting with a family of an affected patient. Statements made by him at that meeting were untrue and I followed these up in an email. I received no response. It was stated at that meeting that only one plantroom contained pigeon droppings. As stated above, that is untrue. The map provided by Darryl Conner highlighted droppings in three areas and I saw droppings in more than one plant room when I visited. The presence of pigeon guano in more than one plant room is also a point discussed by Christine Peters in an email to Colin Purdon on 21 December 2019 summarising a conversation they had. She refers to all four having evidence of pigeon infestation. It was also stated that the pigeon guano was only wet and that this meant aerosolization was unlikely. However, pictures show both wet and dry guano. (See Cryptococcal pdf 3). In this email and several others, I requested the Cryptococcal advisory group report. I have highlighted to Angela Wallace and Marion Bain the poor governance, in that the IMT have not received this report and there has never been an incident debrief. Furthermore, what started as a short life working group has taken many years and a final version of the report remained outstanding for years. During this time, a second paediatric case of

Cryptococcus came to light. I was not involved with this case but Dr Peters or Dr Sastry can give an account. I am not aware if the Cryptococcal advisory group investigated this case.

Dr Inkster's reflections on the Cryptococcus incident

735. This IMT was very different from the water IMT. In the water IMT, everyone worked well together to fix complex issues. There were some issues with communication and the emergence of the DMA Canyon report but, overall, I thought it was a smooth process. There was not the same degree of undermining and challenge that I experienced on the Cryptococcus IMT, which was new to me. During the Cryptococcus IMT, I think there came a point when the organisation's reputation became a priority and they wanted no more bad news stories.

736. Overall, the Cryptococcus incident was very difficult. I felt undermined and there was a lack of respect for my views. Information was withheld from me and reports were not shared in a timely fashion. There were attempts to intimidate me and to exclude me. False statements were being made publicly and to relatives. I felt the overriding priority was organisational reputation and that the main aim became to undermine the IMT and to focus on disproving links to the building rather than to make the environment safer.

737. Recently, in my role at ARHAI Scotland, I became aware of a Cryptococcal infection in another health board. This occurred in an immunocompromised patient who sadly passed away as a result. Whilst reactivation was possible, the IMT also acknowledged that the patient may have been exposed in hospital, as during one of the hospital stays pigeons had gained access to the clinical area. As a result, the IMT focused on education on bird ingress in the hospital and the need to report this immediately. I understand that the duty of candour was implemented and this was discussed with the patient's family. The IMT managed this incident appropriately and the risk from bird ingress and potential exposure was acknowledged. The IMT conclusion has not been undermined. This is in stark

contrast to GGC's approach and is a symptom of the culture within GGC (as compared to other health boards), where organisational reputation must prevail.

CHAPTER 14: Ward 6A incident, Spring to October 2019

Notable events prior to the occurrence of the Ward 6A incident, Spring 2019

HIS Inspection, January 2019

738. At the end of January 2019, a HIS inspection took place on the QEUH site **(Bundle 18, Page 1490)**. I have been asked if this inspection was requested by the Cabinet Secretary, but I do not know the background to that. I just know that HIS turned up. It has been suggested by GGC that I specifically requested to meet with the team. This is inaccurate. HIS requested to meet with an ICD for the QEUH site and that's how Dr Valyraki was nominated to attend.

739. Unfortunately, she went home sick that day. Tom Walsh contacted me and said they needed an ICD to step in; we were so short-staffed and there were very few ICDs. I had to step in at the last minute as there was no other ICD on site. I was interviewed by Elaine Ross and Iain Smith. At the beginning of my interview, the inspectors told me this visit differed from others in that they were going to ask questions regarding culture. I have been interviewed by them only once before and it was not related to culture. It was concerned with policies and procedures and, at that time, it was about Legionella. The culture theme was new.

740. They began by asking me about the action plan that GGC had produced in response to the SBAR of October 2017. I was then asked by Iain Smith to send in documentation. I remember having a discussion because there were different versions of the action plan, so I had a different version from what I think they had been given.

741. When they asked me about issues with the culture, and any problems that I had

encountered, the two main issues I highlighted were: i) staffing levels in IPC, that was very pertinent at the time, and ii) poor working relationships with Estates. I was also in the middle of the Cryptococcal incident, where I was having issues obtaining information from my Estates colleagues and I had also had issues obtaining the DMA Canyon report. They asked me to send in evidence and I sent Iain Smith some emails **(Bundle 14, Volume 2, Page 324)**. They were concerned about what I told them and they said there was going to be an immediate internal escalation. As a result, Ann Gow at HIS contacted Jennifer Armstrong, who then spoke to me.

742. After this interview, I saw the HIS report that came out. I have had access to redacted interview transcripts and communications between HIS and GGC about the findings and the various different versions of the action plans. These communications concerned me because within these documents I am portrayed as a lone voice. But I can see from the redacted transcripts that at least two other people mentioned staffing issues, so I was not a lone voice. However, in the emails between HIS and GGC, GGC seem to clarify that there was a misunderstanding with these other individuals. I find that hard to believe. I know that Tom Walsh and Brian Jones were involved with staffing issues. There was an SBAR in 2019 written by Tom Walsh which he sent to Tom Steele to try and get additional cover for built environment issues. Tom Walsh felt the additional sessions should be funded by Tom Steele's department because they were necessitated by built environment issues. These emails were from GGC to HIS and it seemed that this was the starting point for that particular narrative about me being a lone voice out on a limb.

743. I do not know if HIS took on board the clarifications from GGC, but I think they remained firm with some of the recommendations in their report, even though GGC challenged some of them. However, for some recommendations, particularly on staffing, HIS did back down.

744. I remember the Medical Director referring to the interviews as a whistle blow. I

did not consider it a whistle blow, because they asked to speak to me. They asked about culture and I answered the questions. I had not put myself forward, but within the general communications, it suggests that I had taken it upon myself to go and see them. I did not. I stepped in for someone.

745. Within the redacted interview transcripts and the communications between GGC and HIS, there is reference to what I said in my interview as being anecdotal information and factually inaccurate. I referred to significant issues and I believe that not sharing the DMA Canyon reports, not giving ICDs access to water results, and withholding information during the Cryptococcus incident, are all evidence of such and these examples are not anecdotal.

Steps taken by senior management following the HIS Inspection

746. Following on from the HIS Inspection, Jennifer Armstrong emailed me on 1 February 2019 to arrange a meeting to discuss. (See email post HIS.pdf) **(Bundle 14, Volume 2, Page 349)**. At this meeting, I raised my concerns about staffing, culture, undermining and misogyny, everything that was I was experiencing. She said I was an excellent clinician but I needed a bit of support in dealing with these issues and she wanted me to have a mentor who I could talk things through with. She assigned David Stewart. I didn't know at the time that I could have contested that and chosen my own mentor. I did think it was a strange choice given that he was the individual to whom we had raised concerns about the QEUH back in 2015 and those had not been adequately resolved.

747. I recall three meetings with Dr Stewart. They did not appear to be about supporting or mentoring me. The focus seemed more on establishing who was whistleblowing at the time rather than dealing with the issues I had raised. There were a lot of questions about journalists and there were questions about people's mortgages and had they been paid off because we were in danger of losing our jobs. It was quite inappropriate, and I remember showing him that the press had come to me.

748. Jennifer Armstrong was very supportive of the staff situation. There are emails from her in the trail where she instructs diagnostics to try to resolve the situation. I felt that senior diagnostic medical staff did not adequately address the situation. I would not have expected Dr Armstrong to have been involved with this. Rachel Green was the Chief of Medicine for Diagnostics and Professor Brian Jones reported to her. Dr Armstrong was above Rachel Green.

Specific issues with Tom Steele and meeting with Estates, 14 March 2019

749. Dr Armstrong also arranged for a meeting to take place with Tom Steele, Director of Facilities, to discuss the concerns I had raised with regards to working relationships with Estates. **(Bundle 14, Volume 2, Page 399).** I did not think that she took my concerns with Estates colleagues seriously.

750. I had a difficult relationship with Tom Steele. I often felt undermined and bullied by him. There were several incidences when I felt this was the case. On one occasion, when we were working on Cowlairs, which is unrelated to the QEUH, despite not being my line manager, he cancelled an important meeting I had arranged with an engineer who was travelling from England to speak with me about Ward 2A ventilation. In that same instance, he also tried to bully and intimidate me into agreeing with his point of view about the way to deal with the issues arising there. He told me that colleagues in HPS and HFS disagreed with me and that I was making life difficult for him in relation to the need for air sampling at Cowlairs.

751. On another occasion, during the 2018 IMT, a junior Estates officer, Andy Wilson, told me that he had been told to lie by his boss and say that, if clinicians ask him about the pressures in rooms, he was to say they were positive, when they were not.

752. As I have already mentioned, I felt that information was being withheld from me during the Cryptococcus incident and Tom Steele was challenging a lot of what I

was saying around hypotheses.

753. However, Tom was not always like that. He used to come to the IMT in his role at HFS. At the water IMT in 2018, I found him to be particularly helpful. He would often make suggestions that other people may not have thought of and I thought he was very supportive. There appeared to be a change when he became an employee of GGC. I felt there was a shift in his demeanour and he was part of a group that wanted things supressed and it was all about organisational reputation.

754. I met with Tom on 14 March 2019 (See IC and estates meeting pdf). The meeting was chaired by Dr Linda de Caestecker and attended by Dr Armstrong, Tom Steele, and me. (See pdf note of meeting 14th March) **(Bundle 14, Volume 2, Page 402)**. Notes of the meeting were not circulated until 17 May 2019. In an email dated 22 May 2019, I expressed concern about the meeting note. I had been unaware that one of the purposes of the meeting was to investigate allegations of bullying in the media. The meeting had been organised before an article appeared in a newspaper suggesting bullying. A journalist, Hannah Roger, had approached me on Linkedin stating that she knew things about me which included illness and bullying. I did not give her this information.

755. I felt that the note of this meeting was one sided, reflecting much of what Tom Steele had stated and that my views were not adequately reflected. Issues I had raised that were omitted were: problems encountered by colleagues in 2017; lack of information sharing; difficulties I had in establishing a Ventilation Safety Group and; proceeding with the creation of a respiratory decontamination room.

756. When I first read the minutes, it looked like I was the problem, not him. I don't know why the meeting was not recorded accurately. I believe this is related to hierarchy. There is a hierarchical structure within the NHS and when you get to director level, and there are three directors in the room and you are there as a

clinician, it was always going to go in his favour, and it was always about protecting the organisation. In hindsight I should have taken someone to the meeting as a witness. I did suggest several amendments to the minutes and changes were made.

757. It seemed to be becoming more common that the things I said were either omitted or not adequately represented. I found that when I did challenge it, it would be changed. However, it was only changed because I had challenged it. It seemed to become an issue from around late 2018 onwards.

758. There was a very difficult point in the meeting when I talked about how I felt after a meeting with him when he told me not to put things in writing. Linda asked me to email the reflective note to him, which I did and this sullied our relationship even more as he said he had no recollection of saying those things (See reflective note pdf) and his response was dismissive **(Bundle 14, Volume 2, Page 258)**. That was typical of his responses when I raised issues and if I spoke about him to Jennifer Armstrong, she would take his views over mine. Again, I think this was related to hierarchy.

759. The actions from the meeting were that there should be weekly meetings between myself, Tom Steele, and Sandra Devine; that there should be joint prioritisation of issues to be addressed and that I would share the reflective note discussed above.

760. In a follow up email to Dr de Caestecker I informed her that meetings were taking place but that there were still issues with the flow of information and process **(Bundle 14, Volume 2, Page 409)**. Examples were, issues with access to and omissions within validation reports, concerns regarding the Ward 2A refurbishment and the lack of a cohesive approach, concerns regarding the governance of the Specialist Ventilation Group and the role of the ICD in signing off the new ICE theatres. Tom Steele agreed to raise my concerns with the Capital and Operational teams.

761. Tom Steele was involved in the 2019 IMT from an Estates perspective. I felt he made things more difficult for me. One particular thing he did that I do not like, is that he always wanted a pre-meet before the IMT. These pre-meets are when senior managers get together before an IMT and it is all about rehearsing how the IMT is going to run. The only people who are not at the pre-meet are the clinicians and nursing staff. Tom was very keen on those. He told the Medical Director that he did not like the fact that sometimes I would speak about results in the IMT that he had not seen. In an email to Christine Peters dated 28 January 2019 during the Cryptococcus incident he asked to meet separately to discuss the helipad as a hypotheses rather than 'rehearse' it an IMT **(Bundle 27, Volume 7, Page 533)**. He appeared to want to stay away from formal processes.

762. Sometimes that happened because the results were coming into my Blackberry as we were running an IMT. If that happens, I am not going to wait until the next IMT when I have everybody in the room that I need; I am going to read out those results. Tom did not like that. He did not like things being sprung on him because he did not have time to prepare. This is the nature of IMTs, often information is shared that is new to others present including the chair.

763. The Medical Director was supportive of the pre-meets; she would talk about collaborative leadership and everyone having a voice and their say and everyone would have an opinion. However, what I would say to her is, the person with the expertise in interpreting the results, and really the only person who can interpret the results, is me as a microbiologist in relation to discussing complex water sampling. Tom does not have the skill and expertise to interpret these. However, I had trouble convincing her that the expert in the room was actually me and not everyone else around the table, who were all experts in certain other aspects.

764. There was no real response to this. I think the Medical Director was critical of me in that she hinted in her response to my resignation letter that I was not really in support of collaborative leadership. I am very much a collaborative person.

However, it is a problem when people are collaborating to protect the organisation rather than the patient, and I will not support that. So that was my view. I still feel at these IMTs that there were people with no expertise that had very strong views because they were directors and again, going back to hierarchy, people would listen to them over the microbiology experts. I had wanted to bring more microbiologists along to the meetings. However, there was opposition to that proposal.

Staffing concerns - ICDs

765. Staffing within Microbiology and IC has been a concern of mine for several years.

766. As mentioned in Chapter 3 above, I first raised issues about staffing while working in GRI many years ago and feel I have had a black mark against me ever since for speaking up. When I worked in the GRI, there was workforce planning ongoing because all the hospitals were moving across to the QEUH. The Western Infirmary and the Victoria Infirmary both had separate microbiology labs with consultant staff, although the Western had been phased out over the years. All of these specialist units I had covered, like renal medicine, the ITU, some of the Beatson haematology, were all going to be moved over, but with no microbiologists attached to them. I felt that there was a significant workload there because I had been covering it all those years. I couldn't understand why we weren't sending a colleague or even one and a half colleagues across.

767. I remember being called into a meeting with the GRI consultants, and the Head of Service, Brian Jones, wanted everyone on the same page so that we could give a view as a department. His view was that we would not be sending anyone over. I remember sitting in the meeting and I was really uncomfortable with that. I spoke up and said I did not agree with this, that I thought we should be sending people across. I was backed up by John Hood, my colleague at the time, he agreed because he had also covered the Western as a consultant.

768. After that, Brian Jones didn't talk to me for weeks, maybe even months. He was suggesting to colleagues that maybe I had problems at home, which is a classic tactic. When a whistle-blower or someone speaks up, it becomes about their personality or personal difficulties.

769. I was also told by someone else that I didn't really have a future in the GRI and I wouldn't be the Head of the Department which had been earmarked for me, and they were going to bring someone else over. It was made very clear to me that speaking up was not something that you should do, and that it was going to affect my progress.

770. In the end it was agreed that, with IC and all the specialist units moving, I would move with it to the QEUH. Given the atmosphere in the GRI, I didn't have any hesitation. Even though I moved to the QEUH, I think that behaviour persisted. I have spoken before about being accused of being an ‘empire builder’ and trying to be removed from the post when I went off sick. It followed me to the QEUH as it’s all the same people who are in charge. Brian Jones, for example, was still involved as Head of Service so he had oversight of both hospitals.

771. Around the time that the HIS inspection was going on and I had raised staffing issues, GGC had provided assurance to HIS that extra IC sessions had been allocated. Two weeks prior to the HIS visit, there were emails between the Head of Department in Microbiology and the Head of Service for Microbiology regarding staffing issues. GGC provided assurance to HIS by stating that the QEUH compares favourably to other health boards when benchmarking informally.

772. Whilst some extra sessions were allocated at that time, this was not a long-term arrangement. Sarah Jamdar, one of the consultants in the north, came over for a couple of days. I thought that was going to be for several weeks, even months, and just having her around for two days because she's a very capable ICD, made life so much easier. That was pulled very quickly, maybe after a week or two.

Then I think John Hood came after her to help me specifically with some of the ventilation issues.

773. When John Hood arrived, he hadn't been in ICD for many years. A lot of things had changed, like the HAI-SCRIBE document and the process around buildings he wasn't familiar with. It didn't help me. It actually caused more work for me and others in the department because we had to show him the ropes. Nevertheless, they did supply him for a period of time.

774. John Hood was then tasked with doing the Cryptococcal work, which was only meant to be four to six weeks. Obviously, it has gone on for many, many years. I hoped he would carry out that piece of work and then come back in to help me, but that didn't happen.

775. I am not aware of any hospital in Scotland comparable to the size and complexity of QEUH and one that had ongoing built environment issues to the same extent, requiring significant ICD resource. I have supplied emails pertaining to staffing levels dating back to 2017 in the pdf entitled 'staffing issues' **(Bundle 14, Volume 1, Page 767)**. Notable is that after the HIS inspection, discussion continues to take place about short staffing despite assurances having been provided to them.

776. In an email dated 5 February 2019, Dr Armstrong agreed that there was a need to stabilise the ICD service **(Bundle 14, Volume 1, Page 779)**. In February 2019, it was agreed to appoint a locum ICD, Prof Stephanie Dancer, to provide support on the QEUH site. Prof Dancer is a very experienced microbiologist and ICD with an international reputation. She is a former editor of the Journal of Hospital Infection. I felt it would be useful for her to come in one day a week to help me work through all the issues that were arising at the time, in particular those related to infection control and the environment. She attended the QEUH for just two days before being told by Prof Brian Jones that her services were no longer required. No explanation was given to me for the decision. In an email from Prof Dancer to Prof Jones, she cites serious environmental deficiencies at the QEUH

and alluded to the culture as being a reason for her being dismissed.

777. Prof Brian Jones was subsequently asked to gather data on ICD workload, and it was clear from responses from ICDs in GRI that workload concerns were not isolated to the QEUH. However, nothing happened as a result of the data gathering that had been carried out.

778. I was not given any reason as to why it was not being addressed. Prof Jones basically said that we had to deal with what we had. That's not great for the service but is a typical example of the responses from Prof Jones if we were asking for help.

779. In April 2019, I raised further concerns with Prof Leanord in his role as Diagnostics Clinical Director regarding workload **(Bundle 14, Volume 1, Page 790)**. In addition to being lead ICD at the time, I was in a TPD role for higher specialist training in microbiology and was having to provide temporary TPD cover to Virology in addition to being an educational supervisor for 5 trainees in the department. I highlighted this as being excessive but there was no attempt to address it.

780. One of the issues was that Consultant microbiology colleagues had been given no time in job plans for training. We had red flags from various trainee surveys, issues with training and supervision and much of that was due to staff shortages. Every trainee has to have an educational supervisor, a named consultant supervisor who has an hour a week per trainee allocated in their job plan.

781. Because we were so short-staffed people were not getting an hour a week in their job plan to do this and were giving up the supervisor role. Then we didn't have enough supervisors.

782. In Spring 2019 Tom Walsh was moved from the ICM post into another role and Sandra Devine was made temporary ICM. I think this changed happened

because Dr Armstrong recognised, not just from me, but from others, that perhaps he wasn't performing as he should in the ICM role. She reshuffled the team as well. I think this was as a result of the concerns that I and others had raised with her. She was doing something.

Health and Sport Committee submission

783. In early 2019, the Scottish Government Health and Sport committee called for submissions relating to health harms from the built environment **(Bundle 27, Volume 7, Page 329).** I was surprised that the GGC response was being led by Dr Iain Kennedy, Public Health Consultant rather than the IPCT. I had expected it to be an IC consultant that would respond, because we have the expertise in the built environment, particularly the hospital-built environment. We would not expect Public Health to know much about ventilation or water in hospitals, that is an ICD role.

784. I was in post as lead ICD, and I had expertise in both so it just seemed very strange that I was not asked by GGC to provide any information. The response was sent round for comment. When I read it, I was disappointed by the content which I thought was largely irrelevant to the built environment and hospital. I knew that, even if I tried to change it, they would not take my views on board because what I would be saying would be deemed controversial.

785. Instead, I decided to submit an anonymous submission with a colleague. This paper was a summary of my built environment experience from various Board hospitals and one other health board. It included reference to several incidents involving the QEUH site, but also some from other GGC hospitals and one from another health board. (See HS-S5 pdf). When the submissions were made public, mine and two others remained anonymous.

786. The anonymous submission was a continuation of the concerns that I had been raising all along. It goes back to when I first started as an ICD, so it is not all

about GGC. Some of the submission is actually about the Golden Jubilee, because I dealt with built environment issues there from day one. The submission was a summary of all my experience and expertise. It did not contain anything I had not raised before so I do not think it was particularly controversial. Most of the incidents and outbreaks were known about or had been published. The submission simply pulled everything together.

787. Dr Armstrong asked me if the author of my submission was Dr Christine Peters. I told her it was mine and I could tell she was particularly upset about that. She indicated that our trust had been broken. At that point, our relationship did degenerate somewhat and I felt that she stopped supporting me.

Independent Review

788. The Health and Sport Committee was a precursor to the Independent Review. I think they were in touch with me because, at the time, I was still the lead ICD. They were keen to interview me and other IPC staff. Several of us got invitations to go and have a preliminary chat with them about the whole process and what it would look like. My meeting was scheduled for 21 May 2019.

789. This was when I was given a folder of documents from Pamela Joannidis, which I have referred to above. These documents made it clear to me that the issues which myself and colleagues had raised in 2015 had been raised and discussed before, but when we did it, we were being portrayed as hysterical and as overreacting. Issues such as the BMT unit and the negative pressure rooms had been discussed and even minuted at BICCs by Jennifer Armstrong, Prof Williams, and Tom Walsh. They had all been involved and had attended meetings. I don't think Pamela was meant to give me all those documents; I think it was a mistake.

790. Previously, Dr Armstrong had mentioned trust but I did not trust any of them, including her, because I could see the minutes of BICCs where she was having

discussions about moving infectious disease physicians across, and asking for assurances about BMT units. She and my colleagues such as Tom Walsh, Sandra Devine and Prof Williams were heavily involved at the BICC meetings.

791. By May 2019, I had decided I would be resigning from the lead ICD role. I did not have trust in the team I was working with. I was being labelled as a lone voice and whistle- blower. I felt marginalised and undermined and had raised issues on culture and patient deaths that, from my perspective, were not being taken seriously. I needed to get out and did not feel I could continue on that team.

792. This was around the time of the Ward 6A incident in 2019. I decided not to resign at that point due to the ongoing incident. It had started to evolve and there was another Mycobacterium Chelonae. I felt there would be a risk that it would not be investigated appropriately and shut down or covered up.

The infection outbreak in Ward 6A, Spring 2019 to December 2019

793. On 3 June 2019, a PAG was held to discuss four recent cases of Gram-negative bloodstream infections on Ward 6A **(Bundle 2, Page 130)**. Following that, a decision was made to establish an IMT. The first IMT meeting was held on 19 June at which a total of seven patients were discussed, five with Gram-negative infections and two patients with Mycobacterium Chelonae infections **(Bundle 1, Page 320)**. Given the environmental nature of both the Gram-negative organisms and the M. Chelonae cases, they were investigated at the same IMT and the focus became investigation and control of the environment.

794. The five cases of Gram-negative bacteraemias occurred over the time period 13 April 2019 to 12 June 2019. The two cases of M. Chelonae occurred over the time period May 2018 to June 2019.

795. Of the five Gram-negatives, one patient had links to another hospital having attended day care there. One other had an infection thought to be from a gut

origin rather than the environment. Of the remaining three, one had been an inpatient on Ward 6A and the other two had attended the day unit on that ward. With the epidemiological links to Ward 6A, this warranted an IMT investigation even though different organisms were involved (Stenotrophomonas, Enterobacter and Pantoea). In my view, having several organisms together can indicate an environmental issue, particularly where there is biofilm which has a complex community of bacteria involved.

796. On 24 June 2019, I attended a regular meeting that the ICM and I had with Dr Armstrong. We discussed the ongoing Ward 6A incident. Dr Armstrong had previously been complementary about how I had managed incidents. However, on this occasion, after discussing the cases and epidemiology, she said that I was not seeking advice from experts early enough in this incident and that it was important to do that so that the risk could be shared.

797. I disagreed with her because I was constantly in touch with experts. I had regular discussions with Suzanne Lee about various issues, as evidenced by emails. I also spoke to Peter Hoffman. I do not know what Dr Armstrong meant by her statement or the basis for it and I would contest it.

798. HPS were involved throughout the 2018 water incident. As soon as we reported this new incident to them in 2019, they were asked to be involved because it was almost an extension of the 2018 incident. HPS were present from the second IMT.

799. HPS give external assistance and scrutiny. Following the first IMT, an update was sent to HPS via the HIIAT report. This further undermines Dr Armstrong's statement. None of the external agencies I was engaging with disagreed with my proposals. I do not think they were proposing hypotheses that I had not thought of. I do not think anyone was reporting anything different. I believe HPS were on board with the potential hypothesis.

800. I do not know why there was so much pushback from senior management. I think it may have been about organisational reputation and that is what they were trying to protect. Thinking about the whole situation with this ward, we had to move this ward from 2A to 6A. We had given assurances that the environment was safe to patients and families and the public. When issues then arose in Ward 6A, I think it was just too much for the senior management. We could not move the children back to Ward 2A because of the ventilation issues. So, the question was, where were we going to put these children? I think that is why they tried to keep it quiet and shut it down.

801. Regarding my meeting with Dr Armstrong on 24 June 2019, although she made reference to me being a lone voice, there was never any offer of support at the IMT. I think she was very focused on the epidemiology. Her view was that there was a background rate that would be acceptable. She was very focused on that, and she was very focused on benchmarking with other hospitals, i.e., getting views from other hospitals around the country as to what their bacteria rates were. I felt she was not listening to me about the epidemiology when I was saying that it was not the number but the type of bacteria that was the problem.

802. I have mentioned an epidemiology report from Dr Iain Kennedy **(Bundle 6, Page 104)**. I think the report came out after this meeting. I cannot recall if there were any reports at that time for Dr Armstrong to consider. She may have had conversations with Dr Kennedy. The epidemiology was Dr Armstrong's focus at this point.

803. As the IMT progressed, I did not find them to be very efficient. We were spending a long time at the start of each meeting going over minutes which was slowing everything down. We were also spending ages going back over hypotheses. There was continual challenge about epidemiology, so everything was being repeated. Also, different people were attending, and they wanted to be brought up to speed.

804. We had busy clinicians who can't afford much time. I used to try and keep an IMT down to one hour to allow them to get away to do their clinical work. However, the meetings were becoming longer and longer, with more things being contested. I think a very clear division between senior management versus the clinical team was happening. It was becoming challenging.

805. I did not get the impression that there was any attempt to deal with the increasing levels of disagreement. The only person I saw stepping in to try and smooth things over occasionally was Jamie Redfern. I thought he was good at doing that.

806. I could not raise the issue within IMT with Sandra Devine or Jennifer Armstrong as they were opposed to what I was doing. They did not want the infections to be investigated as an incident or outbreak. They were the people challenging me, so I didn't really have anywhere to go. What I did have, however, was the support of HPS, particularly Annette Rankin, and I also had support from clinicians, which is why I kept going. If HPS had told me that I was wrong, then that would have been different. But they supported what I was doing.

Mycobacterium Chelonae

807. When we are looking to establish whether there is an outbreak or not, we look for an epidemiological link in "time, place and person". "Place" is the ward, so all the patients would have the ward in common; "person" is the patient group, which is haematology; and "time" is over a relatively short time period. Those links were met in the Gram- negatives.

808. M. Chelonae is slightly different as there was quite a significant time between the two cases, with one occurring in May 2018 and the other in June 2019. However, it is a rare, waterborne infection and, as such, two cases were considered a data exceedance even though they were far apart in time.

809. By the time of the second case, we knew that M. Chelonae was in the water in

Ward 2A, but the second patient had not been in that ward as it was closed as at June 2019. Although they had previously been in Ward 2A, it would be highly unlikely for them to have acquired it from the ward given the time duration. Because they were immunosuppressed, you would expect that infection to present more quickly from the time of exposure. I was, therefore, more concerned about where they had been, which was Ward 6A and the theatres. This is why we looked more closely at the two cases and did a detailed timeline.

810. We followed both patients through the hospital to see where both of them had been. Ward 6A was common to both, as were the operating theatres. This is why we tested the water in both locations. This would be one example of root cause analysis. We then looked at the theatre and found that the drains looked as if they had the same build up that had been found in Ward 2A. In view of these initial findings, POUF were applied in theatres and other areas including radiology and outpatients.

811. The other enlightening fact coming from the exploration of the patients' pathway was that we knew they were going to theatre regularly for line insertions, manipulations and lumbar punctures because they were paediatric patients. This was standard procedure with children as they have an anaesthetic for these procedures. We assumed these procedures took place in the operating theatre which has very specialist ventilation and the children are nowhere near a sink. However, it transpired that those procedures were performed in an anaesthetic room beside the theatre where there is a sink and there is not the same air change rate and specialist ventilation. The sinks in that anaesthetic room did not have filters and were a risk.

812. The second patient with M. Chelonae had been in theatre for a line manipulation. Given the prolonged incubation period of the organism, this visit to theatre was where exposure to contaminated water seemed likely. My view was that there was a risk of splash water and also of dislodging things from drains. Patients could be exposed to unfiltered water in that environment. I thought it was certainly

a factor in how the second patient acquired M. Chelonae. Given the way the second child presented, the timing of when they presented in relation to probable exposure and where the skin lesions were distributed, on the chest wall and arms, suggested that water had splashed onto that area when they were manipulating the line in the anaesthetic rooms. It is a theory that is very difficult to prove, but with whole genome sequencing ("WGS") we got very closely linked water isolates from that area linked to the patient.

813. The first M. Chelonae case was discussed at an IMT in 2018 and we informed the government. There was a lot of discussion at the time about whether we should test the water for Chelone because it was not a routine test. The view of the experts and others at that time was that, because the taps had filters on, we were not going to take them off to test the water.

814. Just before the second case came to light, I had recently requested water testing of outlets in the vacated Ward 2A for M. Chelonae and the results had come back positive. I had requested this testing to try and assist the [redacted] of the first patient who had contracted M. Chelonae in May 2018. [redacted] was not happy about how it had been handled and there was an ongoing complaint. Therefore, at this IMT we had knowledge of M. Chelonae from water in that ward (showers and a domestic services room). The way in which I instructed this sampling was slightly unorthodox. I didn't do it via an IMT because I knew it would be declined. Instead, I asked Estates colleagues and lab colleagues to do the water testing. This is why we had the results from Ward 2A just before the second case and this is why we were not testing for M. Chelonae anywhere else. There was a specific reason for looking at Ward 2A only. However, it meant we subsequently tested the water in Ward 6A and the theatres with the knowledge that it was in the water system.

815. We were able to shut down the M. Chelonae aspect of the IMT as we had come up with a theory about the anaesthetic room and the whole genome sequencing supported that theory. This was agreed at the IMT on 7 July 2019.

IMT, 25 June 2019

816. At the IMT on 25 June 2019, an additional case of Gram-negative blood stream infection was discussed **(Bundle 1, Page 325)**. At the time, this patient was in in hospital in Edinburgh. However, they had been in Ward 6A and had grown an environmental organism called Pseudomonas Putida. HPS were in attendance from this IMT onwards in 2019. Drain cleaning in theatres was undertaken and water samples were requested from chilled beams in Ward 6A. The epidemiology of M. Chelonae in Glasgow was reviewed.

817. An error was made in the reporting at this IMT. It was stated that there had been four cases in adults. In fact, one had been in a child and this only became apparent after the Case Note Review. Therefore, in total there had been three cases of M. Chelonae linked to the RHCG since opening. On review of the microbiology records, there was nothing documented to say that infection control or the clinical team were made aware of this patient in February 2016, and nobody seemed to know about the case until the Case Note Review.

818. The Case Note Review must have been able to get it when they asked for the data, so it was an error in the IMT minutes when it said four adults.

819. At this IMT, a request was made for HPS to undertake a literature review of M. Chelonae and other non-tuberculous bacteria outbreaks (see HPS MC literature review) **(Bundle 14, Volume 2, Page 386)**. We sometimes ask for this in IMTs, particularly around rare and unusual bacteria. It is to give us a helping hand with anything that they might get from the literature. I always find it useful to look at other people's descriptions of outbreaks and what they have done, and learning points from that. HPS can rapidly pull all that together because they have healthcare scientists that can do that piece of work.

820. The purpose of the literature review is to look at other outbreaks and what control

measures were put in place and how common the infection is, just to give us a steer. I have knowledge of M. Chelonae anyway and I have done my own literature review.. These kind of things take time, but it is useful as a back-up to support what we were doing and what we were saying. The literature review undertaken by HPS tallied up with what we had been doing.

821. Communications and the duty of candour were also discussed. To be clear, there is still a duty for the clinician looking after the patient to tell them they have an infection and need antibiotics. There is a clinician duty of candour. However, as far as the IMT was concerned, I had nothing additional to tell at that point because we did not know what was going on. I, therefore, did not arrange to meet with anyone at that point. The Gram- negative infections families were told about the infection and the need for antibiotics.

822. Initially, the source of the Gram-negative infections was unclear so no information could be given about this. The picture was much clearer with regards M. Chelonae and therefore there was an organisational duty of candour. At the second IMT, Prof Gibson and I were insistent that both families and patients were told at the same time. Plans were made to speak to one family the following day as they were due to attend for an appointment. The second family were to be contacted immediately after the first were informed. I recall Prof Gibson and I stressing the importance of this and that we did not want families finding out via social media or other means.

823. It was an unusual meeting. I remember the room and I remember there being a big table in the middle and I remember senior managers coming in and rather than sit around the table with Jamie Redfern, who was to my left, and myself, they all sat in a row on chairs. The Deputy Medical Director, Dr Chris Deighan, who was present was asking many questions regarding epidemiology, along the same lines of the discussion I had with Dr Armstrong the day before and it was clear to me he had been briefed about our conversation.

824. It felt as if there were two opposing sides in the room. It was like the clinicians and me versus senior management. Overall, I found this to be a difficult IMT. After this meeting, a clinician referred to me 'being in front of a firing squad.' It was rough and it was distracting from trying to sort out the problem. We always expect challenge in IMTs, but this was nothing like I had experienced before and all of it was distracting us from actually dealing with the problem. After this IMT, I felt there was a division between clinical people and senior management.

825. Although Chris Deighan, who is the Associate Medical Director and a renal physician, attended this meeting, I think he was brought in because the other Deputy Director, Scott Davidson, who had more IC responsibility in acute, was on leave. Dr Armstrong had likely instructed Chris to come along as he had not been there up until that point. He did come to a subsequent IMT where he talked about children splashing in muddy puddles.

826. The following day, I met with Prof Gibson and the family of the M. Chelonae patient. Ultimately the aim of this meeting was to fulfil our duty of candour. Immediately after this meeting, I went to Jamie Redfern's office to contact the [redacted] of the other M. Chelonae patient. There was a Facebook page that families were using as a support. My concern was that the first family might put something on Facebook which the second family would see before hearing from me. In my experience, those situations had arisen previously.

827. Prof Gibson and I were insistent that the minute the first family left, I would go and speak to the second family with Jamie Redfern. When I got to Jamies's office, I was made aware of a phone conversation that Jamie had had with Kevin Hill in which he was told we were not to contact this parent. Jamie was uncomfortable with this decision, as was I. We were not given a reason for the decision, we were simply told not to contact them.

828. Jamie Redfern told me he was going to send a text or WhatsApp message to Kevin Hill confirming this was the instruction so that he had a record of events, as

it was sure to come back to him. It did come back to Jamie. However, we were instructed not to speak to that family. When I followed it up at the next IMT, Kevin Hill reported that the Chairman of the Board, John Brown, had spoken to that parent which seemed odd because the Chairman was not familiar with the investigation. To my knowledge, both families who were involved with the M. Chelonae investigation were told about it.

829. Later, when I met [redacted], it became apparent that [redacted] had not been told by the Chairman. Unfortunately, [redacted] had found out from the other family.

IMT, 3 July 2019

830. At the next IMT on 3 July 2019, sampling results were reviewed **(Bundle 1, Page 330)**. Water samples from Ward 6A and theatres were positive for M. Chelonae. All Gram-negatives were typed and had unique strains which ruled out cross transmission between patients but not an environmental source.

831. At this IMT, it was reported under communications by Kevin Hill that the Chairman of the Board was in communication with the parent of the M. Chelonae patient that Jamie and I had planned to speak with.

832. Due to my annual leave, there was almost a month until the next IMT. I was informed that the other ICDs were reluctant to chair the meeting in my absence due to lack of expertise in the area. Since the previous IMT, a further two patients had developed Gram- negative bacteraemias. Again, environmental organisms were implicated; Chryseomonas, Elizabethkingia and Pseudomonas Putida (one patient had two organisms).

Chilled beams

IMT, 1 August 2019

833. At this IMT, the focus was on chilled beams as the source of the infections, as the leaks had coincided with an increase in infections **(Bundle 1, Page 334)**. There was an agreement to increase cleaning of the chilled beams to every 6 weeks. It was noted that, due to recent warm weather, condensation was increasing on these beams. Estates reported that they had developed an algorithm to address this issue. Due to the severity of the illness of one of the patients, the HIIAT was elevated to red status. There had been several episodes within the QEUH of water dripping from chilled beams (see chilled beam leaks pdf) **(Bundle 12, Page 1250)**.

834. The infections could have come from our water supply. It could have been from drainage, or the chilled beams, anywhere where there is what we call a biofilm. There was disagreement, and I think there still is disagreement, around that hypothesis, certainly with GGC. If the typing does not produce a match, then they basically rule out any source in the hospital. They have not grasped the fact that when you are dealing with an environmental source and biofilm, it is so complex; there are multiple different strains, and you might not get a typing match. There are published outbreaks which are polyclonal (involving different strains). Therefore, typing is still used (erroneously, in my opinion) as a reason to exclude potential sources. A newer method of typing called WGS has been used in a couple of situations by GGC. However, it is not readily available. I understand it is being suggested by GGC that one can use WGS to disprove a link between the environment and infection. This is not correct. I have published a paper about the complexities of biofilm and typing which I have provided to the Inquiry as an appendix to the Executive Summary which accompanies this statement. Suzanne and John Lee are two leading experts who should be asked by the Inquiry for their input. Suzanne Lee is also an important factual witness because she prepared a report dated 25 April 2018, in which she references the large number of colony picks

required when undertaking typing **(Bundle 8, Page 134)**.

835. My suspicion was that the infections were related to a water source and something that we hadn't considered on Ward 6A because we had filters on all the taps. It wasn't convinced it was the drains. I don't know if it's because the ward was at a higher level and whether that affected the drainage, but the drains did not have that same build-up as we had seen in Ward 2A. We were putting disinfectant down the drains, so they were being cleaned adequately.

836. Two other potential water sources were identified on Ward 6A itself, chilled beams and a leaking pipe with water ingress into the ceiling space. These potential sources were raised at the first IMT on 19 June.

837. I felt there was fairly immediate push-back around the chilled beams. With chilled beams, there are two sources of water. There is "internal rain" which is when condensation develops on chilled beams and then drips down. There is also a circulating water system and pipework up there as well.

838. A leaking chilled beam had been reported on 3 June 2019. Christine Peters investigated this and wrote an SBAR (see leakage from chilled beams email 3rd June) **(Bundle 12, Page 958)**. She went to the ward because a patient's parent reported that their child's sock was soaked in water which was dripping heavily from a supply grill. Her view was that it was leaking pipework rather than condensation. There was water dripping on the floor as well. So, there were two different sources of water and phenomena that were going on. Dr Peters took photos of this and her view on the sequence of events was boiler failure leading to reduced heat in the hot water system followed by reduction in pipework temperature and contraction of metal causing loss of seal integrity at pipework connections. Later that day, it was reported to me that beams had been leaking in nine rooms in the ward.

839. This report was contested by various different Estates colleagues, apart from one whose name I can't remember. When I went up to Ward 6A to take swabs of the chilled beams on 16 August 2019, the Estates officer whose name I cannot recall, told me that there had been leaks from both the hot and cold arms of the circulating water system and that this was due to pumps going off and loss of pressure. He also mentioned loose connections. He said they knew the leaks were happening.

840. When I put this information in an email, someone else stepped in and denied that this is what had happened. The helpful Estates colleague suddenly went off sick so I wasn't able to expand on what he had said, or get him to come to an IMT to explain it.

IMT, 8 August 2019

841. At this stage in the IMT process, the main hypothesis for the Gram-negative infections was leaking water from the chilled beams **(Bundle 1, Page 338)**. For the M. Chelonae, it was exposure to unfiltered water from outlets.

842. I felt like the IMT was being shut down when I raised the issues with the chilled beams. There was one particularly difficult IMT where I brought it up. I was the only microbiologist there and Tom Steele contested the chilled beam hypothesis and said there wasn't a leak from the pipework. He contested the hypothesis despite the findings of the microbiological testing that supported it, the eyewitness account and the photos provided by Christine Peters. At that point, I had grown an organism called Pseudomonas oleovorans from a swab off a chilled beam grille. It had been isolated from the circulating water in the pipework and from the swab outside the pipework. I've never seen that organism before, it's exceedingly rare. The fact that was circulating in the system and dripping outside is robust enough evidence to say there's a leak. Other swabs taken from chilled beams revealed growth of bacteria including Klebsiella, Acinetobacter and Pantoea species. Tom Steele asked if there was anything that could be added to the chilled beam water system to address the Pseudomonas found. I suggested

chlorine dioxide and Estates were given an action to discuss this with the manufacturers. As a result, we focused further interventions on the chilled beams, with Estates developing an action plan which entailed the purchase of new grills and cleaning.

843. Although Tom Steele was contesting the issue with the chilled beams, he never offered any other explanation, save for repeatedly saying it was condensation. He said that was to be expected in the chilled beams and they would alter the dew point to stop it happening, which they did. They were able to change some sort of algorithm which stopped the condensation.

844. It took some time for them to implement the change to the algorithm. During this incident, we went round and swabbed all the chilled beams, but Estates went round and had to clean and replace them all. That programme of work took a bit of time. I can't remember when it finished.

845. Over and above the water leaking, there was dust build-up. I think we'd been told by the manufacturer that they only needed to be cleaned yearly, but we had to take that down to six weeks because there was a significant build-up of dust. When the water was leaking, it was coming down dirty because it was picking up all the dust and dirt on the way. These chilled beams were a big issue, but they were controversial because they were placed throughout the hospital for energy efficiency. That was deemed to be the priority and I don't think people wanted to admit that they were actually a risk.

846. I did not think the environment was safe. I felt there was too much environmental risk because the chilled beams meant we had leaking into a ceiling void as well as from other pipework. The move to Ward 6A was only meant to be short term. I worried that the project in Ward 2A was going on for much longer.

847. I think I had asked for a reassessment of the contingency planning during the Cryptococcus incident which never happened and here I was asking for it again because I was getting increasingly concerned about the infections in this ward

and the environmental risk. A discussion took place at this IMT with regards to contingency and moving patients elsewhere. Dr Scott Davidson agreed to discuss this with Dr Armstrong. It was stated that the IMT could make a recommendation regarding a decant but that the final decision would be endorsed by the Chief Executive Jane Grant. An options appraisal meeting was to be set up to look at possible solutions, if it was decided to relocate patients.

848. At the IMT, it was stated that there were only leaks from the hot. However, as noted above, an Estates colleague told me on 16 August 2019 that there had been leaks from the cold as well (where we had isolated the Pseudomonas Oleovorans from) due to pumps going off and loss of pressure.

849. In a follow up email, another Estates officer, Colin Purdon, stated that leakage from the connections due to loss of pumps or pressure was unlikely but that the Estates officer in question was now off sick so he could not clarify with him **(Bundle 14, Volume 2, Page 530)**. He stated there were no records of this type of failure. In this email, details of three episodes of loss of pressure in June/July 2019 and two instances of repair to energy centre pipework in August 2019 were provided. (See Chilled beams actions email pdf). I sensed that Estates colleagues were not being open and transparent about the chilled beam issue.

850. As the IMT process went on, it was becoming increasingly difficult, and the significance of the Gram-negative infections was particularly contentious. There was a view from several individuals in senior management roles that these were normal background rates and that there was nothing remarkable about the epidemiology. There was considerable reference to benchmarking with other hospitals including the old Yorkhill site.

851. Between 12 and 14 August 2019, discussions took place via email between myself, Sandra Devine, and Iain Kennedy about the HAIRT report and an M. Chelonae briefing paper. Sandra had invited me to comment on the HAIRT report. The HAIRT report is the one that goes to the board before their meetings.

I was concerned that the number of cases in this IMT was not being accurately depicted. Rather than report the true number of cases (11), it was focusing only on 3 cases due to unusual bacteria.

852. I felt this was misleading as to the scale of this issue. I did not feel it was being transparent because this was not just about unusual bacteria, we were investigating 11 cases. (See Aug 2019 HAIRT discussion)**, (Bundle 14, Volume 2, Page 560)**. Iain Kennedy had been tasked with writing a briefing note for Dr Armstrong about nontuberculous mycobacteria of which M. Chelonae is one **(Bundle 14, Volume 2, Page 562)**. Again, I was confused as to why a public health doctor was writing this brief and not me as the lead ICD and a microbiologist.

853. There were some omissions in this paper and epidemiology from a referenced publication had not been interpreted correctly, which I pointed out. There was also reference in this email trail to M. Chelonae no longer being named in the HAIRT report. My concern was that they wished to provide assurances to the board with the HAIRT report in a manner that was not open and transparent by reducing the actual numbers of infection and removing specific reference to M. Chelonae by calling it non tuberculous mycobacteria.

854. It's very complex microbiology and I was not happy with the content. I felt that he was misinterpreting epidemiology from a publication from Edinburgh, and I felt he'd omitted some key studies that talked about a single case being linked to water. I thought that was an important omission and then there was reference in one of his emails saying something didn't matter anymore because they weren't going to name M. Chelonae in the HAIRT report.

855. So, for some reason they were going to take the name, M. Chelonae, out. I think this was because of [redacted] and all the issues [redacted] had raised. [redacted] had contracted M. Chelonae. The senior managers did not want that organism specifically named. I felt between that and the Gram-negatives, they

were misleading the executive and non-executive directors of the Board. They were not being open and transparent by declaring the true number and by declaring the actual name of the infection. I believe any reference to “M. Chelonae” would have caught the attention of board members.

856. I cannot remember if the version of the HAIRT report that went to the board directors included any of the changes which I proposed. I would need to check which version was submitted. I don't think the executive and non-executive directors had been informed of what was going on from what I could see. I think there were attempts to minimise the issue, protect the organisation and I don't think they were getting accurate information. I think the intention was to keep this from them. It all comes back to organisational reputation; the HAIRT report goes into the public domain because it's a board paper. Therefore, the general public and the media see it, as well as board members.

857. As a result of what happened at the IMT on 8 August 2019, I raised concerns with Sandra Devine because she was my line manager at the time.

IMT, 14 August 2019 **(Bundle 1, Page 343)**

858. At this IMT I invited two microbiology colleagues to attend - Kathleen Harvey Wood and Dr Christine Peters. Kathleen Harvey Wood is a Clinical Scientist who has experience of covering the unit in the old Yorkhill and many years’ experience of paediatric haemato- oncology and the epidemiology of infections in this patient cohort. Dr Christine Peters has microbiology/infection control expertise and had assessed the leaking chilled beams, visualised the issues and produced an SBAR. Senior management were not happy that I had invited Kathleen and Christine. The minutes of this meeting do not adequately capture the events.

859. The atmosphere at this IMT was difficult. I felt that senior management were not pleased that I had brought microbiology colleagues to the meeting. I was no longer a lone voice or “out on a limb”. Colleagues with expertise in microbiology

were backing me up. I was concerned that several individuals at the IMT with no expertise in microbiology and infection control were voicing strong opinions with regards to the interpretation of epidemiology and microbiological results.

860. It was tense from the outset after Tom Steele contested previous minutes where there was reference to Jane Grant, Chief Executive. He requested that her name be removed with reference to the final decision-making process about contingency planning. The clinicians and others expressed concern that the responsibility appeared to sit with them with regards to the placement of patients. Jamie Redfern stepped in to resolve this, stating that the previous minutes were accurate on the role of Jane Grant.

861. No specific reason was given other than Tom saying it was not what was agreed. Jamie Redfern was not a director at this point. However, he was left to deal with this. I didn't feel that Kevin Hill had much visibility and he didn't often come to meetings.

862. When it came to the discussion on epidemiology, I felt that members of the IMT were disrespectful to my colleague Kathleen Harvey Wood. She was really concerned. She had been in microbiology for a long time and covered Yorkhill. We had had the occasional one of these organisms at Yorkhill, but she was worried about the epidemiology and the pattern and the nature of the bacteria. It wasn't like anything she had seen before and she was raising concerns. She shared our opinion that it was a water source.

863. I recall that Dr Chris Deighan told her that children splashed in muddy puddles and pointed out that the numbers of bacteraemia had not increased, referencing Dr Iain Kennedy’s epidemiological report. Kathleen, Christine and I highlighted that it was the type of infections that were of concern, i.e., environmental Gram-negatives.

864. My view was that the excellent work of the CLABSI (Central Line Associated

Blood Stream Infection group) had driven down the typical pathogens in this patient group and these were being replaced by environmental Gram-negatives as the predominant type due to poor environmental control. Things we would normally see like the skin organisms were not there but they had been taken over by these environmental Gram-negatives. This meant the numbers looked fine, but they weren't, because it was the nature of the bacteria that was the issue.

865. If you added in the Gram-positives that the CLABSI work had reduced, it would be a huge spike, but they could not seem to grasp the impact that that group had on the other typical infections. I don't think they wanted to grasp it. I think they wanted to use this data to say that there was no problem.

866. Chilled beams were again discussed and there was disagreement between Tom Steele and Dr Peters about the source of the water leaks. It was reiterated that the presence of Pseudomonas Oleovorans, which is found in cooling agents and lubricants, indicated that the pipework was an issue. Dr Peters reported that she had witnessed leaks from the connectors. Later, she was accused of bad behaviour and aggression towards Tom Steele. I disagree with this; she was assertive and needed to be because, in my opinion, he was lying. She had told them she was there and had spoken to some of the parents.

867. I have attended many meetings in GGC and many IMTs. I have seen aggression and Christine was not aggressive. What I will say is that when a woman is assertive, they are labelled aggressive. It is fine for a man to behave like that but not a woman. This is an example of the misogyny we experienced.

868. At this meeting, I also discussed the pitfalls of environmental sampling. I did this because members of the IMT were very focused on negative swab results and concluding from them that chilled beams were not responsible.

869. I felt that there was a failure to understand the extensive surface area that a patient is exposed to, and that environmental sampling can be like searching for a needle in a haystack. I discussed a CDC talk where it was highlighted that

surface swabs may only get a 25% yield in picking up bacteria from the surface onto the swab and only a further 25% are likely to transfer the bacteria onto an agar plate for culture. My view was that, regardless of sampling results, leaking water above haemato-oncology patients was a significant environmental risk. We were sampling a tiny surface area and only at one time point. It’s not very easy to sample the environment and prove a link.

870. When trying to find a source of bacteria in a bigger area, we cannot test everything. We base decisions on where to swab on the type of bacteria and the type of environment that it survives well in. For example, Pseudomonas and Stenotrophomonas are found in water, so I'd be looking for a water source. It is possible to narrow down what is to be sampled within a space, but the surface of a chilled beam is big, and it would never be possible realistically to sample the entire surface area.

871. At this IMT, there was a mixture of not understanding and not wanting to understand. I sent the slides from the CDC and I had to do that a couple of times. I had to send papers about epidemiology which I didn't have to do in previous IMTs. People tended to listen to the expert in the room, but I found I was having to really back up what I was saying with sending people things to demonstrate that there was some science behind it.

872. This was not a great meeting, but I have been in far worse. I have witnessed people beat their fists on the table with aggression, I've seen pencils being thrown, people swearing, not meetings I've chaired, but I have seen what I would deem bad behaviour. I did not enjoy chairing it, but I got through it. I do not think it warranted the response that it got afterwards. Nobody stepped in and suggested taking a break or anything like that. There were Associate Medical Directors and some other very senior people present in the room. If it was so bad, somebody should have stepped in.

Aftermath of the IMT and Dr Inkster's removal as chair

Whistle blow

873. Immediately after this IMT there was an anonymous whistle blow to HPS. The whistle- blower raised the following points: "1) The chair is unable to do her job in protecting patients from infections due to the cultural and organisational failings, citing lack of support from management; 2) Critical information has been denied to the chair, or false accounts given by high level managers; 3) microbiology/clinical judgement regarding the fact that there is a real issue with unusual environmental pathogens in haematology paediatric patients is being continuously questioned; 4) Lack of transparency in communication." (see whistleblowing email from Linda DC) **(Bundle 14, Volume 2, Page 573)**.

874. On 19 September 2019, I received an email informing me that there would be an investigation of the IMT following the HPS whistle blow **(Bundle 14, Volume 2, Page 601)**. It stated this would be undertaken by Linda de Caestecker and Barbara Anne Nelson, an HR director from another board to give independent advice and bring HR expertise. (See email re whistleblowing investigation).

875. At the meeting, I gave an account of the IMT and what I felt were the main issues. These included: undermining, lack of respect, lack of information sharing, lack of truth surrounding events, constant challenge of expertise, individuals acting beyond their expertise. I recall being asked if I was the HPS whistle-blower, to which I answered no. I did not think this was an appropriate question.

876. I raised other issues about what I perceived to be discrimination of someone with chronic illness and recounted what had happened to me with regards sick leave and attitudes towards illness. I told both that I did not intend to take out a grievance but felt that HR should do more to prevent such discrimination. I did not hear anything further about this. I was concerned that the individuals interviewed were not fully representative of the IMT and wrote to Linda de

Caestecker to suggest some additional names **(Bundle 14, Volume 2, Page 619-20)**.

877. She informed me that this was an internal review and not a full investigation, so she chose which members of the IMT to interview. If an HR process was to be recommended, there would be a wider group. She did say she was happy to hear suggestions which I put forward, but I am aware that several key members were not interviewed. (See email re IMT investigation) **(Bundle 14, Volume 2, Page 620)**. For example, microbiology colleagues like Kathleen Harvey-Wood were not interviewed, and neither were persons present from external agencies like HPS. I am not sure that some of the conclusions were justified based on the evidence I had given them. There were some very definite statements that people had not raised issues about, X, Y or Z when actually, I had, and I knew colleagues had as well.

878. Another email dated 15 October 2019 was sent about this **(Bundle 14, Volume 2, Page 619)**. Linda said that she had invited Brenda Gibson, Jamie Redfern and Jennifer Rodgers for interview. However, I had named quite a few people: John Mallon, Dermot Murphy, some of the clinicians, Annette Rankin, Susie Dodd and Kathleen Harvey-Wood. However, as noted above, I am not sure if they were all interviewed.

879. A summary of the whistleblowing report about the IMT was circulated **(Bundle 27, Volume 7, Page 536)**. The report stated that there were varying views within the IMT on hypotheses and safety issues and, therefore, the assessment of risk. The IMT of 14 August was highlighted by several people interviewed as a particularly difficult meeting with many unable to state views freely. Interestingly, despite what I, as chair had told them, such as information being withheld in the Cryptococcus incident, and the issue with the DMA Canyon Report, they concluded that information being denied to the chair was not an issue. Similarly, despite the information I had given them about the lack of transparency in their reporting to the Board, they concluded that there were no examples of lack of transparency. The report concluded that there was no evidence or desire to

instigate additional formal processes. (See summary of whistleblowing report).

880. I considered whether to take out a grievance based on this investigation. However, at the time, I decided not to given everything else that was happening to me, including my sick leave and how I was being treated around that.

881. In my view, the whistleblower was concerned about me and that is why they raised concerns. However, the subsequent investigation turned it all around and made the problem out to be me and my microbiology colleagues.

882. On 24 September 2019, I received an email from Linda de Caestecker about other concerns I had raised with Dr Armstrong. (See email 24/9 re whistleblowing concerns **(Bundle 14, Volume 2, Page 603).**These were in relation to SCIs, the duty of candour and the governance of specialist groups reporting to IMTs. An SCI is usually a major error that results in a morbidity, so there's a review of each case. Whilst I brought them up at the whistleblowing investigation, they were referred to the microbiology service to investigate by Robert Gardiner and Rachel Green. I met with both and sent some emails in advance. The meeting was not minuted, and nothing was actioned that I am aware of.

Meeting with [redacted] about Mycobacterium Chelone

883. Immediately after this IMT, I met with the [redacted] of a patient with M. Chelonae and Jamie Redfern. An account of the meeting is discussed later in this statement along with details of a meeting I requested with Prof Fiona McQueen because of what took place at this meeting, ongoing IMT issues and concerns regarding patient deaths. This is discussed below in the "Communications" chapter.

Removal as chair

884. On 14 August 2019, Sandra Devine asked me what support I required for IMTs, I suggested two things. Firstly, I was finding that minutes were not accurately reflecting discussions and IMTs were becoming inefficient because we were spending a lot of time at the beginning of the meetings dealing with inaccuracies. I suggested that meetings be recorded. I had experience of this when chairing the chapter 3 National meetings at HPS and it meant that minutes were very accurate.

885. Secondly, I stated that I wished to bring microbiology colleagues to more meetings. This would help with tasks such as environmental sampling. As the only microbiologist at IMTs, I was being labelled as a lone voice when in fact that was not the case. I felt that support from others in the team would be beneficial when dealing with senior management.

886. In GRI, it was common for more than one microbiologist to attend IMTs. In the QEUH, staffing and attitudes to their attendance made this more difficult. Having them attend would also help support my workload as they would be able to aid with lab data and investigations. I think Sandra's response was that she would consider these suggestions. That is all she said.

887. A few days later, on 19 August 2019, Sandra asked to speak to me again **(Bundle 27, Volume 7, Page 538)**. She apologised to me in advance that the meeting had been so dreadful. She said all attendees thought so and that, as a result, I had to stand down as chair. She informed me it was likely to be Scott Davidson who would take over **(Bundle 14, Volume 2, Page 570)**. This all happened before the meeting on 20 August 2019. I went off sick on the Monday night with a respiratory virus, so I missed three days that week.

888. I am aware that, in the days that followed, several people were approached to chair the IMT, including my colleague, Dr Valyraki. I understand that some individuals declined. It was subsequently announced that Dr Emilia Crighton

would take over as chair.

889. I was obviously quite upset by this because I didn't feel that that was a particularly fair process. From the feedback that I had received following the IMT, it appeared that people were more concerned about me and the behaviour of certain other people such as Tom Steele and Chris Deighan than about the way in which I was managing the IMT, and it was felt that the conduct of the meeting was not my fault. I struggled to think that all attendees thought badly of me. I know that people like Annette Rankin and others present did not think that at all. I felt that senior management had been looking to get rid of me for quite some time and that this gave them the opportunity to do so. I felt they wanted to shut the IMT down.

890. I had already been told by Sandra that I would have to demit as chair. It was presented to me as a *fait accompli*. As already mentioned, Sandra told me that everybody thought the meeting was dreadful, so on that basis, I was not going to contest it. I would continue as the lead ICD and attend the IMT meetings.

Emails providing epidemiology papers, 19 August 2019

891. Also on 19 August 2019, in response to an email trail between Dr Iain Kennedy and Dr Christine Peters in relation to his report on the epidemiology (see IK Gram negative descriptive report) **(Bundle 6, Page 104)**, I sent an email to both and included Sandra Devine and Chris Deighan. My email contained epidemiological papers from other centres which gave a useful picture of the typical organisms causing bloodstream infection in this patient cohort. They were scientific research papers describing the epidemiology of infections from other haematology units. They confirmed what we already knew; the most common infections in this patient group are organisms like Coagulase Negative Staphylococci from the skin; Streptococcal species that come from the mouth, because the mouth gets really inflamed with chemotherapy and sometimes they can then enter the bloodstream and cause infection; and E. coli from the gut. Those are the top three infections that we expect to find. They were seeing very

few environmental Gram-negatives apart from Ethiopia, which did have a fair number of environmental Gram-negatives. However, that is a country where water hygiene is poor. I suspect that was the problem there. I also mentioned that Great Ormond Street had in the public domain an Infection Control Report which was an annual report. I think it was dated 2018 to 2019. They had broken down their population to show how many infections they had had and I think it was one Stenotrophomonas in a year. In that email, I was highlighting that I had examples to back up my position. I felt I had to highlight that evidence to try and get my point across. (See email re epidemiology in other settings 19th August) **(Bundle 14, Volume 2, Page 565)**.

Meeting on 20 August 2019

892. On 16 August 2019, an email was sent by Dr Armstrong's PA stating that there were several issues regarding the haemato-oncology unit and invited individuals to attend a meeting on 20 August to discuss. (See email re assessment of current position) **(Bundle 14, Volume 2, Page 568)**. The aim was to set out the current position and discuss additional support to address current issues. I was not present at the meeting, but the email was misleading as the focus of the meeting from the outset was the IMT and not the environmental issues on the ward.

893. I saw the minutes from this meeting. I was really surprised by the content. As already mentioned, I thought the meeting was going to be about the current position in Ward 6A. There was no indication that the chair and conduct was going to be discussed.

894. According to the minutes, Linda de Caestecker, who chaired the meeting, highlighted that the Director of Public health has a role in reviewing the functioning of the IMT if there are any concerns. Individuals present at the meeting raised issues relating to membership, role of the IMT chair and behavioural issues in recent IMT meetings. Regarding the behavioural issues, those present described

the IMT as ‘confrontational,’ ‘off the scale bad,’ ‘totally disrespectful’ and as involving ‘uncomfortable dialogue’ and ‘inappropriate language.’ Toxicity and lack of identification as a team was also described.

895. In the discussion that ensued, it was suggested that there should be an independent chairperson for complex IMTs. Consideration was also given to the benefit of an agreed escalation process including the identification of an oversight group. This was of interest to me as an Executive Control Group was established for the 2018 IMT and failed to function adequately. There was also discussion regarding risk and adopting a defined mechanism for measuring risk. These had all been issues I had raised throughout the 2018 IMT.

896. Amongst the actions was the appointment of an experienced ICD or consultant in public health medicine from another area as chair. There was also an action for the Diagnostics Chief of Medicine to discuss with individuals attending the recent IMT where concerns had been raised regarding behaviours. At no point during this meeting was there any evidence from the minutes that the patient cases, epidemiology, and environmental risk were discussed. Notably no clinicians, nursing staff from the ward or HPS colleagues were in attendance. The Diagnostics Chief of Medicine did not come to me to discuss any behaviours at the IMT.

IMT, 23 August 2019 **(Bundle 1, Page 328)**

897. Given the way the IMT was functioning, including the friction within the room and the division between senior management and clinicians, I acknowledge that bringing in an external person to chair the IMTs was probably the way forward.

898. On Friday, 23 August 2019, I attended the IMT which was the first one chaired by Dr Crighton. However, she was not an external person. This seems to have been a surprise to the clinicians, HPS and all who attended; they had not been informed of this. At the beginning of the meeting, Prof Gibson asked why the

chair had changed. Sandra Devine responded that she had had a conversation with me and that I was in favour of another chair. She also stated that, due to my absence on sick leave earlier in the week, she had contacted other ICDs to ask them to chair.

899. As explained above, the reality is that she informed me I was to step down before I was absent that week, her reason being the negative feedback arising from the 14 August 2019 IMT. She also mentioned that the change in chair was to provide me with support. I challenged what she had said and highlighted to members that I was asked to demit due to feedback from the last meeting that members were unhappy with the chair. I wanted this out in the open.

900. Annette Rankin asked for an assurance that due process had been followed and that, from a governance perspective, there was a clear decision-making process justifying the change in chair. Sandra advised that Jacqui Reilly, Nurse Director of NSS, was aware. The points made by me and Annette Rankin were not included in the minutes of this meeting. Annette emailed requesting additions. (See further IMT minutes .pdf) **(Bundle 14, Volume 2, Page 587).** I am not aware if these changes were accepted. After the IMT, I emailed Sandra Devine asking for a reason in writing as to why I had had to demit as IMT chair. She did not respond. (See email to SD re IMT) **(Bundle 14, Volume 2, Page 570)**.

901. I would have expected HPS to have had an input to a change of chair whilst they were involved in the IMT process. I might even have expected that they would be invited to chair it. If it was deemed to be such a complex and difficult IMT, we may have handed it over to them. Sometimes HPS do chair IMTs, so they have experience of this, usually if there's more than one hospital involved and it’s something national.

902. At the IMT on 23 August 2019, there was discussion again about the epidemiology, with Dr Iain Kennedy stating that patterns were similar to the old Yorkhill hospital and these infections had been seen there before. However, my

point was that Yorkhill was a very old building. I knew water quality in Yorkhill was very poor because we had really high Legionella counts. They had not looked for Gram-negatives, but it was the Legionella counts which suggested that the water was probably a problem and they had not tested the water back then so it could be that their system was contaminated as well. I did not feel reassured with Dr Iain Kennedy's report.

903. In terms of Dr Kennedy's epidemiology report, I think he probably used the same data as me, but it goes back to the point that he was very focused on numbers, as was everybody, but not on the nature of the bacteria and not understanding that all of the work that had been put in by the CLABSI group had reduced the numbers of the other types of bacteria.

904. In any epidemiology report there are limitations and further work that is required. I don't think people were really paying any attention to that. They were just taking what this data was showing as absolute fact, without considering any limitations.

905. Dr Kennedy argued that occupancy and patient acuity in the new unit should be considered. As mentioned above, I highlighted the low rates of Gram-negative bacteraemias in Great Ormond Street from their annual infection control report which was in the public domain. There was discontent with me using Great Ormond Street as a comparator. I was informed that Ward 6A was a temporary unit, so the comparison was not meaningful.

906. I felt there was pressure on members of this IMT to de-escalate the incident to a green. However, when the HIIAT was discussed, the clinicians requested elevation to a red due to vulnerable patients having to be moved elsewhere in Scotland for treatment.

907. I got the impression that the clinicians were still very concerned about what was happening at the unit, because we were still seeing infections. There was still an environmental risk on the unit. We had the leaking from the chilled beams, we

had the leaking in the corridor and the pipework, and we had to put measures in place to repair that.

908. I also think they were worried about what the change in chair would mean. I felt that up until that point I had had a really good relationship with the clinicians, and I'd been going to all their Friday morning meetings, giving them regular updates, and I was considered part of the team.

909. The HAIRT report goes to the board ahead of their meetings. I sensed irritation from senior management with this assessment. My feeling was that the aim of the meeting and the new chair was to de-escalate to a green. A peer review from colleagues at Great Ormond Street was requested by me at this meeting. Given their low rates of Gram- negative infection this seemed appropriate.

910. As I had been asked to demit the IMT chair, I asked Christine Peters and other colleagues to carry out a peer review of the 2019 Cryptococcal IMT because that had been difficult **(Bundle 14, Volume 2, Page 571)**. I also asked them to review the Mucor IMT. In all, they reviewed three IMTs I had chaired. The purpose was to review everything I had done and to advise whether they agreed with my approach, or whether they would have done something different.

911. I don’t have the results of those reviews in writing, but I recall it was discussed at a consultant meeting and questions were raised as to why these reviews were required given my expertise. I think there are meeting minutes where it is noted that Nitish Khanna in particular, said that he would have done the same as me.

912. A peer review is a recognised process listed by the GMC. It is very much an informal thing that I chose to do as a clinician. It wasn’t any formal route to escalation to senior management. (see peer review email).

Resignation as lead ICD, September 2019

913. The last IMT I attended was on 23 August. I then resigned from the lead ICD role as I felt that my position was untenable **(Bundle 14, Volume 2, Page 579)**. Apart from microbiology colleagues, no one was listening to my concerns regarding the epidemiology and environmental risk on Ward 6A. I was being continually undermined and had been removed as chair. Despite a whistle blow regarding my poor treatment by other members of the IMT, others were suggesting that I was the problem and they referred to bad behaviour by microbiology colleagues.

914. I wrote a resignation letter to Dr Armstrong highlighting the various reasons for my resignation **(Bundle 14, Volume 2, Page 579)**. These included: heavy workload, lack of support, undermining, lack of respect, and exclusion. I also highlighted concerns regarding the duty of candour and the SCIs which did or did not take place. I also detailed the negative experiences I had had over the preceding months including errors with my salary, inappropriate management of sick leave (discrimination) and sudden changes to line management, amongst others. The circumstances surrounding my resignation were not straightforward. I also required treatment for lymphoma that would require modifications to my working day, and I did not feel this was compatible with a lead ICD role.

915. My resignation on this occasion was accepted and I am sure that this was mainly because of my health situation; they could not say no. I went back to being a Consultant Microbiologist. Professor Alastair Leanord, who was the Clinical Director of Laboratories, stepped into the lead ICD role to cover.

916. When accepting my resignation, Dr Armstrong advised that there would be an Occupational Health referral and a review of my job plan as the bulk of my job plan was composed of ICD sessions **(Bundle 14, Volume 2, Page 581)**. I attended an Occupational Health appointment in September 2019. I had been referred by three different individuals, only one of whom had spoken with me and one whom I have never met before from the HR department. At this appointment,

before I spoke, I was informed that I was going to be signed off sick with stress. I contested this and stated that, whilst the lead ICD role was not compatible with treatment, I was able to continue in the Consultant microbiology role. I also emphasised that I had a physical illness not stress and medical doctors had declared me fit for work at this time.

917. I was also due to travel overseas for a week's holiday and had not been declared unfit to do so. It was at this appointment that I was told by Rhona Wall that Dr Peters and I were referred to by senior management as 'bonkers' and a 'wicked problem.' I was told to be prepared for potentially not having a job as I had had so many IPC sessions and had relinquished those. There was still a final decision to be made regarding my course of treatment so sick leave could not be enforced at this appointment.

918. On the day of my appointment with a specialist, I received a text asking me to contact Occupational Health immediately afterwards. Again, when I called to give an update, the response was that I was now to be signed off sick. I stated that would not be necessary as the Consultant had cleared me for travel and had specifically arranged treatment early in the morning so I could get to work in time. There was no medical reason for me to be on sick leave and no history of mental health issues. I felt that Occupational Health were being put under pressure by HR and others to sign me off sick as a result of stress.

919. Whilst on holiday, I was informed by Dr Peters that plans were being made by Prof Brian Jones and others to suggest on my return that I work part time hours only and to move me from QEUH across to GRI. On return to work, I had an email inviting me to a job plan interview with both Prof Jones and Rachel Green. This was an intimidating set up and I requested that my colleague Dr Pauline Wright attend with me. Both these aspects were discussed at this meeting, and I declined the proposal.

920. There were spare microbiology sessions available in the department and I

requested those top up my job plan, highlighting that the reason I was doing so much IPC was that others had refused. The number of sessions I was doing for IPC was not specified in my contract. I did not feel they were acting in my best interests as at no point did they ask me what adjustments I might need if any. They only put forward their own plans.

921. After my resignation, meetings also took place with senior management and the QEUH microbiologists regarding IPC cover. (See notes from IC meetings 25th Sept **(Bundle 27, Volume 4, Page 354)** /2nd Oct **(Bundle 14, Volume 2, Page 608)** /9th Oct **(Bundle 27, Volume 7, Page 337)**. Issues raised by microbiologists present included; undermining, ICDs not able to work in the system, complexity, pressure applied to ICDs, lack of resource and problems with information sharing, several examples were given. I did not feel that there was any progress or resolution from these meetings.

Knowledge/input into IMT process following resignation

922. QEUH colleagues continued to attend some IMT meetings after my resignation. They provided me with feedback and showed me minutes. Following my resignation, Profs Brian Jones and Alistair Leanord from GRI began to attend IMTs. There was no contact with me or other microbiologists to understand the IMT process or epidemiology. There was concern amongst the microbiologists at QEUH that the environmental risks on Ward 6A were not being taken seriously.

923. I would have expected to have been spoken to in relation to this, especially for what was deemed to be a very complex IMT process. I wouldn't expect people just to come into that without asking for background information, and if they didn't want it from me, then they could have requested it from any of the microbiologists on site.

924. There was one approach made to me by Prof Leanord. He had been to one of the WTGs and something had come up about drains. He texted me because he

was in the QEUH at the time and asked me to explain drains to him because he didn't understand them and he didn't understand the roots of transmission from the drain to the patient and what we'd found. I met him, Annette Rankin and someone from the labs and I gave him a mini-tutorial about drains and the risks from drains and the interventions we'd put in place. When I resigned, I had also left a load of information in a shared drive online as a handover, but I don't know how much of that he looked at.

925. Because of the concerns still being voiced by the microbiologists, an SBAR was produced and sent to Dr Crighton as the IMT chair on 29 August 2019 **(Bundle 14, Volume 2, Page 574)**. Twelve risks were identified in this SBAR signed by seven microbiology Consultants including myself. These included: suboptimal ventilation (inadequate filtration, air changes and pressures), chilled beams, risk of mould in bathrooms, toilet plume, and exposure to unfiltered water. Dr Crighton responded that the SBAR was a helpful summary which would be included as part of a holistic risk assessment. She stated that she looked forward to working with microbiology colleagues, but we did not receive any further updates about the SBAR. We did not receive a point-by-point response to each of the issues we had raised, which is what we had expected. This was despite an email from Dr Peters asking for a response to recommendations and an update on the GOSH visit (see emails SBAR relating to ward 6a and SBAR to IMT Chair pdf **(Bundle 14, Volume 2, Page 574)**).

926. I was not surprised at this lack of response; I think people just wanted to shut the IMT down and say there was no problem. A response would have been an acknowledgement that there were issues.

IMT, 18 September 2019

927. I was very concerned that at the IMT of 18 September 2019, Prof Brian Jones stated that the median rate of CLABSI was lower than it had ever been before and that the organisms in Ward 6A were also found in Yorkhill **(Bundle 1,**

Page 365). Now we were in a situation where microbiology colleagues from GRI were not in agreement that the epidemiology was abnormal.

928. At this meeting, it was stated that the IMT position was that Ward 6A was microbiologically safe. The HIIAT was scored as green, and a teleconference was planned to discuss reopening the ward to admissions.

929. I think they were not understanding this fact that I keep returning to; specifically, that it was the nature of the bacteria, the type of the bacteria, rarer than usual, all waterborne organisms linked to biofilm, which was the concern. I don't think they were quite grasping that. They were focused purely on numbers. I don't think that they fully understood the environmental risk in the ward, and I think that these particular individuals were brought in, again, to shut this down. I was horrified when they said Ward 6A was microbiologically safe.

IMT, 8 October 2019

930. At the IMT on 8 October 2019 **(Bundle 1, Page 373)**, there were a further three patient cases, again involving environmental Gram-negative organisms; Achromobacter SPP, Stenotrophomonas and Delftia Acidovorans. Dr Peters and I had in the meantime produced an SBAR on the epidemiology as our views were not being taken seriously. This was as a direct result of what we were hearing was happening in the IMTs. I don't know if we had the preliminary HPS epidemiology report at that time. We had Iain Kennedy's report.

931. In terms of the HPS report, I had involvement in selecting the type of bacteria that they looked at, but I didn't have involvement in producing the report and I actually contested the report. On 7 November 2019, I wrote to Laura Imrie at HPS copying in Dr Crighton, Prof Leanord, and Dr Peters with views on the report **(Bundle 27, Volume 7, Page 541)**. I was particularly concerned about the use of statistical process control charts for environmental Gram-negative organisms. As explained above, I do not think they are suitable for

environmental gram-negatives. That was the wrong methodology and that was the point that I struggled to get across to them. This is because such organisms are not considered to be endogenous flora and endemic. SPCs are better suited to organisms such as MRSA.

932. As far as I was concerned, the sort of information that was being used by HPS in interpreting the data was wrong - they were using the wrong methodology tool to demonstrate what they were trying to demonstrate. If it had been interpreted in a different way, I think it might have had a more accurate result. In my view, this led to a false conclusion about what is an acceptable limit of environmental infection.

933. SPC charts were developed in industry and do not lend themselves well to data that is unstable. They require 25 data points of stable data to construct. However, the SPC charts produced contained data from the significant water incident of 2018. Therefore, the data was skewed, and the upper control limit set too high. I reiterated comments I had already made about the epidemiology to Dr Crighton and others and the problems with benchmarking. (See comments on paediatric haemato-oncology data pdf) **(Bundle 14, Volume 2, Page 623)**. At the time nobody was listening. ARHAI have subsequently been looking at the application of different and more appropriate types of chart.

934. Prior to this IMT, I had been in email correspondence with Dr Crighton and others regarding the epidemiology. In an email dated 23 September 2019, I explain that epidemiology is not just about numbers but also about the nature of the bacteria and in this case environmental Gram negative organisms **(Bundle 27, Volume 7, Page 543)**. I highlighted that the standard outbreak definition is too restrictive for these pathogens. I also explained that outbreaks of HAIs can be subtle and easily missed and that these pathogens would not normally predominate in this patient cohort. I referred to the literature I had circulated demonstrating that the pattern in Ward 6A differs from other centres. It had been alluded to in IMTs that patients were acquiring these organisms in the home

environment and perhaps bringing them in on clothing. I stated that if the view was that these organisms were community acquired (one I disagree with) then interventions should be instated to address this theory. I was concerned that senior management were very focused on the benchmarking of these organisms with other health boards and older hospitals. I did not feel it appropriate to be benchmarking a new hospital with an old building like Yorkhill. There was, in my view, a failure to acknowledge the differences between endogenous and exogenous bacteria and the different strategies to control these. In this email I also expressed concern about the interpretation of typing results. In environmental incidents, it would not be unusual to see different strains in patients and water and they may not match. GGC were using typing results to rule out an environmental source. In my view, they can be used to rule in a source but not rule one out. Ward 6A patients had now been relocated back to Ward 2A. Bacteraemia rates were incredibly low. A raft of environmental control measures were implemented. If the Gram negative bacteraemias we had investigated in the IMTs were not due to the environment, then what was the explanation for the significant decline following the institution of environmental control measures and the absence of any other measures? Key to understanding the epidemiology is not just the numbers at the time but the nature of the bacteria and what happens to the epi curve following interventions. The epi curve is quite striking showing a dramatic reduction in infection numbers since the move back to Ward 2A.

935. We were also concerned about case classification and the possible exclusion of healthcare associated infection, e.g., patients who were not inpatients but were attending the day unit where access to Hickman lines was taking place. This was discussed at the IMT on 8 October. Dr Chris Deighan's view was that there were problems with this proposal and it would lead to issues with benchmarking against other units. Iain Kennedy highlighted that the previous case definition of the IMT was including patients who had contact with Ward 6A be it in or outpatient in the preceding four weeks.

936. It was suggested that this definition should be refined for the incident moving forward and this would remove patients who were coming to the day unit. This was concerning to me as a change in definition in my view would not capture true case numbers and give false assurances. I felt colleagues at the IMT were not understanding the significance of patients attending the day unit and the potential for exposure to water sources when lines were being accessed. They're still having contact with the hospital, they're still having interventions within the unit, at which point they could acquire an infection from a contaminated water source. That was the point that we were making, that we had to actually include these patients, not exclude them and the IMT didn't want to accept that.

937. Astonishingly, in the hypothesis discussion at this IMT, Prof Leanord stated that this could be a pseudo-outbreak, "possibly the first described in the world". Pseudo-outbreaks are extensively described in the literature so it is extremely surprising that he did not appear to be aware of that.

938. A pseudo-outbreak is not a true infection. For example, take the organism, Cupriavadis, discussed above. In one published incident a significant number of patients had Cupriavidus growing in a microbiological sample, but actually what was happening is when staff were taking swabs from the patient they are sticking the swab underneath the tap, and so contaminated water was going onto the swab, they're then swabbing a patient's wound. It looks to the lab like the Cupriavidus has come from the patient's wound, but actually it's what we call a pseudo-outbreak because it's actually a contaminant of the swab. Basically, Professor Leanord was saying that, at some point during this process, the blood cultures from these patients were being contaminated and it wasn't a true outbreak. That really astounded me because some of these children were septic and in intensive care. This was not a pseudo-outbreak. This was a true outbreak with patients who were really sick and septic and some patients died. These patients had to have lines removed and go on antibiotics. I don't know where he got this from and how he could possibly think that and he certainly couldn't have spoken to a clinician to come to that conclusion.

939. In my view, this is an example of someone who is a Professor making statements which are obviously wrong, and people accepting what he says because of his status and his sex

940. From the minutes, I am also aware that Dr Crighton brought up my hypothesis that there was a biofilm source. Instead, someone suggested that the patients were perhaps picking up organisms when walking outside. If people were picking things up from outside or their home environment and no interventions had been put in place, we would expect to see these organisms all the time. Why would it just be parents staying in Glasgow who were picking up these organisms and bringing them into the ward and not people in Edinburgh, for example? It made no sense to me. If it was the home environment, why suddenly did children from several areas in Scotland start acquiring them from home water supplies and why did the problem go away? I think what is particularly important to look at, in terms of epidemiology, is what has happened to the infection rate when patients were moved back to Ward 2A? It now had state-of-the-art ventilation and all the remedial measures in the water system and the epidemiological curve was practically flat. What's the explanation for the improvement now that we've put in all the environmental controls other than an environmental source causing the infections before the controls were introduced? No interventions have been put in place in the home. This picture is not in my view explained by natural variation.

941. Although I was no longer the lead ICD, I was still a Consultant Microbiologist. On 17 September 2019, there had been a water leak in the Ward 6A kitchen which was reported to the on-call microbiologist that evening, Dr Peters. As I was still in the hospital and I have expertise in water leaks and water damage, I went with her to assess. There was evidence of a long-standing leak behind kitchen cabinets and a strong smell of mould. Oddly a pipe dead leg had a POUF on it, so someone had accessed the area. The area underneath the filter was damp, there were also old bits of paper on the floor which were wet to touch. It is possible that this water ingress and the ventilation setup was a contributing factor in patient

infections. It was Dr Peters' responsibility to communicate the above information up the governance line, which she did by email, and she wrote an SBAR, which went to IC and senior management **(Bundle 4, Page 176)**. At the time, when we were on the ward, Jamie Redfern and Jen Rogers appeared and the issue with the leak was communicated to them.

942. I was not present at the IMT where this theory was voiced. However, I was told that Tom Steele stated the water leak was immediately rectified and there was no long- standing leak. Based on what I saw and the pictures I took, I disagreed with this view.

943. The people from HPS present at that IMT were obviously concerned about how things were going. They were raising the kitchen issue in the IMTs and they were being shot down. They were being told that it was an acute leak and it was immediately fixed. As explained above, that does not reflect what me or Christine Peters saw that night. Annette Rankin and Lesley Shepherd, who I think was with Scottish Government at the time, may be able to provide more information about this.

944. I am aware that a briefing paper was sent from the IMT team to the clinical team on 2 October 2019 in which assurances were given about the epidemiology **(Bundle 14, Volume 2, Page 613)**. It was stated that: current numbers of bacteraemia were consistent with historical norms, incidence of CLABSI was at the lowest level recorded, all organisms considered to be unusual had been seen before in Yorkhill, patient acuity and occupancy had increased, and that there was no link between clinical isolates and the environmental sampling apart from a case of M. Chelonae (WGS had indicated the patient isolate was closely related to a water sample). It was also stated that rates were no different from other units in Scotland based on HPS work on the epidemiology. I disagreed with these assurances.

945. During 2019, I continued to attend the WTG until my resignation. During the 2019

meetings, an action plan was developed by the group specifically in relation to atypical mycobacteria in the water (of which M. Chelonae is one) (see pdf AMS ICD request action plan) **(Bundle 27, Volume 1, Page 21)**. At the last meeting I attended, I was concerned that discussions I had in reference to M. Chelonae were not minuted. I requested additions to the minutes.

946. I had discussed chlorine dioxide and the work of an expert Joseph Falkinham which suggested that low dose chlorine dioxide (our strategy) might be encouraging proliferation of atypical mycobacteria in the system. I also expressed concerns regarding governance and highlighted that decisions were being made between the local Estates team outwith the IMT and water technical meetings, with a lack of documentation and flow of information. In my view, these constituted important omissions from minutes, and it was becoming a recurring theme that my views were being omitted from records. (See Water technical group email MC 27th Sept) **(Bundle 14, Volume 2, Page 585)** I just didn't think that people around the table were listening to my views at this meeting either. I was raising really important issues about M. Chelonae, but I don't think they wanted M. Chelonae minuted, or what I was saying, i.e., that the low dose strategy might be an issue. We couldn't use high concentrations because we'd have had to move people out and we didn't have another hospital to move them to and that was always a risk when we were talking early on at the WTG. It was always a risk that this low dose strategy might not work, or it might have unintended consequences, but with all the experts around the table, everyone agreed that that was pretty much all we could do and we did it.

947. I think using a low dose chlorine dioxide probably encouraged proliferation of the M. Chelonae in the system because they tend to be resistant to chemicals and that low dose would just kill everything else, but enable them to take over. That was my concern, that's what I thought might be happening. I had met a German microbiologist and water expert called Vicky Katsemi, who actually came over to Glasgow. She showed me all the work of Joseph Falkinham and told me to read his papers as that would help us with the issues we were dealing with.

948. I did read his work, and that's when I discovered that there were issues with atypical mycobacteria and the chemicals that we use, and resistance, and that that's not an appropriate control measure for them in particular. I wanted all that minuted at the WTG, and it wasn't minuted. But it was really important and it remains really important because we still have the low dose strategy in place and my view is that for the high-risk units our only option is to keep filters on long term. I've been concerned to read recently in board minutes that they were going to review point-of-use filters and I don't think they can. I think they need to remain in high-risk units.

CHAPTER 15: Interactions with the Scottish Government, Independent Review, Oversight Board and Case Review Note

Interaction with the Scottish Government and the Chief Nursing Officer

949. On 4 September 2019, I met with Fiona McQueen, the CNO, to discuss several issues concerning the QEUH including the culture, my concern that other children had been affected by the water issues and that there had been patient deaths. While I felt Fiona McQueen listened to what I had to say, she did suggest that perhaps Dr Armstrong was '*just being mean*' to me. I felt this comment demonstrated that, once again, the focus was on personalities and that my concerns were not being taken seriously.

950. On 3 December 2019, I received a letter from Fiona McQueen referring to the meeting we had in September 2019. (See letter from CNO Dec 19) **(Bundle 14, Volume 2, Page 673)**. In the letter she informed me she was chairing an oversight board into the issues within GGC. She invited me to a meeting with her to review the insights which I was able to contribute to the process.

951. Following receipt of the letter, I had a second meeting with Fiona McQueen and

one of her advisors, Dianne Murray, and Lesley Shepherd. Christine Peters was also there. Fiona briefed us on how things were going to be taken forward. During this meeting, there were discussions about the Oversight Board and the Case Note Review. Christine and I were concerned by a comment that Fiona McQueen made to one of her colleagues. She said, "*It depends on who you think the troublemakers are*." We were concerned that we were being labelled as "troublemakers" and there was some sort of debate about whether we were or not. At the meeting, Fiona asked Christine directly if she was a whistle-blower to HPS. I still felt we weren't being taken seriously despite the very serious issues that we were raising. I was concerned we were being viewed as difficult people and troublemakers.

952. During these meetings, Fiona McQueen was aware of the background and the processes we had been through. Christine had been through the formal whistle-blower process. I had not because I was the lead ICD and I was raising issues as they arose in relation to the incidents I was dealing with. I also remember discussing the investigation into the IMT that Linda De Caestecker was leading on.

953. At these meetings there was a lot of discussion about bringing in external ICDs and ICMs. I think that would have been a better approach. I don't know why this proposal wasn't pursued - maybe no one was available, or they changed their minds.

954. Marion Bain was brought in as Director of IPC to try to resolve all these issues and understand them, but she had no infection control or microbiology background When Marion Bain came in, she did attempt to deal with issues, but she was moved back to the Scottish Government during the pandemic, so we lost that continuity. I think Marion recognised that she was dealing with a huge task, and that was possibly why Jenny Copeland and Angela Wallace became involved. When Marion left, we felt like we had to start all over again with Angela Wallace.

955. Separate to our meetings with Fiona McQueen, I was also in communication with the Cabinet Secretary, Jeanne Freeman, alongside Christine Petters. On 2 December 2019, I wrote a joint letter with Dr Peters to Jeanne Freeman in response to her call in Parliament for individuals with information about the QEUH to come forward. (See letter to cabinet secretary Dec 19) **(Bundle 14, Volume 2, Page 633)**. In that letter, we highlighted our concerns about the safety of Ward 6A and provided a copy of the SBAR dated 26 August 2019 from the QEUH microbiology team **(Bundle 13, Page 995)**. We expressed concern about the interpretation of environmental sampling and the inappropriateness of bench marking. We also highlighted an issue regarding the management of an infection related death in the PICU at the RHCG. We described several risks that were still present in relation to water and ventilation. Finally, we raised the issue of culture in relation to whistle-blowers within the organisation and why we had no confidence in the process.

956. I was subsequently invited to a meeting with the Cabinet Secretary in December 2019. We discussed patients, families, and the impact that issues were having on them.

957. On 20 January 2020, Dr Peters and I received a letter from the Cabinet Secretary thanking us for our 2 December letter. She stated that she was keen for us to be involved with future work addressing issues, not least through the Oversight Board. (See letter from Cab sec Jan 2020) **(Bundle 14, Volume 3, Page 17)**.

958. When I first started engaging with Angela Wallace, I felt that she listened and she assured us that she was neutral. I felt reassured by the first meeting. However, thereafter, there were a lot of email communications which were in management speak. I think the right noises were being made about a “gold command” and a “silver command”. I'm not sure what was going on up there and what was happening with gold and silver command, but it wasn't translating into any

change on the ground where we were actually working as clinicians with the IPCT. No real action was being taken.

959. One of the main issues I had, and which created issues with trust, was that I understood Marion Bain, Jenny Copeland and Angela Wallace were appointed by the Scottish Government. They had, on more than one occasion, indicated that they were neutral. However, it transpired that they reported directly to Jane Grant, the Boards's Chief Executive. This was not explicitly explained to me.

Concerns about ongoing infections in QEUH

960. On 20 December 2019, I wrote to Fiona McQueen and others in the HAI policy unit at the Scottish Government to express concern regarding the GGC media statement about a case of Mucor in the QEUH **(Bundle 13, Volume 10 (Edinburgh Hearing Commencing 26 February 2024), Page 89)**. I was asked if I had raised my concerns internally, which I had not, due to a previous lack of response when pointing out inaccuracies in media statements.

961. The response from Fiona McQueen was that it was helpful to stay in process and that she had asked Marion Bain to meet with Dr Peters and I to better support us. In a second email on 30 December 2019, I emailed my concerns about the situation with Ward 4C and the HSE notice **(Bundle 13, Volume 10, (Edinburgh Hearing Commencing 26 February 2024), Page 93)**.

962. Between 30 December 2019 and 6 January 2020 there are emails between myself, Dr Peters, Marion Bain, and Lesley Shepherd regarding two cases of pseudomonas bacteraemia **(Bundle 14, Volume 2, Page 642-643).** I was concerned that one case was being reported as community onset despite the cases being an inpatient since birth and the other testing positive on the fourth day of hospitalisation with no prior colonisation and the isolate clustered on typing with another hospital acquired strain. Both patients had been on the same ECMO machine which contains a water source.

963. One patient had Pseudomonas recorded on part 1b of the death certificate but, due to the infection being classed as community acquired, the case was not reported and the HIIAT was assessed as Green. (See emails with SG 2020 **(Bundle 14, Volume 2, Page 643)** and Pseudomonas PAG documents 2020) I did not feel the IPCT were being transparent about the reporting of HAIs.

964. There was also an inaccurate media statement which stated that the lab took 6 weeks to develop a test for Stenotrophomonas in 2017. This is not factually accurate. The lab had identified Stenotrophomonas in water prior to the incident in 2017 and it did not take 6 weeks.

965. I continued to raise issues with infection control internally. In August 2020 I was concerned about the investigation of a case of Aspergillus in a child in PICU. The child had grown the fungus from mediastinal tissue, and I was worried about a potential source in the unit or operating theatre. I have previously submitted those emails (see concerns raised 2 2019 pdf) and an email to Angela Wallace on 3 September 2020 **(Bundle 14, Volume 3, Page 115)** about the need to find a way to resolve differences of opinion, as no such mechanism existed.

966. There appeared to be a failure to understand the risks from water damage and a lack of knowledge regarding Aspergillus spores and their dispersal. This was a case of HAI Aspergillus; I do not know if it was reported to ARHAI. It appeared to me that there was an ongoing pattern of misclassification of infections.

967. In early September 2019 I was the microbiologist covering the NICU and discussed with one of the clinicians two neonates with a gentamicin resistant Staph aureus, which was unusual. These emails have been previously submitted (see concerns raised 2 2019 pdf) **(Bundle 14, Volume 3, Page 118)**. Despite my expertise in outbreak management and accurately detecting this outbreak at an early stage, my views were not considered. As result, there was significant delay and the occurrence of further cases before a PAG was held.

968. A lack of national guidance was cited as a reason for not holding a PAG sooner. I highlighted a paper from colleague in Tayside who had published about an outbreak of gentamicin resistant SA in neonates detected following two cases and with no national guidance. This did not stop them managing the incident as an outbreak. My concern was that a lack of national guidance was being used as a reason not to investigate an issue, when in fact the basic principles of IPC and outbreak management can be applied to any situation. Experts in IPC should, in my view, be able to act out with guidance or without waiting for guidance, as that is what we are trained to do.

969. In January 2020, Dr Christine Peters and I attended a meeting with Dr Keith Morris who was the HAI advisor to the CNO. We had requested a meeting to discuss our concerns regarding IPC. An SBAR was produced by Dr Morris (see Dr Keith Morris SBAR) **(Bundle 13, Page 1001)** with several recommendations made. I am not aware to who this SBAR was sent and we did not receive any further communication.

970. On 9 January 2020, we attended out first meeting with Marion Bain in which we gave a presentation detailing our concerns from 2015 onwards **(Bundle 27, Volume 6, Page 319)**. She agreed to liaise with colleagues on the issues we discussed. I also raised concerns with Marion Bain on the governance of the Cryptococcal advisory group and its failure to report to the IMT.

971. She emailed Sandra Bustillo with a list of concerns regarding media communications and the responses to parent questions regarding Ward 6A. In this email dated 11 February 2020 she suggested a meeting to discuss the concerns **(Bundle 13, Volume 10, (Edinburgh Hearing Commencing 26 February 2024), Page 104).** This never took place and the issues about communication remained unresolved. There was continued dialogue with Marion Bain about IPC concerns and the reporting of incidents in board meetings. (See emails with SG 2020 pdf). In order to continue to progress things, we were asked to attend

meetings with Prof Angela Wallace and Jenny Copeland who was tasked with Organisational development (“OD”) work.

972. It continually felt that we were being passed between different people and each time we had to start at the beginning and explain ourselves.

973. There was Fiona McQueen, Lesley Shepherd, Marion Bain, Jenny Copeland, and then Angela Wallace, and we just kept having to go over things. I felt that it was a very inefficient process. Marion Bain was trying to set up meetings to sort things out, but, for whatever reason, they weren't being executed. To be fair to her, she managed to progress two policies that I'd struggled to implement as lead ICD, and that was the patient placement policy, which was great, and the water damage policy.

974. With bigger, more important things like communications; what was being released in press statements, the patient questions, which were inaccurate, and on the patient website, those issues were never dealt with. There was a promise of meetings with various people. Initially, it was Sandra Bastillo, then it was Jonathan Best. Nothing ever transpired, so those issues were never actually resolved.

975. On 3 March 2020 we met with Jenny Copeland and an issue and resolution document was created summarising the output from that meeting. (See issue and resolution document) **(Bundle 14, Volume 3, Page 63)**. The themes of this document were: patient safety, duty of candour, learning system, sustainable service, and staff experience. Under each theme were several objectives and desired outcomes. Work on these issues was halted for a period due to the COVID pandemic and the workloads resulting from such.

976. In April 2020, OD work began with Jenny Copeland and Terri Hunter. There were significant omissions from the initial distribution list for this work with several of my QEUH microbiology colleagues not being included. (See email IPCT organisational developmental sessions) **(Bundle 14, Volume 3, Page 69)** .

977. It started off that she was going to come in and do OD work, so the first phase of that was fact-finding. I think there were two aspects to that: there were the actual facts around what the issues were which were unresolved, all to do with the building, and then there were all the issues around culture. Terri Hunter was brought in to help her.

978. Terri Hunter was a psychologist for GGC. It wasn't really explained to us why Terri Hunter joined Jenny, or what her role was, but she would come to meetings and she would mainly observe patiently. Jenny Copeland also offered us one-to-one sessions. They were effectively coaching sessions; we could go to her with any issues. I declined those because I did not trust her, she was reporting to the Chief Executive. I had a couple of individual meetings, but that was very focused on the OD work, everybody went to those meetings. I never fully understood her role.

979. She was very clear that she reported to Jane Grant. She was also clear that she was not going to produce a written report because she wasn't good at writing things down. Also, she had been told not to produce a written report. She did put a PowerPoint presentation together but she declined to share it.

980. I reflected on Jenny's presentation and the discussion that ensured. (See email to Jenny Copeland Sept 2020**)(Bundle 14 ,Volume 3, Page 275)**. One of the things that concerned me about her presentation was the duck/rabbit analogy and how people can view things differently. I felt this was being used to demonstrate why there were differences of opinion amongst microbiologists without any reference to scientific evidence. She also told me that some colleagues considered whistleblowing unnecessary and unprofessional. In my response to her, I stated that there are no remarks with regards to bystanders, i.e., individuals who are aware of issues but chose not to speak up for fear of retribution. As doctors, we have a duty to speak up, whistle-blowers are vilified for doing so, bystanders face no consequence. During our conversation she fed

back to me that after my resignation colleagues had felt ‘sad, hurt and abandoned,’ she referred to me ‘leaving them’ and ‘taking my love away’. She asked me to think about my communication to others surrounding my resignation. I was dealing with several issues at the time both professional and personal/health related, and I had chosen to keep this information largely private. My view is that those in a senior position who understood my reasons should have found a way to articulate them to the wider team. Jenny delivered several sessions of feedback on her presentation to the wider microbiology team. It was clear from the content of her presentation that other colleagues had several concerns relating to culture. I saw no attempt by the microbiology service to build on this OD work after the presentation or any attempt to undertake OD work jointly with infection control colleagues at our level within the organisation.

981. I asked Jenny for a copy of her presentation. However, she said she was not allowed to give us a copy. That to me did not feel particularly open and transparent. Given how much work she put in, the number of people she spoke to, and all the themes that she managed to extract, I was astounded that there would not be a written report for such an important piece of work, supposedly commissioned by Scottish Government.

982. The Issue and Resolution document which came from that I think was just an updated version of the 27 point action plan (See IPC action plan and PICU action plans May 2020) **(Bundle 14, Volume 3, Page 136)** which came out of the October 20217 meeting. We did have a meeting with Tom Steele to go over all the estates related issues, and there were actions that evolved from that. We did not meet with the IPCT to go through the points on the plan from them.

983. Jenny suddenly announced she was retiring, and she didn't have the time or resource to carry on working on the action plant. Angela Wallace assured us that she was committed to taking it forward, but nothing happened, it just fizzled away. We have never received an updated version. We have never had an opportunity to meet and discuss it.

984. As far as I am aware, there are lots of matters outstanding. I think it was felt that we were obsessed with history and that we needed to move on and focus on the present. Our response was that, to understand the present, we need to understand the history and there are some significant unresolved issues with the building that we still don't know about, such as whether it's safe or not. They were a bit dismissive of historical aspects, they wanted to just push that to the side and focus on moving on.

985. On 30 April 2020, I emailed Angela Wallace about another concern I had with the results of a post-mortem and the classification of a patient's infection (Serratia) as community rather than hospital acquired **(Bundle 14, Volume 3, Page 91)**.

986. I was also concerned with regards to duty of candour. My view was that the interpretation of typing in this case was wrong and did not mean that the infection was not acquired in hospital. (See Serratia case emails) **(Bundle 14, Volume 3, Page 82)**. We continued to meet regularly with Angela and Jenny to progress the action plan developed from the issue and resolution document and in May 2020 received an operational plan and an action plan specifically related to the PICU. (See IPC action plan and PICU action plans May 2020) **(Bundle 14, Volume 3, Page 136)**.

987. Angela Wallace asked my views on improving communications between IPC and microbiology and I put forward some suggestions to her on 7 May 2020. I suggested a regular meeting with key individuals from both disciplines. I also suggested giving attention to handovers, ongoing communication of more pressing issues that cannot wait until the next day's handover meeting and for IPC to be discussed at departmental Consultant meetings. This discussion was to evolve into the creation of the weekly IPC/Labs buzz meeting. (See buzz meeting comms email) **(Bundle 14, Volume 3, Page 125)**. I helped Angela Wallace set that up, it was all to do with improving communication. I was referred to as 'just a consultant microbiologist' at these meetings. It was clear to me that I

did not have a further role in the process, and that my reporting was to Christine Peters as head of department, and also that she would take any issues to the Buzz meeting. That became the escalation process for me; through Christine at this meeting. I can't remember how long it was going for before Christine Peters declined to go because she was being bullied and intimidated. I remember her phoning me in a really distressed state after one meeting because they were awful to her about the infection control issue. Only she can talk about that, but she was very distressed and after that she was too afraid to go back.

988. So our microbiology department was no longer represented at the Buzz meetings. There are microbiologists from the north of the city, but there is no microbiology representation from the QEUH at the meetings, and I don't believe the issues that arose at them have been resolved to the extent that Christine or anyone else would now be able to attend, but I think the meetings are still happening.

989. Towards the end of May 2020, we were still waiting to have a meeting with Sandra Bustillo to discuss communications, a meeting with Prof White to discuss parent questions and a meeting with Jonathon Best to discuss various issues. One of the concerns I was raising was in relation to differences of opinion amongst microbiologists and how to address this.

990. In November 2020, Christine Peters and I agreed to meet with Tom Steele to discuss the issue log that Jenny had created and to start to address issues pertinent to facilities/estates. This meeting took place on 15 January 2021 and a list of actions were collated by Jenny. (See issue log review meeting summary 15.1.21) **(Bundle 27, Volume 7, Page 382)**.

991. Despite all these discussions internally, and with Scottish Government, I had concerns remaining about the culture and in particular the withholding of information. I remained concerned re patient deaths as a result of the water system and GGCs apparent reluctance to investigate. I, therefore, contacted

Laura Mundell, Deputy Procurator Fiscal. She passed my information on to Alistair Duncan, Head of the COPFS HSIU, and directed a police officer, Julie Hendry, to speak with me. I provided a statement to the police in October 2020. (See emails to Laura Mundell **(Bundle 14, Volume 3, Page 234)** and emails to Julie Hendry **(Bundle 14, Volume 3, Page 280))**.

992. In terms of contacting the PF, I felt I had to do that at that stage, because from where I was sitting, things were no better, in fact they were worse. I had already raised issues about the deaths, but now I was seeing the misclassification of HAIs, which meant deaths were not being adequately investigated or reported, and who knows what was happening with duty of candour.

993. I was really concerned about the culture and, despite raising concerns with people who had been appointed by the Scottish Government, I felt I had nowhere else to go. Either I could go to the press, or I could go to the police, and I chose the latter route.

Current concerns about the Infection Prevention and Control Team

994. In terms of up-to-date progress with the issues I raised with Angela Wallace, since Jennys retirement I have had no further interaction with Angela and nothing has been progressed. She was promoted and became a permanent employee of GGC as the Nurse Director. I think what I saw happen with Angela Wallace is that, while she may have started off neutral and listened to both parties, it became very clear when she was given that role, that the IPCT became her team, and she was going to work with them and trust everything they said.

995. We were escalating all these issues. I was actually sending published papers of an approach taken in another hospital because Glasgow is so out of line with what's happening elsewhere, and it still doesn’t appear to be sufficient to gain any movement. Jenny Copeland got it, but not Angela. She only listens to her team and is not listening to the points we were trying to raise with her.

996. I feel it is as if the IPCT are very wedded to the guidance, and if it's not in the guidance then they don't think we need to worry about it. In recent emails I have seen phrases such as, '*This isn't in the guidance*,' but as doctors, that's why we are highly trained and skilled; we need to work outwith guidance.

997. Guidance is just a guideline, it is not protocol, and it's really designed for people who perhaps don't have particular expertise in the field, so that they can make initial decisions. For example, if you look at the water incident that I chaired, the mucor incident, and the Cryptococcus incident, there were no guidelines that told me what to do but it would not have been appropriate for me to turn around and say, "*I'm not doing anything because there's no guidance*."

998. We are highly trained; we should be able to work beyond that, and that is what I'm not seeing from the IPCT. I think they are hiding behind that lack of guidance as a reason for not doing something, and I don't think that is appropriate. It's certainly very different from what I'm now seeing at ARHAI, because I have sight of everything that's going on in Scotland. I'm seeing all the incidents, and I would say that Glasgow is an outlier in terms of how they approach incidents. There is a reluctance to report and information is not always forthcoming.

999. It comes back to what I have said several times. I believe this issue is because the GGC motivation is not patient safety, but organisational reputation. I think it is to do with the fact that there have been all these issues and they don't want to admit there may still be issues. I also struggle with a lot of the email trails and the responses from consulting microbiology colleagues. I can't understand the conclusions they come to given all the training we've had and the exams we've sat. The only explanation I have is that they have been told from above that there are to be no links to the built environment, as they cannot have another outbreak or issue. Under no circumstances will this be linked to the built environment. That's why we are seeing some quite bizarre hypotheses coming forward for certain incidents, which I speak about later, but I think that is the ultimate driver: no more built environment issues, particularly when it comes to the QEUH/RHCG.

Incidents are handled differently in the north of the City.

1000. Brenda Gibson and her colleagues wrote to Jane Grant in August 2019 suggesting that external experts be brought in. In my view, that would have been the correct approach to take, to get an external agency in to assess the situation. However, this has never happened. I know they had the Oversight Board, but that was all very time-consuming, and it took a long time to report. What they need in this situation is some sort of task force to go in and look at how incidents are being managed. In my view, it should have been people with infection control expertise; a senior ICD, an ICM, and ICNs from elsewhere. I think that in the last IMT I ever attended, the one chaired by Emelia, I requested that Great Ormond Street Hospital staff carry out a review. Unfortunately, that did not happen. I think the clinicians were in agreement that an external peer review by some very experienced IPC and haematology doctors should have been taking place.

1001. I think the other comment I will make on this is that there is still no way to resolve differences of opinion, and you will see that coming through in all the emails. There are obviously two different groups with different views, and we have still failed to resolve that. What I cannot understand is why people like Angela Wallace, senior managers, will not subject issues to external peer review, they should just take all those documents and information and give it to external IPC consultants and ask them for an opinion.

1002. In terms of how we could resolve differences of opinion, I suggested around the time of the water incident that, when opposing views arise, we should get everyone round the table with their opposing views and a panel of experts. Each person presents their side of the argument and we debate it. I am quite happy if people tell me I've got it wrong and are able to explain why on a scientific basis. However, what has been happening is that Angela Wallace repeatedly tells me and Christine that we are wrong but fails to explain why we are wrong. There is not, and never has been, independent scrutiny. Microbiologists at QEUH and external agencies /experts were in agreement with me. If we are all wrong, we

deserve to know why.

1003. I've worked in microbiology in Glasgow for a long time, and I have never encountered this before. Up until the issues with the QEUH, it was always generally very supportive, everyone in agreement. I have never come across this scenario before where there is such a disparity of views.

1004. I think further OD work took place at a very senior level in the organisation, but it didn't take place at our level. We were invited to feedback sessions and I was surprised that the head of service for microbiology, having sat through these sessions, didn't then take forward that further OD work, because it was very evident that that's what's needed. That is the reason I would say there is quite a toxic environment, even now, within the department, and all these email ping-pongs and people not able to agree with each other.

1005. We've never actually sat down and gone through the OD report and, actually, a lot of colleagues of ours don't actually know the details of what's taking place at the QEUH. They are dependent on what they hear from senior managers, they've never actually sat down with me and heard my side of the story, or Christine's. Colleagues that I have trained and who used to phone me for advice no longer do and at times I have felt very isolated.

1006. In my opinion, I do think it would help if someone took charge, got everyone in a room and decided to get everything hashed out, I think that needs to happen.

The Independent Review

1007. In October 2019 I was interviewed by the Independent Review. I gave an overview of events, and I was told I would likely be interviewed several more times to go into more depth on some aspects. I found certain aspects of the interview strange in that one of the doctors interviewing me suggested that it must have been difficult to re- establish myself after being off sick. This fitted with a

narrative I had heard suggesting that I was generating incidents to re-establish myself.

1008. To expand on that, there were suggestions from some of the more senior microbiology consultants, although nothing in writing, that I was generating work and incidents, to make a name for myself and to re-establish myself. It was just so bizarre, because all the incidents that I dealt with were referred to me by other people.

1009. The Cryptococcus incident was referred to me by James Cargill coming to my door to say "*I have a problem*". The Mucor incident was Pauline Wright coming to my door to say "*I have a problem.*" The Cupriavidus was initially chaired by Christine Peters. I was not going around looking for incidents or generating work.

1010. I found the comment about me having to re-establish myself highly inappropriate. That's not what the review was about and, again, it's going back to personalities involved. I thought that was discrimination against someone who had been off sick. I was off longer with maternity leave than I was with lymphoma. People do take time out of work, but they are not having to come back and re-establish themselves. It just seemed strange.

1011. There was also a focus on the action plan after the 2017 SBAR and a suggestion that this document belonged to me. I explained that I had been off sick, and the action plan had been presented to committees before I came back. On 12 June 2020, I received a copy of my precognition from the statement I gave **(Bundle 27, Volume 7, Page 551)**. This was issued at 4.25pm on the Friday before publication of the final document after the weekend. I wasn't given the chance to properly review it. I replied stating that there was no time to amend, that there were omissions and language used that I did not recognise which I highlighted in yellow (see Witness statement Inkster precognition). Some of the language used is not the way that I speak and I thought that was a bit odd as the interview had been recorded. I also asked them to amend the reference to 'chronic fatigue' to

make it clear that the fatigue was due to an underlying health condition and not Chronic Fatigue Syndrome. I'm not sure what the relevance of this was and why it was included at all.

1012. I remember there was discussion at the time about being given the opportunity to review what I had said. I know that Penelope Redding was given the opportunity to check, and she sat there for hours going through her statement. I understand there was a lot wrong with her statement that she had to correct, but she was afforded that and I'm pretty sure we were told we would have that opportunity. I was certainly told they would be brought back on several occasions, because I just gave a sort of general overview – not in depth about any particular incident.

1013. In her response to me, Shalinay Raghavan stated that the precognition was a narrative summary and not a verbatim account prepared through the perspective of the statement taker. This struck me as odd as the interview was recorded. She stated that correspondence had been sent to me earlier in the year about my precognition and that there had been no response, adding that a colleague was looking into this.

1014. I had indeed received an email about the precognition and had supplied available dates in February 2020. These did not suit the review. It appears that a response from them to me later in February was returned with an undeliverable message. As a result of this undeliverable message, Kerry Faichney made inquiries with GGC about my email address and was told by them in March 2020 either that I no longer worked for them or that I was off sick, neither of which was the case.

1015. In January 2020, I emailed the Independent Review as I had been recently reviewed correspondence in which it stated that the Independent Review was investigating the IMT processes. I was not aware of this remit at the time of my interview and, as someone who had chaired many of the recent IMTs, I imagined the Independent Review would want to speak to me about this. I suggested I may need to be re-interviewed. I think I found out that they were going to review

the IMT process through a letter to [redacted] which was maybe from Jennifer Armstrong or Jane Grant. It was news to me.

1016. The Independent Review responded on 20 January, stating they had not discussed IMT processes with GGC and had not been sighted on the letter, requesting that I send it in. In a response on 30 January, it was stated that the co-chairs were looking at the IMT but that there was no intention to devote specific attention to this aspect. This is not in keeping with the final report. They invited me to raise any related issues at my next interview which was still to be arranged.

1017. My follow up interview at that stage was cancelled due to COVID although I note that my colleague, Dr Redding, was interviewed via a Teams or Zoom call. It was from that point on that there were issues with both me receiving emails from the review and them receiving emails from me. Their interpretation of this was that I was disengaging from the review or in some way indisposed.

1018. I was not able to get resolution on either the missing emails, due to very early purging of the review's email systems or the narrative that I was off sick or had left. I explored these issues with both the review team and internally with GGC, also involving the BMA. (See correspondence with IR and BMA and review emails re IT internal) **(Bundle 14, Volume 3, Page 158 and 174)**. I have provided the email trails between Shalinay and I about that. So, messages were not being delivered. I tried to look into it, but my investigations were not fruitful. I never found out who was giving that information to the Independent Review.

1019. I also wrote to the Cabinet Secretary in June 2020 expressing concern about the Independent Review. In her response, she stated that the Independent Review was independent from the Scottish Government and suggested I contact the chairs directly (see letter to Cab sec re IR **(Bundle 14, Volume 3, Page 193)** and letter from Cab sec June 2020 **(Bundle 14, Volume 3, Page 172)**.

1020. On 2 July 2020, myself and Dr Christine Peters wrote to the Independent Review chairs **(Bundle 14, Volume 2, Page 536)**. In this letter we expressed several concerns including; the lack of a right to reply, the missing email correspondence, inaccuracies in the report, the inability for me to be interviewed virtually, the extension of the review remit into culture, whistleblowing, and duty of candour of which we were unaware, conjecture, contradictions and misinterpretation, inaccuracies, omissions, failure to interview experts and colleagues and the failure to consider organisational failings.

1021. We asked to submit 23 pages of commentary on the report which they agreed to review. (See Letter to Independent review chairs and response to review TICP)**(Bundle 27, Volume 7, Page 343)**. We received a letter from the IR chairs on 15 July which stated, *'We believe the content of the report is an accurate reflection of the findings of the Review and these findings are a product of a number of processes where fairness was a core guiding principle. We accept that not everyone will agree with all aspects of the report and of course, that is their prerogative. The Review report is now published, and we do not consider that there is anything in your commentary that compels us to retract chapters of the report or make any alterations or additions to the narrative'* (See letter from IR chairs) **(Bundle 27, Volume 7, Page 569)**. I was interested to read that; 'fairness' was a core guiding principle as this did not reflect how I was treated.

1022. I felt incredibly frustrated by the whole process. The Independent Review stressed in the letter that the process was fair, but I couldn't see how it possibly could be fair, and my immediate concern was about the learning, and all the stuff that they missed and hadn't listened to in terms of patient safety moving forward.

1023. Nobody seemed interested in that, and I felt they had strayed well out with the remit, to again, make it about personality. They had a chapter on whistleblowing as well, so I felt that the narrative for that review was set, and the approach they took was that they only interviewed people who volunteered themselves to go

and speak to them.

1024. They did not ask certain key witnesses to speak to them. It appeared it was all dependent on whoever showed up, so there was a lot of bias. I think they only spoke to about 40 people. I was frustrated because when they talk about the Cryptococcus incident, they cite one individual statement. I knew it wasn't me and I knew it wasn't John Hood. There was nobody else qualified to make those claims about Cryptococcus or understand the microbiology of the relevant infection control, but they took the view of one person and put that in the report as a conclusion. I just felt in all the circumstances, it was a really shoddy piece of work.

The Oversight Board

1025. In July 2020 I attended a meeting with Fiona McQueen and Philip Raines, who was the lead civil servant working on the Oversight Board, regarding the work of the board. After the meeting, Philip Raines shared a super timeline which had been constructed. I was concerned that there were omissions and inaccuracies. Furthermore, it was stated that members of the IMT had been interviewed, again this did not include me as chair of many incidents.

1026. I enquired at that stage whether they had been told I was unavailable or off sick. That question was not answered. I submitted comments on the timeline. (See emails with Phil Raines) **(Bundle 14, Volume 3, Page 194)** I had several email exchanges with Phil Raines and sent some evidence to him prior to the publication of the Oversight Board report.

1027. I was not formally interviewed by the Oversight Board and that is what I thought would happen. I thought that I might be invited to an oversight meeting where I would have to present the water incident from start to finish and highlight all the learning and answer questions about the process. That never happened, it was only ever one to one meetings with Phil Raines.

1028. In February 2021 I was sent a draft of the Oversight Board report. In response, I provided more commentary and highlighted missing information with regards to Wards 4B and 2A. **(Bundle 27, Volume 7, Page 384)** I sent in the evidence I had submitted to the Independent Review on these two areas. I also expressed concern about a discussion that had taken place at an Oversight Board meeting whereby two attendees had told me afterwards that Prof Angela Wallace had stated I was the ICD for the RHCG and that I had recently returned to work after shielding. This was incorrect.

1029. I worked full time remotely despite shielding and I was concerned that her comment may have suggested that I was not contactable. Furthermore, I had not been an ICD since August 2019. Phil Raines assured me he would review all the evidence I had submitted before the next version of the draft report.

1030. In an email dated 22 February, Phil Raines highlighted that the scope and purpose of the Oversight Board had to be borne in mind. He stated the Oversight Board process was not the place to review things as comprehensively as we had suggested and that some of the matters would fall to the public inquiry.

1031. In addition to significant omissions in the timeline, I felt there was no consideration of the role of senior management in relation to the water incident and again a failure to acknowledge the existence and role of the Executive Control Group that had been established.

1032. On 21 March 2021, I was sent a copy of the final report **(Bundle 14, Volume 3, Page 194**). I highlighted there were still issues with factual accuracy, reference to a Cryptococcus report that only existed in draft at the time, which is a governance failure, no mention of the Executive Control Group, no discussion of the original condition of ward 2A and the meetings that ensued.

1033. I also raised concerns about the data on environmental testing submitted to the

case note review, and mention of data pertaining to M. Chelonae not being available despite the data being requested from me in December 2019 and being forwarded to the IPCT. Once again, I highlighted my concerns on differences of opinion and my surprise that there was no recommendation dealing with this issue.

Case Note Review

1034. Part of the Oversight Board report included the Case Note Review. I was first contacted by the Case Note Review in January 2021 when Christine Peters and I received an email from Prof Mike Stevens. He stated that it was late in the day but that they had been focusing on the case reviews and that the panel would like to meet with us.

1035. It was concerning to me that once again as chair of the IMT I had not been spoken to prior to this time. In an email response to Dr Peters, it was stated that there had been contact with Board management, microbiology, facilities, and estates teams. It was mentioned that Ian Storrar from HFS had discussed with them the 2018 incident in detail. I did not consider this entirely appropriate as he has technical and not clinical/IPC expertise, nor was he at all the IMTs. He could update on the engineering aspects but not others.

1036. From the panel questions it was clear to me that they had not had access to all the relevant information. We both sent further information to Mike Stevens. I remained particularly concerned about the database of results they had received.

1037. They appeared to have been sent Stenotrophomonas results with no location (they were from Ward 2A) and it was not clear if drain samples had been included. On several occasions I asked for access to the database that was submitted, and this was declined (See Prof Stevens emails and water results emails **(Bundle 14, Volume 3, Page 313)**).

1038. I was surprised that, given my role at the time, that I was not given access to this information. If GGC was submitting information like that to the Case Note Review, they would want to make sure it's accurate. I had my own database that Estates were keeping in Excel with all the water results on it, that was one generated by the lab.

1039. It would have been good to check that they were both the same. It also might have been good to run it past the chair of the incident. I was particularly concerned that I had locations for Stenotrophomonas but there were no locations for what was submitted, I find that strange.

1040. Until I have seen the data, I am not convinced that what was submitted to that is accurate. There were a few red flags in the report that suggested to me they did not have the full picture. They seemed to have no data on M. Chelonae despite me sending it to the IPCT, so I think there was information missing.

1041. I think it was a criticism from the Case Note Review that there was a lack of information available for them to properly consider. The meeting itself was very last minute. Present were myself, Christine Peters, Prof Mike Stevens (a haematologist), Prof Mark Wilcox (a microbiologist) and Linda Dempster. During the meeting, it was clear that they had pretty much written the report already and that our contribution would have no bearing on their conclusions, no matter what we said. A further issue was that Mark Wilcox announced that after 30 minutes he would have to log on to another call. So we had a situation where, after 30 minutes Prof Wilcox was trying to do both calls at the same time. They also interviewed me with Christine despite us having had very different roles. They hardly spent any time at all with me as the chair of the IMT.

1042. They explained that they didn't want to speak to us because it might introduce bias, but that didn't make sense to me because he'd spoken to other members of the IMT. I also thought that was strange.

1043. I think this was another example of those conducting the reviews not speaking to the right people, and again, I was concerned there was this narrative about me being off sick. What I don't know is whether they tried to speak to me and they were told I wasn't available, by someone in GGC who was being obstructive. That was always at the back of my mind. Prof Mike Stevens seemed like a very reasonable person who I thought would have made an effort to try and speak with us.

1044. I do want to highlight that the Case Note Review stated in their report that we didn't do enough water testing. Had they asked me more about that, I would have told them about resourcing, which was a problem for us. We did not have capacity in our own water lab. We were competing with equipment for clinical samples which took priority. We had to farm a lot out to an external lab. We did not have a 24-hour service for water testing, all of these were factors. By not speaking to me and getting that information, an opportunity was missed to make an important national recommendation to upscale water testing, to create laboratory space and to build on expertise. My view is we remain in a situation where we would struggle to react to a significant incident and handle the large volumes of samples required. I am trying to progress this within ARHAI but it would have been helpful if that had been a recommendation from the Case Note Review. I have also been researching water testing methods to help labs identify less common Gram- negatives in water in collaboration with the GRI lab and UKHSA. The fact there is no recognised methodology would have become apparent if they had spoken to me.

1045. I felt that both the Independent Review and the Oversight Board processes were flawed. They did not consider all available evidence, and there were significant and important omissions. There was bias in whom they chose to interview, and I felt that a narrative that had been created by GGC about whistle-blowers persisted and became a feature of the Independent Review report, which also strayed out with its remit.

1046. Overall, a very small number of people were interviewed and subject matter experts in infection control failed to engage with myself and other microbiology colleagues. In one of my communications to the Cabinet Secretary, I highlighted that not interviewing those directly involved was a missed opportunity for learning. I also wrote to the BMA about this matter asking for their support (see emails to BMA re IR and OB) **(Bundle 14, Volume 3, Page 182)**.

1047. I was quite shocked, when I saw minutes of the Oversight Board meetings, to see that members of the GGC senior management were present at the meetings so they could have influenced the process. The Oversight Board also produced a lot of work including a huge timeline and draft reports on the basis of what they were given by GGC, but there were huge omissions in that, and they did not come to us for any evidence. I think if you have a Board under scrutiny, I'm not convinced that it's reliable just to base your findings on what they submit.

1048. 'How do you know that you've got all the pertinent evidence?' was my question for the Oversight Board. I could see there were huge gaps in what they did have and huge gaps in their timeline. I have two documents where I've gone through the timelines in detail and told them what the gaps are and what the supporting evidence is and advised them to ask for it. I was quite surprised by their approach.

1049. I felt I was having to force things upon Phil Raines to get him to pay me any attention, but he came back to me on a few things. I had to send Tom Walsh's SBAR. I had to provide evidence that I did not know about the DMA Canyon Reports in March 2018, so I gave him details of the phone call from Jennifer Armstrong. I had to prove that I didn't know about it from March because I think the Board were insistent that the report was known about in March, but not by me. I remember that being a major focus.

1050. I remember talking him through all the information about Ward 2A and the holes in the ceiling, and the historical issues with ventilation and he said to me, *"The*

things that you might find important, others don't rate as important" and that struck me as odd because I was the ICD. I was the person, with infection control expertise and he was telling me that others had assessed my evidence as not relevant. How do you assess holes in the ceiling in the BMT Unit with dust and fungus falling on patients as not relevant? Who was making that assessment of whether it was relevant or not? It was frustrating.

1051. I felt that my opinion and expertise were not being considered. And there were lots of omissions from the final report and in the timeline. There is one comment that says: *"It is unclear what expertise the Infection Control team have in dealing with gram-negative outbreaks",* and I think I was quite cheeky in my response where I said: *"Did you ask?"* And then I listed all my qualifications. There were just statements being made without any sort of substance to them.

1052. I also did not feel as if there was any sort of comment on senior management's role in all of this. All the criticism fell with the IMT and the IPCT, but, in fact, they hadn't looked beyond that, despite this being the second review, despite me sending in minutes and the terms of reference, and the reporting structure for the executive control group – they just completely ignored its existence.

1053. I think that particular review also ignored the existence of the Infection Control SMT that was chaired by Tom Walsh. That just was not there, it was like it didn't exist. So, there were massive gaps in the governance and accountability structure which meant that it looked like it was the IMT who had done everything wrong. There was no focus on senior management within the organisation in those reports.

The recommendations from the Case Note Review

1054. I have been asked whether the recommendations from the Case Note Review have been implemented. I can only comment up until 1st Sept 2023 when I left GGC, and only on some matters as I was no longer in an IPC role when this

report was issued.

Recommendations. 1. Overall Management of Gram-negative environmental infection in Paediatric Haematology Oncology

1.1 Every GNE bacteraemia occurring in a Paediatric Haematology Oncology patient at NHS GGC should be comprehensively investigated using RCA methodology.

1055. My understanding is that this occurs however my concern is that it occurs and is undertaken by the IPCT without involving the Consultant Microbiologist covering the unit. Their inclusion is important because as a matter of routine they will undertake a root cause analysis of a patient's infection. It is my view that their insight is valuable to this process.

A multi-professional group, with a defined and consistent membership representing all appropriate skills and backgrounds, should be established with responsibility for continuing oversight of these data.

1056. As before, a truly multidisciplinary group would involve the microbiologist covering the unit as they are involved in daily liaison re the patients.

Water testing

1057. A database of water testing results was established. There was discussion regarding this database at Microbiology Senior Management Team meetings where it was clear that no-one knew the governance arrangements or who the database belonged to. This is a risk as no one appears to be taking responsibility for this database.

Infection Prevention Control Communication

1058. Communication between IPCT and Microbiology in QEUH up until I left was poor.

The ICD for RHC was based at GRI and did not attend either QEUH daily handover or fortnightly consultant meetings. Sector reports issued on a Friday afternoon contained minimal or no details regarding RHC incidents. Communication was largely via email and was at times obstructive and unhelpful.

1059. On 19th October 2021 I attended a meeting entitled IPC/Microbiology Communication Focus Group. The meeting was chaired by Dr Mairi Macleod, Head of Service for Microbiology. Three other microbiology consultants attended. The aim of the meeting was to improve communication between microbiology and IPC teams with the goal of securing improved patient care and safety. Actions from the meeting for further discussion with IPC were improvement of the handover process, optimisation of information sharing e.g. IMT minutes, access to water results and development of a process for typing results. I was unable to attend a follow-up meeting but a colleague was going to attend in my place.

1060. My understanding is the meeting did not happen in any event so it is not clear how and if these actions were progressed. I saw no improvement before I left in September 2023. I had continued to send emails expressing concern about the differences in opinion between microbiologists and the inability to resolve these, along with concerns as to how emails re typing results were being handled by the lead ICD.

8.1 NHS GGC should review its Standing Operating Procedure regarding the use of the term HAI to make it clear whether this includes all Healthcare Associated Infections

1061. This is a specific issue in the context of patients who, like those in Paediatric Haematology Oncology, frequently and repeatedly attend the hospital as outpatients, day patients and inpatients and for whom the distinction between Hospital Acquired Infection (HAI) and Healthcare Associated Infection (HCAI) is unlikely to be useful. I have submitted emails to the Inquiry and mentioned elsewhere in this statement some examples of instances where I believe

infections have been misclassified.

NHS GGC should revisit how they will monitor and, if necessary, trigger concerns about future outbreaks of Gram-negative environmental infections. Reliance on SPC charts to determine if episodes of infection caused by unusual/uncommon microorganisms are significant should be re-evaluated. The process in place for much of the Review period appears to have been insensitive to identifying clusters that should have raised earlier concerns about potential for a common/environmental source of infection

1062. As noted above, GGC have declined to be involved with the ARHAI environmental surveillance pilot one of the reasons being our triggers are deemed to be too sensitive.

Bacterial typing data / Reference laboratory reports

1063. At the point when I left there was still no database for these reports

Other examples of an inadequate response by GGC

1064. There are some specific examples below of issues that I do not feel were adequately dealt with by GGC;

- In May 2021 there are email trails between myself and Angela Wallace regarding two issues; environmental Gram negatives in NICU and water testing in response to Gram negative bloodstream infections in ward 4B. (see water testing 4B and NICU issue 2021 pdfs) **(Bundle 14, Volume 3, Page 303 and 306)**. Following patient cases of bloodstream infection with Pseudomonas, Stenotrophomonas and Roseomonas, I was concerned about the time taken to test the water and the focus on only one of these organisms, the Roseomonas. I was also concerned that despite several different issues with Gram negatives in the NICU there was only focus on one of those, Serratia. Cases of

Stenotrophomonas and ESBLs did not appear to be being included or reported in updates. I highlighted to Angela Wallace the Serratia incident from 2015 and the subsequent learning from that (SBAR Serratia main) **(Bundle 4, Page 26)**. Also, it is important to look at other Gram negative organisms on the unit at the same time as this can point to an environmental source such as water/drains. Again, this was highlighted in the Oversight Board/Case Note Review report. In fact, there was criticism in that report that even though we did investigate two different Gram negatives we held separate PAGs before the initial IMT. GGC have not demonstrated learning in this regard. Regarding this Serratia incident there were suggestions that these Serratia cases were due to our screening programme picking them up and that other units did not screen. We had a screening programme for good reason, this was instigated due to our previous issues within the unit, the aim of screening being to detect a colonisation burden before neonates developed bacteraemia (See SBAR Serratia) **(Bundle 4, Page 26)**. Later in 2022 there was a suggestion that the source of Serratia was mothers breast milk. Again, there was a failure to discuss the background to the incident and take advice from microbiologists who had covered the unit for many years. We can debate how Serratia was introduced into the unit back in 2015 but it has become endemic and during one of the incidents we found an outbreak strain in the drains, so my view is there is an ongoing environmental reservoir that needs addressed. Through previous incidents we have demonstrated that the numbers can be reduced through giving attention to IPC practices and environmental control. I feel that benchmarking against other units/screening practices is irrelevant here.

- In October 2021 there was an email trail regarding air sampling for fungi in ward 4B (see 4b air sampling 2021) **(Bundle 14, Volume 3, Page 315)**. Results from at least two rooms were abnormal and the clinical team were looking for advice on how to deal with this. I was copied in as I am the microbiologist covering the BMT unit. Responsibility for interpretation of results lies with the ICD, the need for me to see results is that I am involved in advising on antifungal treatment. What concerned me was that the response to the clinical team's request was to

suggest a review of the existing policy, and the development of a quality management process rather than give immediate advice on the abnormal results to the clinical team about the safe use of the rooms for patients and to initiate relevant investigations. I requested that someone from IPCT get in touch with the team to do this. The response I received from the lead ICD Dr Bagrade was less than satisfactory. This email felt targeted towards me and mentioned exclusion of the IPCT from emails which was nothing to do with me as they had originated from the clinical team. She also requested I make my position about not covering IPC known to the clinical team. I think the point had been missed and there was still no advice being given to the clinical team regarding the interpretation of results. I wrote back expressing concern that there had been abnormal results from the end of August which had still not been addressed. In one room, particle counts were 60 times what we had as an acceptable limit, and we had grown both Aspergillus and Cladosporium from plates. My view that repeat sampling on several occasions, development of a new policy and setting up quality meetings was not addressing the immediate issue, for example, what was the source of the high counts, what investigations needed to take place, and could these rooms be used safely for any patient groups? Repeat air sampling without any investigation/intervention is not a control measure. Further response from another ICD also alluded to roles and responsibilities of microbiologists and ICDs, again missing the point. The roles are clear, as a microbiologist I had referred the issue to the ICD who has responsibility for reviewing and acting upon the results. I reiterated the procedure that was in place when I was an ICD, i.e. monthly sampling, risk assessment and investigation. The issue was escalated to Angela Wallace by Christine Peters who was concerned that despite raising the issue at a buzz meeting, individuals copied into the emails claimed to know nothing about the situation. In the email trail my colleague Dr Bagrade had mentioned she sought advice from a colleague in Birmingham. I thought this was unusual given that I had extensive experience (over a decade) with air sampling in BMT units, I was the author of the previous policy and well aware of the background to the unit. It had been agreed in a SBAR written by HPS that after the initial period of air sampling over 4 - 6 weeks we should revert to the GGC

normal protocol which was monthly. (See previously submitted BMT SBAR) **(Bundle 3, Page 57)**. Currently, I do not know if monthly air sampling continues or not. Whilst there are some BMT units in the UK that do not undertake air sampling the majority do, and it was important in my view as our unit was not at an optimal specification. This was a view shared by HPS in the SBAR they produced to GGC. Over the years my experience of air sampling in BMT units is that it can alert you to problems such as water damage, construction work, dust ingress. Despite being the microbiologist allocated to BMT, I have been excluded from all IPCT PAGs and IMTs. This is different to how Prof Jones, who was in the role before me, was treated - he was always invited. I consider it important to know about IPC risks as I may alter treatment recommendations as a result. I highlighted my exclusion to the ICD, Dr Bal, and the Head of Service, Dr Mairi Macleod. My exclusion from BMT matters continued despite this. I believe this is because of my status as a whistleblower. I have not been afforded the same respect that Prof Jones had been given.

- In February 2022 I queried a case of possible Aspergillus infection in a BMT patient **(Bundle 14, Volume 3, Page 366)**. I was told that a full investigation would not be undertaken unless there was a linked case. In the same email thread, there was reference to consultant meeting minutes in which a stained tile in the neurosurgical ICU was mentioned. It was stated that a stain on a dry tile is not a risk for fungal infection. I disagreed with this, citing my experience with mould and water damage over the years. Staining on a tile is indicative of a water leak and safe removal of the tile and investigation of the ceiling void with identification and control of the source is required. What is happening in my view is that the abnormal is becoming normalised, where there are frequent water leaks and stained tiles it becomes accepted as something that just happens. This is ‘normalisation of deviance’ and in my view, this is important in understanding the culture as it pertains to other aspects not just stained tiles (The term ‘normalisation of deviance’ was coined by American sociologist Diane Vaughan in relation to the Challenger disaster, it has subsequently been applied to healthcare settings. Deviation becomes the norm as there is no immediate

adverse outcome). I remain concerned regarding the approach to cases of Aspergillus infections. In the case of patient AS, which has been in the public domain, there was a failure to investigate retrospectively and just weeks before this patient's stay in ward 4B there was a case of Aspergillus infection in a paediatric patient. Two cases in a short space of time would certainly warrant investigation.

- I was not present at a microbiology SMT meeting in August 22 where there was discussion regarding the reporting of a Stenotrophomonas result in faeces, but I was included in subsequent email trails (see SMT discussion re Steno pdf) **(Bundle 14, Volume 3, Page 404)**. It was worrying to read that reporting differently from any other lab in Scotland would mean being reflected 'unfairly' in surveillance data. I was also unsure why reporting of this result was suddenly an issue, we had a case of Steno in faeces reported during the 2018 incident and it was minuted at the IMT so lab processes and reporting were consistent. I felt that colleagues were overly concerned about the impact on national surveillance programmes which in my role at ARHAI I did not view as a problem. Rather than deal proactively with the result I felt that reasons were being made as to why the result should not have been reported in the first place. Rather than the IPCT taking responsibility, the blame was being shifted to microbiologists. There has been reference several times to 'looking bad' compared with other hospitals.

- In September 2022, my colleague [redacted] informed the IPCT of a typing result for Stenotrophomonas, I was copied in as I cover paediatrics. The response was surprising in that it was queried why the sample had been sent for typing and stated that the email was not for the IPCT to deal with. In addition, it was stated that there was no database for Stenotrophomonas typing results despite us having assurances that the recommendations from the Case Note Review, Oversight Board and Independent Review had been implemented. There appeared to be and still is confusion regarding the database containing water results as to who it belongs to and who has responsibility for it. My colleague Dr Peters highlighted that there have been two cases with a striking match to one of

the patients in 2017 who had Stenotrophomonas bacteraemia and had passed away. A further email from an ICD colleague suggested a potential link would be the consumption of salad from the same supermarket and the ICD had not requested typing and were taking no responsibility for results. I emailed my view on the results which was that they likely represented an unidentified environmental reservoir within the hospital **(Bundle 14, Volume 3, Page 404)**. I also highlighted that environmental outbreaks can be prolonged with long periods between cases. This is an example of how bizarre alternate hypotheses such as eating salad are acceptable to GGC because it means the hospital is not the cause. It is correct that salads can become contaminated when washed in water but neonatal patients do not eat salads.

- As recently as November 2022 there was debate at the QEUH consultants meeting regarding alerts for environmental Gram negatives and water testing. In an email trail (see hospital revealed infections pdf) **(Bundle 14, Volume 3, Page 410).** I highlight that boards must consider local epidemiology. My concern is that there appears to be a requirement for guidance for every possible scenario and IPC colleagues appear unable to think beyond guidance, often using lack of guidance for inaction. Appendix 13 makes it clear that the document is an agreed minimum standard list of alert organisms. We expect local IPCTs to consider local epidemiology/ historical issues and populate that list with other relevant organisms to their setting. Based on what I was told a case of Cupriavidus bacteraemia would not necessitate water testing in GGC, fairly surprising given the history of the building. Again, there remains no mechanism by which to resolve differences of opinion between microbiologists.

- As I write this statement in January 2023, I am concerned regarding the approach to two incidents in Ward 4B – an increased incidence of VRE bloodstream infections and cases of Stenotrophomonas/ Pseudomonas/ Roseomonas. I have queried water testing in relation to the latter and I was told that it was considered but will not take place.

- I have continued to raise concerns regarding Ward 4B (see ward 4B 2023 pdf). I pointed out that there were several cases of infection or colonisation with environmental Gram-negative bacteria. These included Stenotrophomonas, Pseudomonas, Roseomonas and Aeromonas. I emailed the ICD to highlight the similar epidemiology to Ward 2A and subsequently sent quotes of the learning from the Case Note Review. The responses indicate to me that there has been no IPC learning from the 2018 water incident. In a departmental meeting the ICD confirmed that he had not been involved in any process where the previous reports were reviewed and learning points discussed.
- I also mentioned the Fusarium case on Ward 4B. This was, by definition, a hospital acquired infection and sadly the patient died. At this time, this has not been reported to ARHAI. I expressed my view which was that this constituted a red HIIAT. It was occurring at the same time as environmental Gram-negative infections and when issues were found with the fabric of shower rooms. There was also concern regarding the HAI scribe measures being suboptimal to deal with the shower room issues. I was told that there is no requirement to report a single case of Fusarium. Again, I highlighted the inconsistent practice with the reporting of recent Mucor cases. The reason I feel these Mucor cases were reported was that they could be linked to a surgical procedure potentially in one case and the patient's own home environment in the other. The Fusarium was possibly related to issues ongoing on Ward 4b and that would not have been a positive news story. HIIAT scoring would mean that external agencies, GGC and potentially the media would become aware. I am aware via my role in ARHAI Scotland that someone whistle blew to the Scottish Government in relation to the Ward 4B situation. It would appear from my position in ARHAI that assurances were provided to the Scottish Government directly by GGC and that ARHAI were not involved in this. I am not aware of what assurance was provided, this took place before the patient died and I am not sure who in Scottish Government at the time would be suitably qualified to assess fungal HAIs, the IPC response and assurances regarding the state of the environment.

1065. In summary I feel that the current IPCT are not operating in an open and

transparent fashion. In particular there are issues regarding:

1) Classification of infection
2) Scoring of the HIIAT tool
3) Focusing on single pathogens rather than reviewing all environmental Gram-negatives
4) Not undertaking investigations or environmental sampling quickly enough
5) An over emphasis on typing results sometimes waiting for typing results before taking any action, Valuable time is lost resulting in onward transmission
6) Failure to understand the epidemiology of environmental incidents and the fact there can be significant amount of time between cases
7) Generation of hypotheses that are scientifically invalid but deemed more acceptable as organisational reputation is protected
8) Failure to understand the complexity of typing in environmental incidents
9) Continual reference to benchmarking of environmental pathogens and reference to “unfairness” in surveillance data

CHAPTER 16: Current Role with ARHAI and NHS ASSURE

1066. In July 2021, I started working one day a week with NHS Assure, and in January 2022, an additional day with ARHAI Scotland. Since September 2023, I work full-time at ARHAI as an infection control doctor and microbiologist for Scotland. In these roles, I have attended many meetings with IPCT and other colleagues in various Scottish health boards. I have yet to encounter the culture that I experienced within GGC. Through my work in ARHAI, I can see that the reporting of incidents from GGC is not as open and transparent as other health boards and frequently colleagues in ARHAI Scotland are having to seek clarification.

ARHAI

Appointment to the role and concerns about GGC

1067. When I initially applied for the sessions with ARHAI, senior management at GGC said there was a conflict of interest. However, I was no longer an ICD within GGC. ARHAI did not see any conflict. Of relevance in this regard is that there was no conflict of interest when Alistair Leanord was an HAI government advisor and head of department in the QEUH during everything that was going on and he was able to ask questions of me, which he did frequently about ongoing incidents at the time.

1068. When I was working simultaneously in both ARHAI and GGC it would be difficult because I would see things going on in Glasgow that were not reported to ARHAI, and that would be problematic. I recall one incident where GGC reported cases of Stenotrophomonas. What they did not tell ARHAI was that there are also cases of Pseudomonas and Roseomonas both of which are recognised as waterborne pathogens. I saw this being reported into ARHAI and I knew there was more to the story, but all I can do is suggest that ARHAI ask GGC whether there are any other environmental organisms within the ward. This is a reasonable question to ask, but it does put me in a difficult position.

1069. In saying that, I have found that the communications and the information that ARHAI get from GGC about incidents can be missing a lot and is poor compared to the other health boards, so when I was still working in GGC I didn't actually have to intervene much. The nurse consultant will assess the information coming in and will often go back with several questions that ensures that everything relevant is obtained. A nurse consultant is assigned to every single incident that comes in during their on call week supported by senior nurses in IPC. Part of their role, and my role, is to review everything that's reported in and to identify any areas that are not clear and go back to boards with questions.

1070. I can't think of any reasonable explanation GGC can offer as to why they have not reported all the facts in relation to this incident in Ward 4B, especially after the various reviews we've been through. The Case Note Review focussed on the fact that you can see different environmental organisms as part of the same incident. It mentioned the instances of Enterobacter and Stenotrophomonas at the same time. There is no plausible explanation as to why they would omit that information. This is a further demonstration of failed learning from the case note review.

1071. This pattern all points to a potential water system source. It also shows inconsistent practice because these are the same organisms we saw a year or two ago and where the IPCT did eventually advise water testing.

1072. If an issue ever arises where we have not been provided with the information we require or have asked for and it's a repeated issue, this will be escalated from the nurse consultant to Laura Imrie, who is our lead consultant. She will then escalate the matter to the Scottish Government.

1073. One example of an issue that Laura escalated to the Scottish Government relates to an issue with Burkholderia contaminans in GGC (see B contaminans 2023 pdf) **(Bundle 14, Volume 3, Page 374)**.

1074. UKHSA alerted us to a cluster of patient isolates in the NICU at the RHCG linked to a national outbreak associated with Clinell wipes in the UK. The report from UKHSA on the whole genome sequencing was that the source of cases in the GGC NICU was the wipes i.e. the patients had the same outbreak strain. There were four cases over a 13-month period (this illustrates the time between cases point I was making earlier). Subsequent cases in the NICU were then detected. The interpretation by myself and others in ARHAI was that the strain had been introduced into the unit and there was now an undetected environmental reservoir as these wipes were not in use. Laura Imrie herself went along to the

PAG that was held, as the lead nurse consultant, and put forward the hypothesis from UKHSA and ourselves about there being an ongoing environmental source. This hypothesis was rejected by GGC at a PAG meeting.

1075. The hypotheses put forward by GGC have not been adequately explained and to me, as a microbiologist, made no sense. These include maternal colonisation with Burkholderia and a pseudo-outbreak linked to changes in ecology of the organism and lab processes. These hypotheses have not been tested. Burkholderia is not considered part of normal flora so colonisation of mothers seems highly unlikely. If this organism was something colonising mothers, we would be detecting cases nationwide. It is notable that in a positional paper GGC state that whistleblowers demonstrated 'A *failure to apply and/or accept recognised scientific principles in the testing of a hypothesis regarding potential sources of infection.'* Drs Bagrade and Kennedy were present and involved at the Burkholderia IMT (which did not test hypotheses) but are cited as individuals who can provide more information in this regard despite not testing hypotheses themselves.

1076. Similarly, there was no explanation given for a change in lab processes that would mean this organism would be identified more than usual. It is not clear how this could be a pseudo-outbreak and by what mechanism lab samples would become contaminated. Whilst there were some investigations undertaken, investigation for an environmental source was far from comprehensive.

1077. I discussed my concerns with Laura, but I wasn't sure if I should go back and question them because at that time, I was also in GGC. She confirmed that I should, because my role in ARHAI is to communicate with the Scottish Government. We have to make sure that communication is accurate and sensible, and some of these hypotheses were not sensible at all, there was no evidence behind them, they hadn't even been tested and there weren't plans to test them. They rejected not only just our hypothesis but also the UK Health

Security Agency's hypothesis.

1078. As a result of this discussion, I sent an email to GGC's lead ICD Dr Bagrade on 23 December 2022 asking for some clarity on certain aspects of the B Contaminans incident **(Bundle 14, Volume 3, Page 374)**. I received a response on 7 February 2023 **(Bundle 14, Volume 3, Page 419)**. This email stated that GGC had not asked ARHAI for support and mentioned a discussion regarding roles and responsibilities of GGC and ARHAI. The email confirmed that the IMT felt the most likely explanation was a pseudo- outbreak. It also stated that lab processes had been reviewed by GGC and that, I as a microbiologist with GGC, should be aware of such investigation. Once again, I felt the response was not to deal with the concerns I had raised but to make the issue about me, with reference to roles and responsibilities and information I should know about lab investigations. This was similar to the response I encountered when raising concerns about air sampling in Ward 4B, i.e., the actual issues are not dealt with but are deflected.

1079. I subsequently contacted the clinical lead at QEUH, Dr Bal regarding the lab investigation and he was unaware of any lab contamination issues regarding Burkholderia Contaminans. He confirmed that nothing had been discussed in morning handover meetings or Consultant meetings.

1080. I responded to Dr Bagrade informing her that the role of ARHAI is communication to the Scottish Government and that I required clarity on certain aspects in order to do so. I sought clarity on the pseudo-outbreak hypothesis as both UKHSA and ARHAI were not of this opinion. I think it is reasonable to ask this question when you have disparate views. In addition, I had not encountered B contaminans colonisation of mothers before in all my years as a microbiologist, so I felt the need to query this. I also pointed out that pseudo-outbreaks need to be investigated if that was in fact what we were dealing with. This is because they are not without patient harm, e.g., unnecessary investigations and antibiotic treatment. Dr Bagrade did not respond to me, this was before Christmas. I

contacted her again asking for a response. However, there has been no response to date. At that point, Laura contacted Sandra Devine as the deputy, and the email that came back said that Sandra had discussed with Angela Wallace the role of GGC and ARHAI in terms of managing incidents and it would be better for each of their teams if they could practice in a "*supportive safe space*." None of the questions about the outbreak were answered, but there has been reference made to the need for a 'supportive safe space'. This is the third time in six months I've heard the phrase 'safe space' used around me in either meetings or comments on reports. Again, I see that as very targeted against a whistle blower.

1081. Sandra's real issue here was that she had an ICD who was generating hypotheses that are not agreed by ARHAI or UKHSA. Rather than address that and address why there is a difference of opinion, it becomes an attack on the whistle blower.

1082. There was no further communication and ARHAI closed the incident noting GGC's responses.

1083. Later I emailed Dr Mairi Macleod, head of service for microbiology as I was concerned about discussions that took place at a microbiology SMT meeting. Discussions related to the B Contaminans incident and there was also reference to ongoing national discussion regarding reporting of single cases of infections. I highlighted potential probity issues with inaccurate information being relayed to and referenced about, national agencies. I also pointed out an inconsistency in reporting of fungal HAIs in that the Fusarium case in Ward 4B was not reported whereas two separate cases of Mucor were. I did not get any response to that email. The minutes of the meeting have significant amounts omitted which mean the points I have alerted Dr Macleod to are not attributable to anything within them. As is apparent from this statement, the issue of inaccurate minutes is a common theme.

1084. Over and above this incident, there are others, discussed in the following paragraphs, that have given me cause for concern.

Mucor case, ICU

1085. Despite the patient requiring antifungal treatment, a source not being identified and the likely public anxiety that would ensue, this HIIAT was scored as a green despite ARHAI suggesting this was not appropriate.

Stenotrophomonas/VRE, Ward 4B

1086. At the time when I spoke to the Inquiry team, this was an ongoing incident. The hypotheses for the Stenotrophomonas cases in haemato-oncology patients was treatment with Meropenem. Whilst it is correct that Meropenem selects out Stenotrophomonas, the patient still has to acquire the Stenotrophomonas from somewhere. This is a nosocomial pathogen. GGC did not report to ARHAI the other cases of environmental Gram-negatives on the unit, Pseudomonas and Roseomonas. My view is that water testing should have been undertaken but they have stated that they do not believe there is an environmental source. The concurrent increase in VRE cases also may point to an environmental source.

1087. By way of another example, I emailed GGC's lead ICD about a Stenotrophomonas typing result. I was the duty microbiologist, that is my job. We got a number of reports back every day from reference labs and it told me that a child had Stenotrophomonas which was clustering with two other patients, one from 2022 and one from 2018. I had to action these reports. In my mind, that is an infection control issue, the cases are clustering together; it's suggestive of an environmental source.

1088. The lead ICD's response was to ask why I was sending this information to her as she didn't ask for it and it should be sent to the microbiologist. I responded to say

that, regardless of who sent it and why they sent it, this is an infection control issue from the actual interpretation. There was then a whole email ping pong between various people in the thread **(Bundle 14, Volume 3, Page 432)**. It demonstrates the toxic culture right now. Rather than deal with the result those who sent it for typing are asked to explain their actions.

1089. GGC is very different to other health boards I interact with. With other health boards, I go along to IMTs and I am included in all the communications. They are open, they are transparent. I was at an IMT recently where I was able to freely ask questions and get responses back. They are very appreciative. I have had ICDs from almost every other health board contact me for advice, which they are really grateful for. GGC have never contacted me for any built environment advice, and they will not, so I think it's important to stress that I do not have that relationship with other health boards.

1090. I know that the approach taken by GGC is not in keeping with other health boards. The culture is very different around the table at IMTs, and I've been to enough elsewhere now to say that confidently. There is a health board which recently reported a single case of aspergillus. They are investigating it and they have a hypotheses. GGC do not do that. I am concerned regarding the use of the term 'hospital revealed ' in relation to Aspergillus by GGC. In my view this is a convenient way to never have a case of hospital acquired Aspergillus infection.

1091. As discussed above, there was another health board which investigated Cryptococcal infection where there had been bird exposure. They acknowledged that and they have told the patient. Nobody is trying to undermine the microbiologists. They have undertaken duty of candour and have spoken to the patient and their family. That is how it should be, but in GGC there is not the same openness and transparency.

1092. At the moment, ARHAI are unable to challenge bodies such as GGC if, for example, they only report one infection when they know there are three. This is

where I think ARHAI need a greater role in scrutiny and challenge which they do not currently have.

1093. ARHAI's purpose is to communicate between the health board and the government and to make sure that the communication is sensible, but they don't really have that ability for scrutiny. They can put forward hypotheses, but GGC can just reject them, as they have done with the most recent incident. The actual scrutiny question really must come from Scottish Government. I should point out that, in my experience, most health boards are open and transparent and do not require scrutiny.

QEUH HIS REPORT

1094. In my role at ARHAI, I was asked to comment on the HIS report into Aspergillus and their inspection at the QEUH. My view was that this was by no means a comprehensive review of Aspergillus (see HIS Aspergillus report) **(Bundle 14, Volume 3, Page 412)**.

1095. It focused on a limited time period of one year and had only reviewed one incident involving two patients, which in fact were not HAIs. There were some national and local guidelines and tools which were not considered and those were listed in my response. The real issue appeared to be in relation to the management and reporting of a single case of HAI Aspergillus.

1096. I was particularly concerned that the view from an expert was that 30 days were sufficient to look back for case ascertainment. My view is that thirty days is a short time frame for any pathogen but particularly those of an environmental nature. Sources of Aspergillus can be undetected or ongoing for months/years, for example, construction on the site /vicinity, water leaks hidden behind IPS panels or in ceiling voids.

1097. There was no scientific reference provided to support this statement that 30 days

were a sufficient look back, and it was not clear if HIS consulted any infection control expert. I attached a scientific paper which supported my point. I was also concerned about the use of the term ‘lab error’. This is more than likely Aspergillus contamination which is part of any investigation into cases.

1098. Laboratory air is not filtered, and because spores are ubiquitous, we can get contamination of agar plates in the laboratory. This is one of the first things to exclude when investigating cases and should not be construed as an error. Once again, I felt that this review was insufficient, made no attempt to collect accurate data and do a comprehensive review of an Aspergillus case and once again, they did not interview the correct people.

1099. Whilst there was utilisation of an external expert, this individual has expertise in the treatment of patients with fungal infection, but this review required an expert in infection control and HAI Aspergillus outbreaks. Colleagues in ARHAI agreed with the points I had made, and these were fed back to HIS, however, they were not taken onboard. I reiterate that I do not feel ARHAI Scotland have sufficient influence.

1100. What also struck me about this report was the reference to the creation of a new ventilation group in June 2022 at which validation/verification reports would be discussed. The need for a more robust system for validation reports was highlighted.

1101. It was stated in the report that prior to this time the sharing of such reports with IPCT was much more informal. There is no reference to the group I helped establish in 2019 which had this exact purpose and we had been starting to review all the reports there. It would suggest to me that when I resigned, this group was stood down despite it being good practice.

NHS Assure Role

1102. From an NHS Assure perspective, my only involvement with GGC is in relation to the new Ward 2A. I do not have all the relevant communications and did not attend any meetings as my colleague, Dr Weinbren, was the water lead at the time. However, I was asked for an opinion on certain aspects. I did get sent some water results and some questions from Annette Rankin, and that's probably because I have been the chair of the IMT and I knew the background and I think that was fair enough. I put comments back on those, which she agreed with, but the microbiologist in Assure who was leading on this was Mike Weinbren. He would be the best person to speak to about this matter.

1103. I think GGC approached Assure because they wanted them to sign off the water system in Ward 2A. Mike wanted to establish a short life working group with experts around the table; people like Suzanne Lee and other water experts to review all the results and assess all the control measures because we never had a debrief following the water incident in Ward 2A. This approach was declined by GGC. I don't understand why GGC or the Scottish Government wouldn't want assurances for the ward, from a team of experts, given what happened previously.

1104. From my perspective, within NHS Assure I was keen to do a piece of work on the learning with respect to ventilation from the new build hospitals. I was not able to obtain all relevant reports to do so and particularly the AECOM report. As a result, it has not been possible to apply the learning and I am told this report cannot be released due to ongoing legal action between GGC and the contractor. Overall, I do not feel there is a robust system for shared learning and at times it has been actively discouraged by GGC.

CHAPTER 17: Communication

General Communications by GGC

Core Briefs, South Sector Briefs and other communications

1105. The two main sources of regular email briefing information by GGC come from the Core Brief and the South Sector Brief.

The Core Brief

1106. The core brief is Board wide and comes from Jane Grant as the Chief Executive, or from the Communications department. It is the main means of disseminating information to all staff across the health board via email, and this includes staff in the QEUH/RHCG. Often the content is very general. I don't know how often they are properly read by the staff. The content might be something to do with IT systems, or it might be a good news story, which have been appearing quite frequently.

The South Sector Brief

1107. The south sector brief is similar to the core brief, but it's predominantly about the South Sector and what might be going on there. This would be the responsibility of senior managers for the South. That used to be Scott Davidson, now it's William Edwards, who replaced Jonathan Best. It has a similar structure to the core brief. South Side briefs tend to be quite positive and acknowledge staff, rather than giving any facts about any kind of incident or issue. These are also distributed by email.

Other means of communication

1108. Over and above the two briefs mentioned above, there are also a lot of meetings

where information is disseminated. For example, in microbiology, we have a senior management team meeting which is attended by all consultants and information is discussed there. We are also reliant on heads of department or heads of service disseminating information via email. For example, if there are any new antibiotic policies, or letters from the Scottish Government, then they would go via that route.

Communication of issues related to the building, built environment, infections and outbreaks

1109. I don't recall any information about the built environment/infections being included in core briefs, but they are board wide. It might go in the South Sector brief, but, usually it would be up to individual departments to communicate with their staff and that would most likely come from the senior managers. For example, during the Cryptococcus incident, as chair of the IMT, I think that I put comms together for distribution to the south sector.

1110. I will speak in further detail later about the communications coming out of the IMTs that I chaired. After I stepped down and returned to my role as a Consultant Microbiologist, I would say that we get minimal communication about the built environment/infections. When I was lead ICD, I would attend various meetings and provide updates. For example, I would attend GGC microbiology consultant meetings; I would go to local QEUH consultant's morning handovers and give updates there.

1111. I also frequently attended the haematology medical staff morning meeting; I think those were on Fridays. I would speak to Brenda Gibson and her colleagues; sometimes senior nurses were also there. Whilst all of the issues were going on with water and then the decant, we were having frequent discussions in these forums at the time, although this was more general discussion amongst the staff and providing them with support at what was a stressful time. I think a lot of staff

felt that they were to blame. Initially, there was a lot of focus on IPC practice until we knew what was going on. These meetings were about reassuring staff that it wasn't their fault, and they were doing a really good job. There were also all these environmental issues, but that meeting was not really designed to decide what was communicated to patients.

1112. I don't think those regular meetings happen now. We have no insight into what is going on. For example, there were recently positive water results for non-tuberculous mycobacteria from cardiac cooler machines. The organism M chimaera is similar to M. Chelonae. It is found in water and has implications for patients. We weren't told. We only found out because we saw it in meeting minutes. This suggests a breakdown in communication and microbiologists are not being told what they need to know from the IPCTs to practice safely. We wouldn't normally test every patient for that particular organism. We need a special type of blood culture, but if you tell us that you've grown it in the water and patients are at risk then we can make sure that that test is done.

1113. I have mentioned the Buzz meetings and I was trying to improve communications by suggesting having these. This is expressed in the emails I sent to Angela. I was looking at improvements. While that was in progress, we were getting feedback from Christine Peters about what was being discussed at that meeting. For a while it was okay, but that has fallen away now.

1114. I believe there is a meeting that's set up with 2A that has the ICD present to discuss cases but didn't have the microbiology person present. I know that Christine Peters had raised concerns about that, and I think now she's started going along to that, but that's a relatively new thing. I have never attended these meetings.

1115. I am also aware that there are staff huddles held on the ward, but that is not something that I would be expected to attend as an ICD. I do think that senior

ICNs would attend them. I don't know what is discussed at those huddles.

Communication in relation to the IMTs 2018-2019

Communication with patients and families

1116. Prior to the 2018 water incident, I had not spoken to patients or families involved in outbreaks. Following the formal introduction of the duty of candour in April 2018, I added this as an agenda item for IMTs. I felt it was important for IPCTs to support clinicians when talking to patients about outbreaks/incidents. During the water incident, I spoke to many parents. Apart from the odd occasion, I would speak to them with a clinician present as I was not able to answer any queries regarding their condition or treatment.

1117. As the IMTs progressed, my view about the way communication was handled is that they got slightly better, but not to a satisfactory level for patients and families.

1118. One challenge was that the situation continued to evolve, and we did not have all the answers. We would communicate that we had identified and addressed one problem and then another would arise. Some of the information about the building and risk was not being shared with me as chair of the IMT.

1119. Brenda Gibson and I would try to speak with as many patients and families as possible to update them. The issue was that the minute there was a press release, it would immediately be all over Twitter and social media. There did not seem to be any coordination about when press statements were released. There was pressure to get press releases out and we weren't given enough time to get around the families to speak to them first. There were, however, situations where patients contacted us as they had found out by social media. I do remember getting phone calls from some of the day patient families who were irate, and I do not blame them, because they were finding out about unsafe conditions that their

child had been put in from the media. It was really difficult.

1120. They set up the closed parents' Facebook group to address some of these problems. I was not privy to that, I do not know what was discussed, but I do know that it was set up to try and address some of the issues with social media, because there were a lot of families finding out via that route.

1121. I have been shown a positioning paper submitted by NHSGGC, section 63 which reads as follows;

Despite this, and despite her pivotal role in the IMT as chair, Dr Inkster, together with Dr Ronghe, advised [redacted] *on 17 September 2018 that their* [redacted] *infection had been hospital acquired and, specifically, had come from the drains. Not only was this information without any factual basis, it was known, or ought to have been known, by Dr Inkster to be untrue: it is recorded in the minutes of the IMT from 10 September that Dr Inkster herself advised the group that the Serratia organism had not been found either in drains or in water in Ward 2A.*

1122. I refute in the strongest possible terms the suggestion that I told families or patients anything that was not true. I, along with other clinical colleagues, told families as much as we knew. When telling families about their child's infection I would always explain what sources we were investigating. I would explain that we were undertaking environmental sampling and typing to try to confirm this. I do not recall definitively stating to [redacted] that the source of their [redacted] infection was definitively the drains. I do not recall saying anything similar to any other family. I note in positional papers submitted by GGC they stress that evidence is still to be heard from clinicians and microbiologists, yet here GGC have made this claim without hearing my evidence on the matter.

1123. In an effort to try and get information out more quickly, we started issuing parent lines which were in keeping with the press statement. These were sometimes

issued by nursing staff and would be delivered to patient rooms. This was an impersonal means of communication, but it was aimed at informing parents as soon as we could and before it appeared in the media. There were several evenings where Brenda Gibson and I stayed late and went to speak to all available families. I recall one Sunday where myself, Brenda and Jamie were in until 7pm going round families one by one updating them and including all the patients who were boarding in other wards.

1124. It was labour intensive, but we wanted families to have the opportunity to speak with us. Particularly challenging was informing parents of children attending the day unit or the outpatient clinics as they were not on site. Brenda and I did try to overcome some of these difficulties. For example, with the outpatient group, Brenda took me along to her leukaemia clinic on a Tuesday or Wednesday morning. She gave me an office and, as she and the clinicians were seeing patients, they would tell people I was there and that they could come and speak to me about any concerns. It was like an 'open door' scenario, and some parents would come and speak to me about all sorts of things, even risks from their home environment. I think that helped.

1125. During the Cryptococcus incident Brenda and I spoke with families in groups so that we could reach them all. They would all come to clinic and they would be asked to wait, and then they all came into a room in groups of maybe 10 to 20. We would then explain to them what was going on. Again, it was an impersonal way of doing things, but it was the only way we could get around them all, because I have busy clinical jobs and Brenda has a whole clinical list. My recommendation for such a complex incident in the future is for there to be a dedicated comms group linked to the IMT.

1126. Over and above our communications with the patients and families, we were also having to communicate with the Scottish Government, Board senior management and our colleagues in microbiology and haematology. It was too much for a small number of individuals to undertake.

1127. I attended several meetings with the haemato-oncology staff to address their concerns, often with Jamie Redfern. I often saw visibly stressed and upset nursing staff. I was told that there was an occupational health report into the effects of the incident on staff, but that senior management were not happy with its content.

1128. I was criticised by a microbiology colleague for not updating them ahead of on call when the reality was, I was still in the hospital communicating with these other groups. This links in with my request to Sandra Devine about taking microbiology colleagues to meetings with me as they would have been able to support with communication to Consultant colleagues and lab staff.

1129. I told families as much as I knew as did Brenda Gibson and we were honest. It is accurate that I mentioned cost as a barrier to HPV cleaning to [redacted] This remains one of the reasons it is not in routine use to this day. I gave an honest response but appreciate it came across as rather blunt.

1130. If we had a dedicated comms team linked to, but working independently of, the IMT and dedicated to dealing with the situation then I think this would have been a much more effective way of dealing with this situation.

1131. Throughout the entire process, if parents asked Brenda or I a question, we would just answer it, and sometimes Brenda would say in front of parents that we were going to get into trouble for saying what we did, but that it was the truth. I don't think people were able to influence Brenda and I on what we were telling parents. We told them what we knew at the time.

1132. To my knowledge, I never knew more myself than what I was passing on to parents. I was trying to tell them what I knew, but I was also trying to weigh it up and provide them with reassurance, because their child had a life-threatening condition requiring chemotherapy. I didn’t want to be too alarmist, but I would try

and explain things as best I could, whilst also thinking about what is more important, i.e., that the patient gets their treatment and their cancer does not progress.

1133. We never ever deliberately withheld information. A lot of the time we didn't know the information, for example, I didn't know about the DMA Canyon reports, I didn't know the extent of the issues with the water system, so I wasn't able to tell parents about that. There were a lot of questions I just could not answer. I used to go to the meetings for parents when they started in 2019. There was a psychologist there and they asked me to go to the first meeting, where I talked to all the parents, told them what was going on and answered their questions.

1134. I was asked to go back during the second incident in 2019, but I refused because I couldn't give them assurance, because I wasn't getting accurate communication. I was faced with an Estates and Facilities director who was lying about chilled beams. I could not go and speak to these parents because I did not know what to say to them. Now that everything is in the public domain, some of the parents probably think Brenda and I were lying or being economical with the truth; I can assure you we were not, we just did not have all the information to hand.

Press Releases and involvement of Corporate Comms

1135. At the IMT, we would have a conversation about whether we needed to put out a press release, and that would be a function of the IMT. It's also supposedly a function that the IMT chair approves that press release but, as I think I alluded to previously, in GGC I have always known it to be the Medical Director or the Chief Executive who has the final say.

1136. The communications within the IMTs were handled by the corporate communications team. Their role was to come along to the IMT and ask any questions that might make the comms clearer. If we went down the route of a

press statement, they would either provide a draft statement, or confirm lines that were told to the press. They would go away and construct those based on what they had heard at the IMT, and they would often seek clarity on points.

1137. They would also report to senior management and I think that's where the difficulty arose as there was a senior management influence on those comms lines and, as the chair of the IMT, I did not have the final say.

1138. Once a press statement had been drafted, it would come to me and several other people such as Jamie Redfern, Jen Rogers, Jennifer Armstrong, Johnathan Best, to check for accuracy. People would always want to make changes or correct inaccuracies. It was quite an inefficient process.

1139. Sometime, the press officers would make the decision not to take any of the suggested changes on board. For example, there were instances where I attempted to amend the line to reflect what was factually accurate, but was told that the changes would not be made. Once the press statement is agreed, the final sign-off was done by either Jennifer Armstrong or Jane Grant. With any of these issues related to the built environment, the final sign-off was not by the chair of the IMT. It was by senior management. They would also go to Scottish Government. I don’t know what input they would have when it was finally released, but they were usually made aware of it.

1140. In my experience, the statements would be reactive and very carefully worded, in particular to protect organisational reputation. I do not think they were as open and transparent as they could have been.

1141. I did have some input into writing certain communications as the chair of the IMT, but they usually went through the hierarchy, and they might not always make the press. Those were things such as explaining to parents what we meant by HPV cleaning, to try and explain that process.

1142. At the same time as press statements were being drafted, lines for staff and lines for patients which were consistent with what was in the press statement, were also drafted, so it was all aligning. On some occasions I wrote the lines for parents because it needed to be in understandable language. However, sometimes Jen Rogers and other people would be tasked with doing that. It depended on who was available to do it.

1143. Quite often there could be a significant delay in lines for patients being provided. For example, at one of the IMTs where we were discussing mould and damp on the ward, myself and Brenda Gibson, were told by Jennifer Armstrong to take a break and wait on the ward and they would bring communications for us to give to families.

1144. At 7.30pm that night, we still had no communications. We decided to tell patients what was happening and we got the communication line at 8.30pm. The reason it had taken so long is those tasked with it were debating a better word to use than mould and eventually settled on damp. The communication line did use the word “damp” instead of “mould” which is the word we had used with the patients. It was very frustrating. Language was important to senior management and I have been pulled up for using the term sewage instead of effluent and referring to clutter.

Duty of candour

1145. I have a particular interest in duty of candour, which was introduced by legislation in April 2018. I have attended meetings about it, and I set up a short-life working group within IPC with an ICD and some senior nurses to look at how we applied it to IPC incidents. My concern was that we were not telling patients that they were part of an outbreak and what to expect, or much about their infection.

1146. We did have patient information leaflets for common organisms such as MRSA C.

Diff which would be handed out, but during these incidents we weren't talking to patients with infections or to patients who were at risk of infection. I thought about how duty of candour applied to the IPCT, and that's when I thought I would put it on the agenda for all the IMTs. I started speaking to families and patients about their infections. That was a direct reaction to the introduction of the duty of candour, and it was described in the Independent Review as, 'innovative' or 'unique', because no one else was doing this.

1147. In terms of duty of candour, I'm surprised it took until April 2018 to have something formal in place imposing an organisational duty of candour. I think a patient would expect, if they had an infection, to be told the name of the infection, what it is, where it came from, how long they are going to need treatment for it, whether there are any control measures and if they're part of an outbreak. They should know that. But, up until that point, it had not happened.

1148. Patients are entitled to that information, as are their families and visitors as it could influence whether they come in to see the patient, particularly if they are part of an incident. If they are part of an incident we have caused then they should have an apology for that happening and receive assurances that we are going to investigate and make sure it doesn't happen again. They should be invited to attend a meeting and be given the opportunity to ask questions. This process is detailed in the Duty of Candour Procedure Regulations (Scotland) 2018.

1149. That was what I was trying to do by adding it as an agenda item to the IMTs. In terms of the level of detail we would go into, usually we would tell them the name of the infection, we would discuss whether it was a bloodstream infection and how they were being treated. I would usually say what I thought had caused the infection, but, as always, we had difficulty with our incident and proving anything definitively through typing or sampling.

1150. We would try to give them as much information as possible. However, sometimes

I just couldn't give them answers and I think that was really frustrating for them, because they wanted to know where their child got the infection from and what we were going to do about it. That was very difficult for us.

1151. I remember apologising to several patients, and then I thought the response should really be corporate. It's not my fault there is an issue with the building and the water system, but I did find myself apologising on behalf of GGC, and I think what was lacking in this incident was the corporate response and the corporate duty of candour. I think GGC underestimated the psychological distress of being involved in such a long, protracted incident for patients and families. Not just those with infections were affected by the circumstances. Psychological distress for > 28 days is one of the definitions whereby organisational DOC should be applied.

1152. I think the challenge we had is there was only one of me and Brenda is a very busy clinician. Keeping track of the number of families, and sometimes patients who would be discharged to either never come back or maybe just come back as an outpatient was a challenge. We did not have a good system for updating families that we had spoken to, and I think it was dependent on those families requesting to get an update from us.

1153. If we had had adequate resource we could have dedicated an ICD and a clinician to that, and we could have had that sole responsibility of just updating and being available for families, so again, there was a better way to deal with it.

1154. As I have already said, there was never any real discussion about setting up any sort of crisis management team, there was no appetite for it. I told Tom Walsh several times that I thought that, whilst I should be leading the IMT about the incident, crisis management, contingency planning and communication should be someone like Kevin Hill, because that was a difficult area. These are not areas I have been trained in.

1155. There was no organisational duty of candour strategy and duty of candour was left to clinicians. There was no visibility of the Chief Executive or the Medical Director in dealing with these families. It was left to me, Brenda Gibson, Jamie Redfern and other clinicians. I know that all families were not happy with the communication they were given. And I accept that, because we just did not know things, we could not give them answers.

1156. I am also not aware of the communication strategy to the board members. I have highlighted an example of where I felt the HAIRT report in relation to M. Chelonae and Gram-negatives was misleading.

1157. I passed on all the work I had done around duty of candour, at her request, to Angela Wallace to go to Prof White. That didn't evolve either. No one was really interested in that and I don't think that the corporate duty of candour has been fully appreciated or addressed by the Board. I still think there is an awful lot of work needing to be done.

Duty of Candour in relation to Significant Clinical Incident (SCI) Reports relating to the Cryptococcus incidents

1158. In my resignation letter in August 2019, I expressed concern over the SCI process. This was in relation to the cases of Cryptococcus. I participated in an SCI meeting for the adult patient which seemed straightforward. I am not sure why both cases were not considered together. My prior experience of an SCI had done that with RSV cases in the Beatson.

1159. There was a delay in receiving the report for the adult patient but with a few amendments the report reflected my contribution to the meeting. I asked for a copy of the final report. On 16 August I received an email from Myra Campbell asking me if I was happy with an attached report as they were keen to send something to the family.

1160. In the attached email trail, the report had been reviewed and amended by several individuals. My content had been largely removed from the amended version. I wrote to Myra Campbell expressing concern that this was not reflective of the process I had participated in. I was concerned that we had still not issued a report to the family and that we were in breach of the time limit. I also stated that I did not feel we were being open and transparent with communication to families **(Bundle 14, Volume 2, Page 505)**.

1161. I believe my content was removed as output from the Cryptococcal advisory group was awaited. All reference to pigeons, infection control issues and filtration systems were omitted from the version I had received. I am not sure which version the family received and when. I am not aware of any of the individuals in the email trail having microbiology or infection control expertise. Again this is an example of actions being taken by those without any qualification in microbiology of IPC.

1162. I also had concerns about the SCI process for the paediatric Cryptococcus case. This had a different format. Rather than a meeting with all relevant parties, a panel of us interviewed clinicians involved with patient care. Aside from the chair, Jim Beattie, I did not feel the rest of us (myself, Jamie Redfern and Jen Rodgers) were qualified to interview clinicians regarding patient management. There was no interest in infection control aspects. I fed back that I felt the process was intimidating for clinicians but was told that was how things had always been done in RHCG. The ID physician was introduced as an expert in Cryptococcus but did acknowledge that he had not been involved in treating any cases. I do not recall seeing a final version of this SCI report.

1163. After I expressed concern about the SCI process in my resignation letter, I discussed concerns at the meeting with Linda De Caestecker into her review of the IMT. It was subsequently decided that I should meet with Rachel Green and Rob Gardiner to discuss matters with them, which I did. The meeting was unminuted and no actions were taken.

M. Chelonae, circumstances surrounding information provided to [redacted] and meeting on 8 August 2019

1164. As I have already mentioned, there was discussion at the IMT of 25 June 2019 about disclosure to both families whose children had contracted Mycobacterium chelonae. Brenda and I received some pushback over what we intended to disclose to them. I can't remember why, but I do remember Brenda and I being very robust about how we wanted to approach the situation as we had a duty of candour and we did not want a family to find out via social media or from another family.

1165. I was aware that [redacted] had already had involvement with the hospital and that Jamie Redfern was the designated point of contact. Jamie and I had planned to tell [redacted] exactly what was going on, that is, that we wanted to make [redacted] aware that there had been two cases of M. Chelonae and that the IMT was investigating it and [redacted] was part of that incident. It was that basic, and it was agreed that we would say the same to [redacted] as we'd said to the other family.

1166. As I have already explained, when I went to Jamie Redfern's office after having told the first family, Jamie had been told not to speak to [redacted].

1167. I didn't take any other action at that point. Jamie was the designated contact; I had been told that. I was not allowed to approach [redacted] and tell [redacted], it had to be Jamie. I was then told by Kevin Hill at the next IMT on 3 July, that the Chairman of the Board, John Brown, had been in contact with [redacted]. I was surprised by that, because the Chairman of the Board had not spoken to me as the IMT chair to understand the background. I did not have any further communication at that point with Jamie as he was on a period of annual leave.

1168. I then had the meeting with Jamie Redfern and [redacted] on 8 August. At

that time, I was told that [redacted] and [redacted] family had found out about the mycobacterium chelonae through the first family, and that was why [redacted] had asked for the meeting.

1169. I was surprised they had found out from another source other than the Chairman, because I thought the Chairman had dealt with it. I could not believe that we were in the very position that Brenda and I had tried our hardest to avoid.

1170. I hadn't had any discussion with Jamie prior to this meeting because it came off the back of an IMT and I was slightly late and the meeting with [redacted] had started. I understood the purpose of the meeting to be twofold: firstly to bring [redacted] up to date with the IMT process and investigations, and, secondly, [redacted] wanted an explanation as to why [redacted] hadn't been informed.

1171. I believe that Jamie had been given instructions about what to say beforehand based on the content of the conversation, however I cannot evidence that.

1172. When I got there, I thought that Jamie seemed flustered and anxious just from his body language. He was red in the face and appeared shaky. He was apologising because he was the point of contact and he had been on annual leave. [redacted] was quite angry about that response and made the very valid point that, in such a big organisation, someone else could have contacted [redacted]. It was quite tense.

1173. Either Jamie or I explained that we believed the Chairman had been in touch, but [redacted] told us that that was to do with [redacted] original complaint procedure and nothing to do with the M. Chelonae.

1174. After Jamie initially said that he hadn't been in touch because he was on holiday, his position then changed to say that it was because there had been a process agreed at the IMT. Jamie was getting more anxious, [redacted] was getting more angry, and I recognised that what Jamie was saying just wasn't

true. That is when I said to Jamie that he should tell [redacted] the truth, because it was nothing to do with the IMT process.

1175. Brenda Gibson and I were adamant that both families be told, openly and transparently, what was going on. This was not open and transparent, and the blame was being assigned to the IMT as not functioning and not communicating, which was inaccurate. First and foremost, I was telling a parent the truth but I was also speaking up, as chair of the IMT, on behalf of all the IMT members who had agreed that is what we would do. Once again it looked as if fault was sitting with the IMT rather than senior management, and I wanted [redacted] to know the truth.

1176. I then explained to [redacted] what had been agreed at the IMT and I explained that Jamie had been told not to tell [redacted]. [redacted] was very angry and [redacted] was pushing us to name Kevin Hill, which I didn't really want to do. It was just a very difficult situation to be in. Eventually, [redacted] thanked both of us for speaking to [redacted] and left.

1177. Jamie Redfern turned to me afterwards and said, *'It's a huge weight off my mind what you've just done, but my goodness, we are in trouble.*' I went back to my office and Jamie phoned me. Apparently, [redacted] must have immediately contacted someone, and Jonathan Best got in touch with Jamie and was swearing down the phone at him and asking why I had said what I did. I actually felt quite scared at that point.

1178. I had no further contact from anyone about that, and there was no further discussion about what had happened at that meeting between Jamie and I or anyone else who was more senior.

1179. I am unaware whether there was any further action arising from that meeting with [redacted]. I think [redacted] was in touch with senior staff and wrote letters to management, but I was not privy to that.

1180. I was asked later, after I had resigned, to comment on a letter that senior management were sending to [redacted] about the whole investigation and where [redacted] might have acquired [redacted] infection. I was not happy with the content of it at all, I didn't think it was open and transparent and I felt that there were efforts to hide information. I sent back quite a lot of commentary to Chris Deighan, who was coordinating the response. I don't think I saw the final letter that went out.

1181. I am not aware of any further meetings with [redacted], I am aware there was further correspondence, but I wasn't involved in any further official meets. I do think I met [redacted] one day, either in the main atrium or on the way to the car park, and [redacted] said [redacted] had met with Professor Leanord, Scott Davidson and Jonathan Best, that the meeting was most unhelpful, and that [redacted] had stormed out.

1182. I think the incident with [redacted] was handled dreadfully. It was obvious that they were trying to cover things up. They obviously didn't want [redacted] to know that there was another case. I don't know what more to say about that, other than to highlight that they were prepared to lie to [redacted].

1183. They were lying about following the agreed IMT process, and that is the part with which I was uncomfortable. They were not giving [redacted] the information that [redacted], as the [redacted] of a sick child, needed to hear. They were not prepared to update [redacted] about the investigation.

1184. As Brenda Gibson and I had indicated, [redacted] was going to find out anyway because of the way social media works. I suppose also, certainly by that stage, a lot of the parents were talking to each other about things that were happening.

1185. [redacted] had, historically, been raising issues about [redacted] and the handling of that case and the fact that it was most likely linked to the environment. The Board were disputing that. The second case would really

strengthen [redacted] argument and they just did not want that.

1186. I have no doubt that there was a deliberate attempt to withhold information. I would say that because of [redacted] and [redacted] history, [redacted] position and [redacted] work, they were afraid of [redacted] However, they made the situation worse by the way they handled it. They should have been open and transparent in the first place.

1187. I have been shown a positioning paper submitted by NHSGGC, section 40 of which reads as follows;

'That a clinician had been instructed to lie to the [redacted] of a patient: The clinician in question is Dr Inkster, and the [redacted] of the patient is [redacted]. The position may be stated very briefly. There is no truth in the suggestion that Dr Inkster was ever instructed to lie to [redacted]. The allegation is one which was investigated fully in the context of a whistleblowing complaint raised by Dr Inkster, and reported upon by Dr Chris Deighan. In relation to this issue the Inquiry is invited to have regard to the Report of Dr Deighan,and to the assistance which may be provided by Jamie Redfern, Kevin Hill, and the Lead Nurse for Infection Control.'

1188. It is correct that I was not instructed to lie to a [redacted], rather I found myself in a position that lies were being told which I refused to be a part of. At no point did I raise any whistleblowing complaint within GGC relating to this mater, nor do I have any awareness of a report by Dr Chris Deighan. I had no conversation with Dr Deighan regarding the meeting with [redacted] and Jamie Redfern, so I am surprised to hear that he has apparently written a report regarding this matter given that he did not obtain my position on this. I note that the lead nurse for infection control is cited as someone who can provide assistance on this matter. The individual is not named however no infection control nurse was present at the meeting with [redacted] or involved in any discussion with me regarding this meeting, so I fail to see what assistance they could provide.

Article on duty of candour with [redacted]

1189. I thought it was important to share the learning about communications and duty of candour, so I chose to write a paper on the subject. I wanted to capture the perspective of a parent and approached [redacted] as the parent representative on the Oversight Board.

1190. We co-authored a paper published in the Journal of Medical ethics on duty of candour and communication during an incident **(Bundle 27, Volume 6, Page 143)**. This paper is available. Our conclusion was as follows:

There was a hurried and chaotic approach influenced by media and political oversight. It is critical that effective governance and proactive communication is delivered regardless as to the identified source(s) of the outbreak(s), in a consistent, open and honest manner that seeks to reassure and enable patients and their families with opportunities to engage in dialogue, make informed decisions and seek assurances. If this is not managed from the outset, an outbreak can quickly become a crisis, which consumes the governance structure charged with managing and mitigating the outbreak. It is the case that distinction must be drawn between the role of an IMT and Crisis Management Team required to manage the critical incident supported by more prominent and transparent strategic leadership, coordination, governance, resilience, business continuity and public engagement. This would enable a focus on communications and duty of candour leaving the IMT to concentrate on investigating and implementing control measures. It would ensure timely, responsive, reassuring and accessible communication with the patients and families involved in order with a view to minimising the anxiety and distress experienced during similar incidents.

Other concerns about the communication surrounding infections

Cryptococcus involving Dr Sastry – 2020

1191. In 2020, there was another child case of Cryptococcus resulting in an IMT. I believe that efforts were made to cover that up, although Dr Sastry and Christine Peters would be better placed speak to that. I was told that Dr Sastry was instructed by senior management to tell the parents that it wasn't linked to the hospital. It is an example of a specific situation where management instructed a clinician not to give parents information.

Personal Impacts related to communication

1192. Personally, this whole experience has had a huge impact on me. I don't have a child who is sick with cancer and I would do the same again, but it did have a massive impact on me. Professor Gibson and I were in the ward until late in the evening trying to get round everybody and I remember one Sunday, Brenda, Jamie and I came in on our weekend off and spent the entire day going round every family, including all the boarders and other wards.

1193. I was in breach of occupational health guidance around not working weekends and long hours and I wasn't seeing my own family. There was one weekend where I had my two kids on the ward while I was dealing with issues because I had no childcare but felt I had to come into work.

1194. There was also the personal impact of being unable to tell patients and families what I wanted to in terms of professional obligations. I felt bad after every conversation, because I couldn't give parents the answers I wanted to give them. I found it difficult because I wasn't getting the answers myself. It was just a horrible experience. I could tell that they were unsatisfied, and they were angry with Brenda Gibson and I, but we just could not tell them any more than we had

because information was being kept from us. There is no obligation for an ICD to speak with families, it wasn't done routinely and colleagues have questioned why I did it. I felt it was unfair for clinicians to have this burden during such a complex IPC issue and unfair for families to not have access to someone with IPC expertise.

1195. I felt like the whole approach to parents and families was that they were being treated like idiots and not intelligent people. Some of the parents had environmental health experience and I think there was a ventilation engineer; they might have known more than I did about certain aspects. These people were not idiots, but I felt that the organisation was treating them like they were.

1196. Some of the parents were scared to bring up issues. I remember speaking to one parent who was really worried about the cleanliness. She was pointing things out to me, but when I asked her if she had reported the issues to nursing staff she told me she hadn't because she didn't want to become a problem parent. She was worried that would have implications for the care of her child. As a result, I found myself doing the report myself and highlighting cleanliness issues to nursing staff.

1197. Information being on social media was an issue too as there was a lot of speculation which made my job more difficult. There were accusations of information being withheld or parents being lied to.

1198. I was also being criticised for not updating my microbiology colleagues. That became really hard for me in the department because either I wasn't at handover meetings or weekly consulting meetings, or I simply hadn't left the building to give someone a 5pm handover. I was having to speak to the Scottish Government as well as all the parents and I suppose my microbiology colleagues were bottom of the list. It was really challenging with so much going on all at the same time.

1199. I think from my colleagues' perspective they possibly thought I was covering things up and not sharing things, but the reality was I just didn't have the time to get around everybody. I think that's where it would have been really useful to have a microbiologist at the IMT with me, and it's a point I made many times. If I had, they could have gone back to the department and updated the on-call person and everybody else. We did not have that luxury because the staffing was so poor.

Work being undertaken by ARHAI

1200. ARHAI recognise the importance of the built environment and the learning from the new build hospitals and are progressing work in this area. Work that I am currently involved with includes the following: preparation of notes for health boards on the design of bone marrow transplant/haematology wards, advice on design of intensive care units including NICUs, a pilot of environmental surveillance, and (in collaboration with NES) a series of animations on water and drainage systems to help educate staff. There are also extensive literature reviews being undertaken on water and ventilation systems. Engagement with and feedback from stakeholders is important. Comments from GGC suggest to me that no lessons have been learned from the events in the QEUH. GGC appears to exist in a bubble and they seem unaware of published literature on the risks from water and drainage systems or the CDC categorisation of opportunistic pathogens. There is much reference to normal flora and gut pathogens without an understanding that these organisms can establish a reservoir in the hospital environment. There continues to be over reliance on the fact that HAIs occur in high-risk patients without a focus on prevention. I am surprised that they continue to take this approach now that the Inquiry's expert reports have begun to be made available to core participants of which GGC is one.

Whistleblowing

1201. In terms of my awareness of whistleblowing processes, I was aware of them, but I was in a very unique position in terms of who I would raise any concerns with. Thinking about the whistleblowing steps that my colleagues took; step one was to report to the Medical Director. For me, that would have been Jennifer Armstrong, who was sitting around the table at my IMTs, who I told about the deaths and who accused me of whistleblowing to HIS. In my mind, it would not have been productive for me to report to her for a whistle blow.

1202. Step two of the whistle-blowing process that Penelope and Christine went through was Linda De Caestecker. I had already been involved with Linda De Caestecker. She had investigated the IMT process, so that wasn't going to be fruitful for me either.

1203. Step three was Tom Steele and William Edwards. Given my history with Tom Steele, this route was not going to work for me either. Internal whistleblowing was not going to work for me.

1204. Even though the process was there, it probably wasn't a realistic option given my experience with all those people. It was for that reason that I went to Fiona McQueen and then the police. I anticipate similar problems would arise if someone like a senior manager, for example, wanted to whistle blow. How would they go about that within that organisational structure and with that whistleblowing policy?

1205. The whistleblowing process itself does not actually make it easy for staff to go down that route given their interactions with particular members of staff who are involved in the processes at certain levels. It just makes the whistleblower a target.

1206. I know there have been lots of amendments to the whistleblowing policy, but what concerns me is that step one is just a generic email address. I have no idea who has access to that email address. It is possible that the Chief Executive has

access. I don't think staff are protected at all within the organisation.

1207. I think the existing process makes any potential whistleblowing route less attractive for anyone who feels they need to go down that route. I have noticed that more people are going to the media. It has happened around COVID and the crisis in the hospital where senior consultants have released emails to the BBC.

1208. I don't really recall that happening before. Perhaps journalists maintain confidentiality, whereas within the organisation, although they claim the process is confidential, it is not. That is clear from what happened to my colleagues. It's supposed to be confidential, yet their names are in a report that goes to the entire AICC. I think people maybe see the media as being a safer route.

1209. I have never known a successful whistleblower, I have never known someone who has raised concerns and had them taken on board and been thanked for it, they always become the target.

Involvement with INWO

1210. After I left GGC in late 2023 I was interviewed by two individuals from the INWO who were investigating a complaint. Initially I had high hopes for the INWO process as this was a means to bypass GGC. I participated in the INWO's investigation and answered questions relating to infection risks and culture within GGC. I spent a lot of time on this and provided the INWO with a large amount of information. In May 2024 I received an email from the INWO informing me that they had decided that it would not be in the public interest to continue their investigation due to overlap with the Scottish Hospitals Inquiry. Whilst they rightly acknowledged that they did not meet their own service standards in terms of the time taken in dealing with the complaint, I found their approach very concerning for more fundamental reasons. Whilst I am not familiar with the content of the whistle blow the nature of their questions to me indicated that there were serious patient safety concerns raised. I don't understand how they can have simply

decided not to look at these. This further emphasises my view that there are limited options available to whistleblowers. There appears to be no process whereby concerns are listened to and addressed in a timely fashion. Patients continue to be put at risk when years are spent investigating concerns about safety and diverting them elsewhere.

CHAPTER 18: Events Post-2019 Resignation; the current situation

Culture

1211. As discussed above, I was involved in the Independent Review and I contributed to the Oversight Board. Nothing changed in relation to either the culture or the structure in IPC as a result of that scrutiny. In fact, I think it got worse. I had a very difficult time but I was always open and transparent. I would declare incidents and investigate them. Latterly there were hospital acquired cases which should have been investigated and which were not. This amounts to a cover up; if the information is not reported, then it will not be investigated. There are emails as recently as December 2021 that I have sent regarding issues that have not been responded to.

1212. I think part of the reason I received no reply is because I am a whistle blower and someone that speaks up about issues. Jenny Copeland alluded to that being the case when I spoke to her about it. It is really worrying. Just because I have been labelled as a whistle blower, people do not take heed of the issues I am raising. There have been several situations where I have picked up on outbreaks and appropriate control measures have not been put in place at the correct time which has resulted in outbreaks evolving. They have missed the opportunity to put in adequate infection control measures and prevent further transmission. I have got several examples of these scenarios.

1213. The other part of the reason I believe I am not getting a response to issues I raise

is because I no longer have any infection control responsibility. There was one particular situation where, clinicians in the Ward 4B BMT unit had emailed me because they were really concerned about air sampling results that had been repeatedly abnormal. They did not feel they were getting an adequate response from the IPCT. I think they were emailing me because I was the microbiologist for the BMT unit, but also because they knew I used to deal with these issues. After they contacted me, I escalated it back to infection control. The response I got from the lead ICD was to tell my colleagues on Ward 4B that I no longer cover IPC. I do not think that is a satisfactory response. The response should be, *"thank you for bringing this to my attention, I'll sort it out immediately".*

1214. When I was lead ICD, I was very reliant on Consultant Microbiologists telling me things. For example, the two cases of Cryptococcus. That is not an alert organism and it was my colleague James Cargill that came to see me to say that there may be a problem. Similarly, the mucormycosis was Dr Pauline Wright. She came to me and said I think there is an issue in ITU. I would never be dismissive of a microbiologist coming to tell me that they think there is a problem. I would always investigate it.

1215. Sometimes when I raised an issue, I would get a one line email back saying that they will look into it, but that is it. A report would be issued every Friday which would describe all of the incidents and outbreaks, so if something appeared on there then it had been reported. However, very often the issues I had raised would not appear on the Friday reports.

1216. I have not had any contact with Angela Wallace for several months. Angela Wallace came in via the Scottish Government to take on the Deputy Director of IPC role. She met with myself and Christine where she described herself as 'Switzerland'. She said she was going to work with both parties, i.e., Christine and I and also the IPCT. However, ultimately, she became the leader of that team and they became her colleagues. She reported to Jane Grant. Therefore, I would disagree that she was "Switzerland" in all this. She was not neutral; she

became part of that team. She worked with us for several months, we escalated issues to her and we had meetings with her. I never felt I got a satisfactory response from Angela about how they were actually dealing with live issues. I got a lot of emails about what was happening in terms of all these different things that she was setting up and ways of working, but she wasn't actually telling me how she was going to resolve the issues with incidents not being reported and managed appropriately.

1217. Jenny Copeland retired last year and she sent an email saying that she was not able to continue on with the action log work that she was doing. I responded, expressing disappointment that this work was going nowhere and that it needed to be completed. Angela assured me that she would take it forward but I have not heard from Angela since. There has been no progress.

1218. I feel that Christine and I have been disregarded by senior members of staff. I think this is because we continue to raise issues. People who raise issues within the organisation are treated this way, despite what is said in the whistleblowing policy.

Disclosure of Further Incidents and Outbreaks

1219. I have continued to report incidents to senior management following my resignation in 2019. Some examples are as follows:

- **September 2019** – email to Dr Emelia Crighton. SBAR sent from microbiologist with regards to environmental concerns in Ward 6A and an email from myself expressing concerns which included interpretation of typing results, understanding of the epidemiology and content of media statements.
- **September 2019** – email to Josephine Ives and Fiona McQueen regarding concerns about the reporting of a Salmonella outbreak in RAH and the situation with Ward 6A **(Bundle 13, Volume 10 (Edinburgh Hearing Commencing 26 February 2024) Page 85)**. I received a response informing me all the concerns were being taken seriously.

- **6 November 2019** – email to Professor Alistair Leanord expressing concerns regarding the classification and reporting of infections in PICU patients including Pseudomonal bacteraemias. This was further escalated by a colleague to Scottish Government colleagues. **(Bundle 13, Volume 10 (Hearing Commencing 26 February 2024), Page 87)**
- **20 December 2019** – email sent to Fiona McQueen, Lesley Shepherd and Jason Birch. Concern regarding the accuracy of a press statement released in relation to cases of Mucor **(Bundle 13, Volume 10 (Hearing Commencing 26 February 2024) Page 89)**
- **30 December 2019** – email to Marion Bain and Lesley Shepherd. Concern regarding two Pseudomonas cases in PICU. Patient admitted 18/9/2019 **(Bundle 13, Volume 10, Hearing Commencing 26 February 2024 , Page 91)** and positive on 21/2/2019 with typing clustering with an appendicectomy case. Why was this not considered therefore to be hospital acquired?
- **30 December 2019** – email to Lesly Shepherd, Keith Morris, Fiona McQueen and Marion Bain. I expressed concern regarding the NHS GGC media response to the HSE investigation into Ward 4C. I sent relevant documents regarding this issue. Marion Bain requested a meeting with Sandra Bustillo to discuss concerns with media statements in relation to Mucor/Stenotrophomonas/4C/Cryptococcus. No meeting has yet taken place. **(Bundle 13, Volume 10 (Hearing Commencing 26 February 2024) Page 93)**
- **15 January 2020** – Email to Marion Bain regarding my concerns about the governance of the cryptococcal advisory group. This remains unresolved. **(Bundle 13, Volume 10 (Hearing Commencing 26 February 2024) Page 101)**
- **17 February 2020** - Email to Marion Bain (joint with Dr Peters) regarding inaccuracies in the GGC summons statement **(Bundle 13, Volume 10 (Hearing Commencing 26 February 2024) Page 108)**
- **25 February 2020** - Joint email to Marion Bain with Christine Peters regarding inaccuracies in board papers with respect to ventilation in Ward 2A, shower rooms, Cryptococcus, the HSE investigation (4C). Marion Bain replied to say there would be amendment to the minutes on one of these issues. **(Bundle 13, Volume 10 (Hearing Commencing 26 February 2024) Page 111)**

- **30 April 2020** – I emailed Angela Wallace and Marion Bain regarding a case of Serratia bacteraemia in a child. Postmortem had revealed Serratia growing from multiple sites. The child developed infection 6 days after admission so this is a hospital acquired infection and should be investigated as such. I am concerned that it was not. **(Bundle 14, Volume 3, Page 93)**
- **1 September 2020** – email to Angela Wallace expressing concern about the management of a case of Aspergillus in a PICU patient. **(Bundle 14, Volume 3, Page 96)**
- **30 September 2020** - email to Angela Wallace regarding 1) duty of candour with respect to the family of a child with Cryptococcus in a meeting that took place with them, 2) highlighting governance failures regarding the Cryptococcal report, 3) no means of resolving differences of opinion amongst microbiologists.
- **1 October 2020** – email to Dr John Hood and Angela Wallace expressing concern regarding the accuracy of information given to the family of a patient who had Cryptococcus. **(Bundle 14, Volume 2, Page 464)**
- **20 October 2020** - email to Angela Wallace regarding cases of MSSA in NICU. I had raised concerns regarding cases of gentamicin resistant Staph aureus in patients on the unit. Despite me alerting the IPCT on 8th Sept, it took many weeks to arrange a PAG and during the time there were more cases. I highlighted the lost opportunity to implement control measures and prevent further cases. I also attached literature on a similar outbreak from colleagues in Tayside. Jenny Copeland informed she felt the lack of reaction was because I was the individual raising the concern. If this is in fact the case, it is extremely concerning.
- **10 March 2021** - Email to Mairi Macleod expressing concern regarding S capitis cases in NICU. I highlighted that I had raised concern about S capitis in our NICU and also about cases of Burkholderia stabilis. The cases of B stabilis were the first in a national UK outbreak but were about to be dismissed by IPCT because they did not meet a definition of hospital acquired. I did not consider the IPCT approach to these incidents appropriate. I also expressed concerns regarding cases of fungal infections in PICU/NICU and two paediatric cases of Cryptococcus.

- **13 April 2021** – escalation of potentially waterborne infections in Wards 4B and 4C to buzz meeting and concerns regarding the approach to water testing.
- **17 May 2021** - escalation to Angela Wallace regarding the range of environmental organisms in NICU including Serratia/Stenotrophomonas/ESBLs. I was concerned that these organisms did not appear to be considered together with a focus only on Serratia. In this email trail I also alerted her to issues with water resting in Ward 4B.
- **November 2021** – email to Dr Bagrade and others regarding concerns about air sampling results and management of such inward 4B BMT.
- **December 2021** – email to Mairi Macleod regarding resolving difference of opinion and an inconsistent approach to the management of environmental organisms by the IPCT.
- **December 2021** – email to Dr Bagrade regarding management of a Pseudomonas bacteraemia in PICU.

CHAPTER 19: Reflections on what went wrong and why?

Failures at the design stage

1220. Based on my experience, I can only conclude that the governance processes which were put in place by the Board to oversee the design of the QEUH and RHCG were not adequate and were not effectively implemented, particularly at significant project milestones.

1221. As I have explained above, the CEL of 2007 and SHFN 30 are clear about the crucial role which the IPCT must play in the design of a new healthcare facility. However, when we first raised concerns in 2015, it seemed that there had been no IPCT involvement and that the issues we were raising had not been considered before. So much so, that, as I have also explained above, I was tasked by senior management to produce a paper explaining the role of the IPCT in new builds, based on the SHFN 30 document.

1222. However, it transpired that there had been ICPT involvement. In 2019, I came into possession of documents and minutes which demonstrated that the IPCT had been involved in discussions in the early stages of the build, including discussions related to the adult BMT unit, infectious diseases and theatre commissioning, all of which had featured at BICC meetings.

1223. More specifically, in 2019, a couple of months before I was due to be interviewed for the Independent Review, Pamela Joannidis, a senior nurse in IC who was, at that point, the Associate Nurse Director, gave me a file and advised me that it contained documents that I should read before the Independent Review. When I read the documents, I was absolutely astounded because they showed that members of the IPCT had been present at many meetings about various units throughout the build of the QEUH and RHCG. For example, there were email trails between Prof Williams, ID physicians and the Medical Director about the negative pressure rooms and the ID rooms. There were also emails from Prof Williams in which he recognised that the BMT rooms were not up to specification. In relation to the isolation rooms, he quoted the same guidance on TB I had referred to in my subsequent SBAR. Given Prof Williams was raising the same issues years before, it is not clear why they were not dealt with at the time or why this information was kept from us.

1224. Instead, in 2015, when Christine and I raised the same issues, we were portrayed as hysterical females who were risk averse when, in fact, we weren't the first people to raise them.

1225. Board colleagues have stated that they acted as soon as myself and others raised concerns but, based on the documents I have seen, this is not the case. Rather, these same individuals failed to disclose that many of the issues myself and others raised, had already been discussed.

1226. In my view, one of the reasons why there were failures at the design stage (and, indeed, at the commissioning and validation stage which I discuss below), is

because there was no dedicated IPC resource for the project. There should have been protected sessions in an ICD's job plan or a secondment for a build the size of the QEUH and RHCG. Further, more than one ICD/microbiologist should have been involved for peer support and sense checking to prevent Prof Williams simply having had sole oversight.

1227. Other reasons why things may have gone wrong with the design stage of the QEUH and RHCG include

- The size and complexity of the build
- The lack of relevant stakeholders present
- The late involvement of the IPCT
- The lack of clarity around roles and responsibilities
- The lack of oversight and sign off at critical points
- The lack of horizon scanning – e.g., bed numbers and facilities calculated at the start of a project may not be relevant years down the line at the time of opening
- The lack of governance structures and links with existing health board groups such as board water safety
- The lack of expertise
- The disregard of expertise
- The lack of a process to resolve differences of opinion
- Hierarchical structures – status placed above expertise
- Political and time pressure
- Conflicting priorities e.g., energy efficiency
- An underestimation of maintenance requirements and estates and facilities resource for a building approaching 100% single rooms

Failures at the commissioning and validation stage

1228. As with the design stage of the build, in my opinion, whatever governance processes were put in place by GGC to oversee the commissioning and validation

stages of the QEUH and RHCG build were wholly adequate and were not effectively implemented, particularly at significant project milestones.

1229. While I was not involved in the commissioning and validation process, from documents I have seen this does not appear to have taken place in accordance with the applicable guidance. For example, I know that RHCG operating theatres had no air sampling done in advance of opening as I actioned this once I became lead ICD in April 2016. Some areas which did have validation undertaken by an external contractor appear to have been validated against the wrong specification.

1230. There was a failure to acknowledge the guidance on specialist ventilation and the list of areas within the hospital that require annual verification. It took many years to set up this process in the form of a Specialist Ventilation Group. Many of the areas were having annual verification undertaken for the first time. Whilst the Specialist Ventilation Group took some time to establish, there was an existing theatre validation group, it is not clear whether this group had any involvement with the new build theatre commissioning process at the QEUH. It is possible there was a failure of communication between the project team and GGC theatre ventilation group.

1231. With regards to water, there was evidence of a commissioning and validation process as water samples were taken and those were repeated by the lead ICD and Estates at the time due to abnormal results. This detail is provided in the HPS report on the 2018 water incident and the Independent Review. It is not clear whether the south sector water group had sight of these results. I was working in GRI at the time, so I am unaware of this group's involvement in the commissioning process. I would have expected GGC Water Safety Group to be aware of the results as this would meet the criteria for exception reporting. This may reflect failed lines of communication between the project team and the relevant Board Water Safety groups.

Failures in oversight and leadership

1232. In my opinion, there was a serious failure by GGC to ensure that there was adequate and effective oversight and leadership in place at the QEUH and RHCG to deal with all the issues which arose.

1233. Throughout this statement, I have provided examples of issues which were escalated but went unresolved. The failure to resolve serious issues reflects both a failure in reporting lines but also in leadership, e.g., ventilation issues and the need for project management, the creation of a Specialist Ventilation Group, the reporting of deaths of children requiring review. Serious issues would often get passed around people with no one individual taking charge and providing leadership.

1234. There was also a lack of visibility of senior leadership during the 2018-2019 incidents. The Executive Control Group, described above, is an example of failed leadership. I felt some individuals failed to step up and passed responsibility to others. Some members of middle management were under extreme pressure. There was a failed duty of candour event. In my view, the organisation failed to adequately respond to the concerns Prof Gibson and myself raised into the deaths of children.

Cultural problems

1235. During my time as an employee of GGC, the culture felt toxic. Individuals who raise concerns become targeted. Those who conform are promoted. There is a culture of cronyism. Organisational reputation prevails over patient safety. Internal investigations are biased, select individuals are interviewed and they are designed to always find fault with the individual raising concerns by those lacking experience in the subject matter area. Hierarchy is an issue, with the views of managers given too much weight as compared to experts in the field. The fact that managers were giving views on IPC matters at IMTs was surprising, because

they are not qualified to do so. Having attended IMTs in other boards the views of IPC are much more valued and appreciated than in GGC.

1236. Additionally, there was an underlying misogynistic culture where I felt that male colleagues would not have come under the same scrutiny or had the same comments directed at them. There were times when a female view would be checked with a male colleague or would be bypassed completely. Senior management were keener to look at the outcome for the reputation of the organisation rather than considering the evidence.

The ability of staff to raise concerns without fear of repercussion

1237. It is very difficult to raise concerns without fear of repercussion. As a result of raising concerns many years ago about staffing issues, I feel I have had a black mark against my name ever since. I became a target. There were efforts made to interfere with my application for the lead ICD post, attempts to demote me while off sick and I was labelled an 'empire builder.' Later, I was removed as the ICD support for the Louisa Jordan hospital without discussion or explanation, my colleague being persuaded to take it on 'to get a feather in her cap.'

1238. As a result of raising concerns, I have been repeatedly undermined and subject to attempts to discredit and exclude me. Less experienced colleagues in GGC who used to come to me for advice no longer did so. I rarely spoke at Board wide microbiology meetings for fear of being shot down. At times, I have felt discriminated against for having had a serious illness and time off sick. I have been treated differently from colleagues. The final straw for me and one of the main reasons I left was because an accusation of bullying behaviour was made against me. In the complaint I was targeted for being a whistleblower and a public inquiry witness. I was lumped together with another whistleblower. I submitted a statement and detailed evidence challenging the accusations but over one year later I have heard nothing further. One of the accusations was in relation to sending emails regarding IPC issues. I felt I could no longer do my job safely and

resigned from the role. I dreaded going to work and coming across an infection control result or situation that I might have to communicate, for fear of repercussions.

The attitude to IPC from Senior Management/GGC

1239. I was informed by Jamie Redfern that the CEO was only interested in positive news. IPC is usually a negative news story and I think this culture explains the attitudes of senior management who I felt placed organisational reputation above patient safety. At some IMTs, senior management attendees would be quite challenging to IPC and clinician views. Whilst one would expect some debate and challenge there were certain IMTs such as those for Cryptococcus and Ward 6A where this was beyond normal challenge. Clinicians were often outnumbered in these IMTs. There was a tendency to downplay issues, and to control communication to place a positive spin on them. Alternative hypotheses would be proposed with no evidence or be scientifically unlikely. If these hypotheses protected the organisation, they would be accepted without robust evidence in favour of hypotheses that had a stronger scientific basis. Considerable emphasis was placed on collaborative leadership and anyone disagreeing was viewed as not aspiring to this. I did not attend any board meetings and I do not have knowledge of which issues were escalated to the CEO and when, apart from the relocation of Ward 2A as I attended a meeting with the CEO present.

CHAPTER 20: Conclusion

1240. At the heart of the Inquiry's work is patient safety. At each stage of my involvement with the QEUH and RHCG, this has also been my primary concern. What I have endured personally and professionally can never compare to the profound suffering experienced by the patients who acquired infections as a result of the hospital's built environment and their families. However, the Inquiry should be aware of the disgraceful way in which my colleagues and I were treated by

GGC as a result of reporting concerns which were subsequently found to have been well founded.

1241. On a professional level, I have been excluded and side-lined. Rather than my expertise and professional opinion being welcomed for discussion and debate, I have repeatedly been undermined and discredited, often by those with no microbiology experience or qualifications. My career progression has also been negatively impacted at times.

1242. I have, over the years been referred to, and described, as many things including the following: ‘a lone voice’, ‘out on a limb’ (both by Jennifer Armstrong), ‘bonkers’, ‘leaving a trail of destruction’, ‘hysterical’ (all relayed to me by Rona Walls in Occupational Health), ‘politically naïve’ (by Brian Jones),’ risk averse’ (by David Stewart), ‘an Empire builder’ (by Brian Jones), ‘influencing others’ (by Bernadette Finlay) and ‘does not seek expert views” (by Jennifer Armstrong). All of these comments were made about me in relation to the concerns I was raising about the QEUH and RHCG.

1243. At times, I have felt personally targeted. I believe I have been treated differently to my colleagues because I have been branded a “trouble maker”. I have also experienced frequent “gaslighting” and, as a result, I have requested internal peer review of incidents. I have referred to some of these peer reviews above.

1244. When IPC matters arose at the QEUH and RHCG, I approached them scientifically, driven by the goal of ensuring to the best of my ability the safety of my patients, many of whom were incredibly clinically vulnerable. I deliberately and regularly sought out independent expert opinion to scrutinise and inform my approach to the various issues. I welcomed scientific debate. I have also regularly published papers and given talks on many of the incidents and microbiological issues which arose over the years at the hospital. I have provided these papers to the Inquiry and welcome their scrutiny.

1245. From a personal standpoint, the toll of the past few years has been enormous. In June 2017, I was diagnosed with lymphoma. As one might expect, this was a particularly difficult period in my life. As a result, I was off work until January 2018, when I was supposed to start a phased return. Given what was happening at the time at the QEUH, the phased return was honoured more in the breach than in its observance as I tried to address the serious infection issues which were arising on what felt like an almost daily basis. As I have explained above, I tried to resign in January 2018 such was the situation I was faced with on my return.

1246. In addition, my family life has suffered because, for a considerable number of years now, I have been required to expend an inordinate amount of time and energy addressing the various issues and concerns set out in this statement, not only during normal working hours but in the evenings, at weekends and during holiday periods. Even when not at work or working at home on these matters, I have been physically and emotionally drained which has impacted my home life.

1247. I appreciate that there is much work still to be done to uncover the full extent of what went wrong and why. As I hope my efforts to date have shown, I am fully committed to that process and welcome the opportunity to contribute to the Inquiry's work through this statement and, to the extent my health permits, in any other ways going forward.

APPENDIX 1

CV of Dr Teresa Inkster

CURRICULUM VITAE

DR TERESA INKSTER

MBChB, BSc (Hons), FRCP (Glasgow), DTMH, MPH, FRCPath

2020

PERSONAL

Personal Details: Full name: Dr Teresa Jane Inkster

Address: [redacted]

E-mail: [redacted]

Date of Birth: [redacted]

GMC No: [redacted] CCT date - 14/03/08

Education: 1991-1997 Aberdeen University

2003-2007 Glasgow University (MPH)

Qualifications; 1997- MBChB, Aberdeen University

1997- BSc (Hons) Medical Science, Aberdeen University

2001- MRCP (UK)

2007- DTMH (London School of Tropical Medicine)

2007 – MPH, Glasgow University

2007 – FRCPath

2011 – FRCP (Glasgow)

Learned Bodies: Royal College of Physicians

Royal College of Pathologists

Prizes: Aberdeen and Kincardine Prize in General Practice 1997.

Awarded for elective project entitled 'The management of infective diarrhoea in children'.

EMPLOYMENT HISTORY

Current Employment

Consultant Microbiologist and Infection Control Doctor

May 2009 - present day. NHS Greater Glasgow and Clyde. I have worked as a microbiologist and infection control doctor at various hospitals within NHSGGC during this time.

Previous employment

May 2009-May 2011; Consultant Microbiologist and Infection Control Doctor, Golden Jubilee Hospital , Clydebank , Glasgow

November 2013-May 2014 I was employed by Health Protection Scotland for three sessions per week to provide microbiology and infection control support. I worked with both the antimicrobial resistance and infection control teams.

INFECTION CONTROL EXPERIENCE

- From May 2009 -2011 I was the Infection Control Doctor for the Golden Jubilee Hospital (GJNH), Western Infirmary and Gartnavel General Hospital. Together with the Infection Control Manager I was instrumental in developing the Infection Control service at the GJNH. We established the infection control committee meetings, water, built environment and decontamination groups and the antimicrobial management team. As a centre providing ECMO for influenza patients I participated in and gained experience in pandemic influenza planning. I also developed an expertise in the built environment dealing with multiple episodes of water ingress in the cardiac transplant unit and ICU. In addition I managed several instances of increased surgical site infection in both cardiac and orthopaedic infections. In addition I established weekly antimicrobial ward rounds and Clostridium difficile ward rounds, providing feedback to medical staff on inappropriate prescribing. I also developed specialist infection control guidelines for the management of Ventricular Assist Devices and patients undergoing ECMO and cardiac transplantation.

- In May 2011 I moved to GRI and became ICD for North Glasgow (5 sessions) . In this role I further developed experience of outbreak management, policy development, surveillance, the built environment, ventilation and legionella control. I dealt with significant outbreaks of Group A strep, VRE and Pneumocystis in care of the elderly, burns and renal units. I also participated in several refurbishment projects at the Western and new

developments of operating theatres and endoscopy units at Gartnavel. During this time I developed an interest in Legionella and water control following Legionella contamination in the renal unit. I was involved in the redesign of the water system in the Western Infirmary. I sat on both sector and board water safety groups.

- From Nov 2013-May 2014 I undertook 3 sessions a week at Health Protection Scotland as their microbiologist. This role involved support for the antimicrobial resistance and infection control teams. Activities included assisting other boards with infection control incidents and outbreak e.g. community CPE outbreak in Dumfries, close liaison with SGHD and public health colleagues, dealing with media enquiries, assisting with development of national guidance .

- I moved to QEUH in August 2015 to cover Regional services infection control which included specialist units such as Burns, Bone marrow transplant, Renal medicine and Neurosurgery.

- In March 2016 I was invited to India as an expert on the built environment to support and establish links with infection control colleagues in Mumbai. This was organised by the British Deputy High Commission and I gave a presentation on water damage in hospitals and participated in a Q+A session on Legionella control. I also spent a day touring three of Mumbai's hospitals providing infection control advice to the teams based there. This included tours and advice on ICUs ,outpatient TB clinics and operating theatres.

- In April 2016 I was appointed to lead ICD in NHSGGC a role I undertook until September 2019. I continued to gain experience in the built environment dealing with ventilation issues at the QEUH. I was involved in remedial work to PPVL rooms and the adult and paediatric BMT units. I also instigated the work to develop negative pressure rooms on the site. I continued to gain experience in outbreak management dealing with a number of incidents e.g. water contamination, Cryptococcus, Mucormycosis . I also developed water guidance for hydropools and chaired the local implementation group for national Mycobacterium chimaera guidance.

- I am an Assistant Editor and Reviewer for the Journal of Hospital Infection. I have been a reviewer for this journal since November 2006 and became an Assistant Editor in November 2008 whilst still a trainee. These roles enable me to keep up to date with all aspects of infection control

- In 2010 in response to increased surgical site infections at the Golden Jubilee hospital I introduced screening of patients pre-operatively for Meticillin Sensitive Staph aureus (MSSA) and subsequent eradication when present. We were the first cardiac centre in the UK to implement screening for MSSA. The result has been a reduction in surgical site infections and in Staphylococcus aureus bacteraemias (SABs) in cardiac patients.

- I am a tutor and module lead for University of Highlands and Islands MSc Infection control which involves online tutoring of students, marking of assessments and contribution to course content. I am also an Academic supervisor for students on the MSc Infection control course. I am module lead for Outbreak management and for a new module , Infection control and the built environment .

- I have attended specialist courses/meetings in ventilation, infection control and Legionella control

- In 2007 I completed a Masters in Public Health at Glasgow University. In addition to submission of a thesis this course involved modules and examinations in Statistics, Basic and Advanced Epidemiology, Quantitative and Qualitative Research Methods, Communicable Diseases and Outbreak management , Environmental Health and Social Science/Psychology. In particular this degree has equipped me with in-depth knowledge of epidemiology , outbreak management and pandemic preparedness.

- I am the Chair person for Health Protection Scotland Consensus group, responsible for implementation of Chapter 3 of the National Manual; Healthcare Infection Incidents, Outbreaks and Data Exceedance. This group developed the outbreak methodology documents used in Scotland for hospital acquired infection incidents.

MANAGEMENT EXPERIENCE

- I am currently the National Training Programme Director in Medical Microbiology. In this role I am responsible for the management and delivery of microbiology training in Scotland. I organise rotations, ARCPs, and teaching. I provide a supportive role for educational supervisors and have experience of dealing with doctors in difficulty.
- In my role as lead ICD I have gained management experience leading a team of sector ICDs. I regularly chaired IMTs, senior management team meetings, short life working groups and ICD clinical meetings. I

also attended board infection control committee and have presented to the NHSGGC care and clinical governance forum.
- I represented infection control on the board clinical governance meeting presenting the HAIRT report to attendees.

TEACHING EXPERIENCE

- I participate in informal teaching of lab staff and microbiology specialist registrars on a daily basis.
- I am an educational supervisor for five microbiology/ID trainees and a clinical supervisor for trainees at QEUH
- I run practice exams for the microbiology year 1 assessment and for FRCPath part 2 candidates
- I organise and participate in the monthly regional microbiology teaching programme
- I participate in departmental teaching sessions at QEUH

IT SKILLS

- Competent user of Microsoft applications.
- During my Masters in Public Health I received formal training in statistical packages including SPSS and Minitab.

RESEARCH EXPERIENCE

- In 1995 I undertook a BScMedSci in Mental Health. This involved a six week course in statistics and research methods followed by a research project in entitled 'Autobiographical Memory in Depression'.
- In May 2007 I completed a part-time Masters degree in Public Health at Glasgow University. My submitted thesis was entitled ' Adherence to antibiotic prescribing guidelines by junior doctors, identification of barriers to guideline implementation and an exploration of junior doctor's experiences of antibiotic prescribing teaching'.
- Chair of GGC Infection Control research group. This group was established to propose and carry out Infection Control research projects within NHS GGC and provide support to infection control team members undertaking research.

- I received funding for a research project from the Scottish Infection Research network (SIRN) in 2013.
  - Co- Investigator; Susceptibility of gram-negative urinary tract isolates to mecillinam in a large Glasgow teaching hospital. [redacted]
- 2019 – Funding received from Glasgow Children's hospital charity ([redacted]) . Research project with colleagues from University of West of Scotland to investigate Pseudomonas and Acanthamoeba in the clinical environment

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- N. Khanna, **T Inkster** . The rise of VRE in renal units – oral presentation at the British Renal Association Conference, Glasgow, May 2008.
- **T Inkster**, L Imrie, L Cottom, T Brooks. Decontamination of a hospital room occupied by a VHF positive patient – lessons learned. ECCMID 2015
- **T Inkster –** Water damage in Hospitals, UK and India Collaboration on the Built Environment, Hinduja Hospital, Mumbai, 2016

OTHER PROFESSIONAL ACTIVITIES

- Senior Examiner for FRCPath part 2 practical, Royal College of Pathology
- Question writer for Core Infection Certificate exam (RCP/RCPath) and FRCPath part 2
- From 2014-2015 I was the Scottish Microbiology and Virology Network representative on the Health Protection Network guideline approval group.
- From 2012-2015 I was an expert advisor for NHS Education Scotland reviewing and providing content for several online training modules including MRSA and antimicrobial resistance.
- Member of review panel for 'Antimicrobial wound dressings' , Health Technology Assessment , 2014.
- I was a member of the Glasgow Intergenerational Mentoring network. This was a project run by Strathclyde University whereby participants mentor 5th or 6th year school pupils from deprived areas of the city who are keen to apply for University. I mentored pupils who wished to study Medicine or Science
- Deputy chair person for HPS Built Environment group 2018
- Regional representative on HPS Neonatal Group 2017 onwards
- Regional representative on HPS Pseudomonas guidance group 2018 onwards
- Representative on HPS Steering Group 2019 onwards
- Representative on HPS TB SLWG 2018-2019
- Scottish representative on Hospital Infection Society iGAS guideline review group 2019 ongoing