Scottish Hospitals Inquiry
Witness Statement of
Annette Rankin

The following question responses are from events/dates ranging up to 15 years ago and therefore whilst some are based on memory, a review of available emails, mainly from 2015 onwards (very limited emails available from 2009-2014), filed Health care infections incident assessment tools) (HIIATs) and any relevant documents available. A lot of detailed information on the topics below has previously been provided to the public inquiry team over the last 3 years.

Professional History

1 Please list your professional qualifications, with dates

A

Registered Nurse Southern General hospital	1988
Diploma in Professional Studies in Nursing GCU	1994
BScHealth Studies GCU	1995
Diploma in Infection Control Nursing Glasgow University	1996
MSc Infection Control UHI	2011

2 Please give your chronological professional history.

a. roles held where and when- please also provide an up-to-date CV

A Registered nurse training: Southern General Hospital Nov 1985-Dec 1988
Staff Nurse (medicine (Haematology)) Southern General Hospital 1988-1991
Senior Staff Nurse (Surgical) Southern General Hospital 1991- 1995
Infection control nurse Hairmyres Hospital (which included a 6-month secondment to IPC forth valley primary care) 1995-2002
Lead infection control Nurse (Victoria Infirmary) 2002-2006
Head of Nursing infection control NHS GGC (Acute) 2006-2008
Nurse Consultant Infection control NHS GGC 2008-2009
Nurse Consultant Infection control ARHAI (formerly known as HPS) 2009 - present

3 What specialist interest / expertise / qualifications in any area of Infection control do you hold? E.g., hospital ventilation, water Legionella control and infection control related to the built environment, and epidemiology and outbreak management.

A I have been working within the field of infection control since January 1995 and have gained a wide variety of infection control experience in both primary and secondary care settings. I have had previous experience with both refurbishments and new hospitals builds, including Hairmyres Hospital and the new Victoria Hospital. I have gained significant experience in incident/outbreak investigation management and control throughout my career as an ICN, Lead ICN and when providing board support from a national perspective, and National IMTS as Nurse consultant. My first role with HPS/ARHAI was to lead the infection control decontamination programme. This expanded and became the Infection control in the built environment and decontamination (ICBED) programme (in 2015) for which I am the clinical lead. With regards to specific built environment expertise and qualifications I have undertaken:

- City and Guilds water in healthcare premises 2017
- City and Guilds ventilation in health care premises 2017
- Specialised ventilation in healthcare premises 2019
- Engineering aspects of infection control 2019
- Water and Wastewater safety in Health Care (HIS) 2024

in addition to attending and presenting at study days/conferences and experiential learning.

Infection Control Team – and the role of HPS

4 Can you describe the arrangements for infection control within NHS GGC (south sector) in 2015? In particular can you describe:

a. structure of department / team.

b. roles and responsibilities (including ICMs, ICDs and ICNs).

c. decision making responsibility.

d. reporting lines, communication pathways and escalation routes

e. governance (committees, Infection Control Senior Management Meeting etc).

A In response to question 4 parts A-E: I was employed by ARHAI in 2015 and had limited interaction with NHSGGC at that time and therefore I am unable to comment on NHSGGC IPC arrangements for that specific time period.

5 Can you explain the respective roles within the infection control framework of:

a. the Microbiology department

b. Estates and Facilities.

c. Public Health; and

d. external experts (i.e., Public Health England).

A The Microbiology department, which includes Microbiologists (and infection control doctors), works alongside the IPCT and plays a key role in the detection and identification of organisms from clinical and environmental samples. It also has a key role in supporting outbreak detection and management and provides expertise, support and advice to clinicians, including the IPCT. It also participates in any research/national activities. The estates and facilities department has responsibility for the maintenance, functionality and cleanliness of the healthcare environment and compliance with national guidance and legislation. It also has a key role in supporting outbreak detection and management and provides expertise, support and advice to clinicians, including the IPCT. It also participates in relevant research/national activities. The estates and facilities department has responsibility for the maintenance, functionality and cleanliness of the healthcare environment, and compliance with national guidance and legislation, such as national cleaning services specification and relevant SHTMs.

The public health department (PH) has a role in infection control in broader terms.

The focus of PH is more towards community and the general public rather than healthcare settings. It is involved in disease prevention, such as vaccine policy, plans and implementation and has a role in training, education, surveillance and outbreak investigation and management.

External expertsoffer specialised knowledge and resources gained from education (formal or informal) and/or experiential learning/experience used to supplement existing infection control approaches and intelligence.

6 Can you describe:

a) The role of HPS in respect of advice, assistance and expertise

A Health Protection Scotland comprised public health and the ARHAI group until 2020 when Public Health Scotland (PHS) was formed, replacing the public health element of HPS and National Services Scotland (NSS) retained the function of ARHAI. HPS was the organisation which co-ordinated health protection in Scotland with the function to protect the Scottish population from infectious diseases, incidents and environmental hazards. ARHAI was and remains the HAI and AMR group within HPS and now NSS. Although part of HPS, ARHAI was distinct with a different SG sponsor and stakeholders, given that the primary focus of ARHAI is healthcare. The role of ARHAI within HPS and as part of NSS has fundamentally remained unchanged. This response describes the role of ARHAI (as part of HPS and now NSS). ARHAI is a clinical service providing national expertise for IPC, antimicrobial resistance (AMR) and HAI for Scotland. ARHAI coordinates the national programmes for IPC and AMR, supports local NHS Boards, other national bodies and stakeholders in the implementation and delivery of six key priority programmes to reduce the overall burden of infection and antimicrobial resistance, in line with nationally agreed priorities.

ARHAI provides expert intelligence, support, advice, evidence-based guidance, clinical assurance and clinical leadership to local and national government, health and care professionals, the general public and other national bodies, with the aim of protecting the people of Scotland from the burden of infection and antimicrobial resistance. As the national organisation responsible for IPCand

Antimicrobial resistance (AMR), we liaise with other UK countries and international counterparts in the delivery and development of these national priority programmes.

b) The role of HPS in HAI reporting (HIIATs etc)

A National guidance for reporting infection related incidents is detailed within Chapter 3 of the National Infection Prevention Control Manual (NIPCM). The alert organism/condition list within the NIPCM details the minimum list of organisms and conditions which should alert Infection Prevention Control Teams (IPCTs) to their occurrence, allowing them to consider whether further investigation is required. The Hospital Infection Incident Assessment Tool (HIIAT) should be used by the IPCT to assess every healthcare infection incident i.e. all outbreaks and incidents (including decontamination incidents or near misses) in any healthcare setting. The scoring system is used to assess the impact of the incident or outbreak and results in a RAG (Red, Amber, Green) rating, which determines the reporting and communications requirements, including the frequency of reporting throughout the incident or outbreak. IPCTs must complete a Healthcare Infection Incident and Outbreak Reporting Template (HIIORT) for submission to ARHAI Scotland for all incidents. If an incident is assessed as amber or red, ARHAI Scotland then shares this information with SG HAI PU. If an incident is scored as green then the HIIORT is submitted to ARHAI Scotland for information purposes only, unless assistance from ARHAI Scotland is requested, in which case an update for Scottish Government Healthcare Associated Infection Policy Unit (SGHAIPU) is provided. There may also be occasions where ARHAI will forward or highlight a green HIIAT to the HAI policy unit that it should be made aware of.

The HIIORT describes the information required for submission to ARHAI Scotland. There are a number of data specific fields, as well as open fields for descriptive narrative describing the incident, investigations undertaken and controls in place. This reporting form has been designed by ARHAI Scotland to ensure that the appropriate information required to provide assurances to SGHAIPU is received, as well as to develop an epidemiological evidence base and yield lessons learned for sharing nationally. It is not possible for ARHAI

Scotland to evidence whether NHS Boards report all incidents, outbreaks and data exceptions detected by local surveillance systems, as ARHAI relies on NHS Boards to follow NIPCM guidance and ARHAI has no role in identifying local outbreaks and incidents.

c) The role of HPS when National Framework activated

A ARHAI (within HPS) is the lead co-ordinator for the response when the national framework is activated. The role of ARHAI when the HAI policy unit invoke the framework is detailed within the national infection prevention and control manual.

d) The lines of communication as between HPS and SG, including when National Framework is activated

A When the framework is activated SG Health Care Associated Infection Policy Unit (HAIPU) will inform the lead consultant (ARHAI) and advise of the reason. The HAIPU will instruct ARHAI on the expected leadership and co-ordination of all national activity and commination required with the HAIPU.

e) The extent of SG supervision/ coordination/ control, especially with regard to the SG HAI Policy Unit

A This is entirely dependent on the cabinet secretary and related civil servants This varies relating to personnel/subject matter. In my experience this is dependent on how invested the cabinet secretary becomes in a specific incident. An example given is Jeanne Freeman, cabinet secretary, had significant interest in reporting of HIIATs. Her predecessor and successors did not display the same level of involvement.

7 What were your impressions of the GGC infection control team in 2015. Were youaware of any of the following:

a. existing tensions?

b. lack of clarity around roles and decision making?

c. relationships (i.e., between ICM and ICD)?

d. record keeping- did AR or LI take part in this?

e. culture and bullying; and

f. attitude of senior management and board to infection control issues?

A This response covers point a-f:

I was employed by ARHAI since 2009 and therefore, in 2015, I had very limited interaction with NHSGGC IPCT as I did not provide any incident support during that year. I am, therefore, unable to comment on questions 7a-7f for that specific particular time period of 2015. I would however be able to provide a response from 2018 onwards. With regards to point D: AR/LI had no remit or role within NHS GGC record keeping in 2015.

First involvement with QEUH at planning stage

8 Please describe your involvement with the Project Board in 2008. In particular can youdescribe any advice you provided from infection control perspective during the competitive dialogue phase, and whether it was followed.

A I became Nurse Consultant Infection Control in NHSGGC in 2008. As part of this role, I worked closely with facilities (soft FM) and I also had IPCN input into the new adult hospital, similar to the input I provided as an IPCN into the New Victoria Hospital. I was the IPCN representative at the competitive tendering stage, when a number of contractors were bidding for the contract for the new hospitals. I recall attending presentations organised by the project team. I do not recall being specifically asked for any detailed input. My role at this time was to provide oversight on any high-level infection control issues that were discussed during the demonstrations/videos of the overarching hospital design. Nor would I have been in a position or expected to provide decision making or advisory input into systems such as ventilation/water as, at that time, this was very much the remit of microbiology/ICDs. These presentations were high level, covering the design and layout of the buildings. Once the contract was awarded to Brookfield

Multiplex, I provided input to the NHSGGC project team for a short period (until I left in 2009), on areas requested by the project team at design and architectural drawing stage (for the QEUH only), which included matters like room relationships and to the level of what is known as the 1:200 drawings. 1:200 drawings do not cover the details of systems such as water/ventilation. At this stage I worked closely with the architect and healthcare planner employed for the board on this project. I can confirm that I had no involvement in any detail relating to utilities, such as water or ventilation. I had no input and gave no advice on any equipment, fixtures or fittings, such as wash hand basin or tap types. The adult and children's hospitals operated with 2 separate project teams, and I had no involvement with the children's project team. I had no involvement (other than being present at competitive tendering presentations, as this was undertaken for both hospital as a single project) in the RHC. The IPCN input into the children's hospital was provided by the lead ICN for the women and children's directorate.

9 Did you have any further involvement with the design and build of QEUH prior to the hospital opening?

A I had no further involvement with the build stage of the QEUH. From a design perspective, once the contract was awarded to Brookfield Multiplex, I provided IPC input to the NHSGGC project team for a short period (I left in 2009) for the adult hospital only. This was on areas requested by the project team at design and architectural drawing stage (for the QEUH only) which included things like room relationships. I provided advice on appropriate department layouts and individual room plans. At this stage I worked closely with the architect and healthcare planner employed for the board on this project, to the level of what is referred to as the 1:200 drawings. I left NHSGGC and commenced with ARHAI late 2009 and after that I had no further input with NHSGGC QEUH project.

10 Were you required to sign off any design matters? If so, please give details.

A I don't recall being involved in any design matters that required sign off, other than design drawings to the level of 1:200 drawings, which detailed high level department/ward layout: room relationships.

11 Were you involved in writing the SBAR dated 1 April 2014 relating to the pseudomonas risk occasioned by HORNE taps? If so, can you describe how you became involved and what your advice was?

A I was not involved in writing the above SBAR dated April 2014.

12 From an infection control perspective, do you have a view on whether the proximity of the hospital to sewage works causes a risk to patients?

A I am not aware of any evidence that supports the proximity of the hospitals to the local sewage works being a risk to patients. Prior to the building of the QEUH/RHC, the Southern General hospital was on the same site. I worked in the Southern General Hospital from 1985 until 1995, and do not recall any risks or concerns being identified from the proximity of the sewage works, other than, at times, there was a strong, pungent odour.

Early issues with Ventilation (Adult BMT Unit) and – drafting of first SBAR.

13 You drafted an SBAR in 2015 in respect of the Adult BMT. **(Bundle 3 NHS NSS SBARs pg. 36)**

A The responses to this section are covered in detail in the ARHAI BMT Narrative previously submitted to the Public Inquiry.

a) When did the concern arise?

A My understanding is that BMT (adults) was not originally planned to be included in the design specification and this changed around 2013. I am unsure exactly when concern was raised within NHSGGC, however the first contact from NHSGGC regarding this was on 31st July 2015 when NHSGGC requested information on acceptable limits of aspergillus.

b) When was assistance requested from HPS?

A Dr Inkster requested ARHAI support on 13th November 2015.

c) What was the nature of the concern – specifically what was thought to be wrong withthe building system in question?

A NHSGGC Bone Marrow Transplant (BMT) provision was provided at the West of Scotland Beatson Oncology Centre (WOSBOC) based on the Gartnavel Hospitals site. Transfer of this unit was not included in the original QEUH design. I understand NHSGGC agreed in June 2013 to include adult BMT in the design for QEUH and as a result this would not be a purpose-built unit designed for haemato-oncology. Patients were initially transferred to ward 4b from WOSBOC when the hospital opened in 2015. However, following concern raised by an Infection Control Doctor (ICD) related to an increase in fungal counts, including Aspergillus, the patients were moved back to WOSBOC to allow investigation and remedial works to be undertaken within Ward 4B.

NHSGGC initially contacted HPS on 31st July 2015 requesting information on acceptable aspergillus limits. However, whilst Public Health England (PHE) advice was sought, HPS was not aware of any issues in the BMT until November 2015, when Dr Inkster contacted HPS by telephone requesting support from HPS, and seeking expert opinion on the adequacy of a revised specification for the BMT unit at the QEUH after patients were moved out of the BMT and back to Gartnavel. The concerns raised were that the revised specification was less protective than the BMT unit at Gartnavel, which was built to CDC standards.

d) What was the nature of the risk posed to patient safety and care?

A From my involvement via the SBAR, the risk posed to the patients appeared to be that the quality of air being provided to the BMT patients was not of the standard required for protection of this patient cohort and did not offer the additional protection required from organisms such as aspergillus, particularly whilst significant construction / demolition was being undertaken in close proximity. Such protection in this vulnerable patient population, who are at high risk for invasive aspergillosis, would normally be achieved via mechanical ventilation and filtration.

14 Who was advised of this?

A I am not aware of internal GGC communications/discussions relating to this issue. HPS was contacted by Dr Inkster NHS GGC. The request for input/advice on the BMT unit was discussed with key staff across National Services Scotland, including the HPS consultant medical microbiologist on 16th November 2015, HFS on 16th November 2015 and the medical director (HPS) was contacted by the medical director (NHSGGC) in November 2015. The medical director (HPS) confirmed to the medical director (NHSGGC) that I would remain the main HPS contact.

15 Was the advice in your SBAR followed?

A I am aware that on 17th December 2015, the director of facilities emailed Dr Inkster regarding who was accepting the recommendations "*With the HPS intervention at your request and their subsequent report, it is important that we know who is accepting the recommendations on behalf of the Board. It will not be the Project Team as they are responsible for implementing agreed specifications. E.g., SHTM's. Is it you as the infection control expert?"*

However, the NHSGGC chief operating officer advised HPS via email in January 2016 that the NHSGGC Director of Facilities, (Mr David Louden), and his team would discuss with the contractors the implications of the recommendations made.

Discussions between NHSGGC/HPSHFS continued throughout 2016 regarding the recommendations made in the 2015 SBAR. A meeting was held on 16th November 2016 attended by HPS where a request was made by NHSGGC for HPS to review the SBAR of 2015 and update with any recent guidance. This resulted in the SBAR of 2017. Prior to the 2017 SBAR the recommendations made in the 2015 SBAR were not implemented.

16 In your view was the action taken sufficient to address the concern?

A There were no remedial actions taken following the 2015 SBAR and therefore the concern originally raised was not addressed until a later date and following

the 2017 SBAR submitted to NHSGGC. An options appraisal paper produced by NHSGGC on 1st March 2017 discusses that the fourth floor QEUH (where the BMT unit is situated) could not be configured to meet the full specification of requirements, as detailed by HPS. This paper prepared by Gary Jenkins, the NHSGGC regional services director also highlights that a return to level 4 QEUH was unlikely to be a long-term option. ARHAI have had no further input or request for input since submission of the SBAR in 2017 and is unaware whether all or part of the recommendations in the SBAR were implemented.

17 During the emergence of issues in the adult BMTU, what consideration was given tothe adequacy of the ventilation system in the paediatric BMTU?

A HPS was not approached or asked to consider or provide any input into the paediatric BMT until 23rd November 2017. Sandra Devine NHSGGC contacted me to seek advice on a specification that outlined the proposed ventilation to be in place in four rooms used for patients who required bone marrow transplantation. NHSGGC was seeking guidance as to what would be a reasonable approach to monitoring of this environment, in terms of sampling methods, frequency and interpretation of results. ARHAI/HFS provided NHSGGC with an SBAR on 9th January 2018 relating to environmental/ventilation monitoring in Schiehallion ward RHC.

HAI infections in 2015. Bundle 1 IMTs

18 Can you recall HPS being alerted to any HAIs in 2015? If so, can you recall:

a) what was the nature of the infection.

b) was a link to the built environment suspected and if so, in what respect.

c) in what area of the hospital did the infection(s) occur.

d) what sampling / testing was conducted and was a link confirmed.

e) At what stage did HPS get involved

f) what, if any, external reporting occurred.

g) Was there a PAGs or an IMT

h) what control measures were put in place?

i) Whether prophylaxis was administered

j) Were the actions taken sufficient to respond to the incident?

k) Can you comment on the effectiveness or otherwise of the IMT?

A Responding to a-k above

Serratia Marcescens October 2015

NHS GGC contacted HPS out of hours on [redacted] 2015 to report a neonatal death from *Serratia marscesens,* against a background of an increasing incidence of colonisation with *Serratia marscesens* over the previous 5 months. ARHAI became involved on 2nd November 2015 following the Scottish Government invoking the national framework. Having reviewed the submitted HAIORTS it would appear that the focus was on practice/equipment as the source and there was no mention of environmental testing. IMTs were held and ARHAI was in attendance. Control measures included hand hygiene review, review of PPE, review of decontamination of communal equipment. I was not involved in this incident and am unable to comment on the efficacy of the IMT, if prophylaxis was administered and the control measures put in place.

Clostridioides December 2015

HIIAT Green was submitted on 23/12/2015. Clostridioides is a gram-positive anaerobic spore forming bacteria which although can be found in the environment is not considered an environmental organism and out with this scope.

Emerging issues with the water system refer to IMTs.

19 Please describe specific concerns with the water system as they emerged. In relation toeach concern can you explain:

a) When did the concern arise?

b) What was the nature of the concern – specifically what was thought to be wrong withthe building system in question?

c) At what stage did HPS become involved?

d) What was the nature of the risk posed to patient safety and care?

e) Was any action taken sufficient to address the concern?

A HPS was not aware of any issues with the water system in 2016. NHSGGC did not report to HPS or seek support from HPS with the water system in 2016.

20 In particular, was HPS involved in any of the following issues:

a) Water temperature: problems with energy plants – hot water temperatures are nothigh enough to prevent/tackle bacterial growth.

b) Flow straighteners / regulators / tap type

c) Debris in pipes

d) Single room design – water outlets increased; flushing regimes; risk of stagnation.

e) Pipe size and storage volumes; encourages water stagnation

f) Wet rooms and floor levels

g) Drainage system

A HPS had no involvement with any of the issues highlighted in a-g above, with the exception of HPS involvement when NHSGGC sought advice on the taps/flow straighteners procured for the new hospital. This is covered in detail in the SBAR, and narrative has previously been provided to the public inquiry team.

21 DMA Canyon Reports

a) When were you first made aware of the DMA Canyon reports? How did this come about?

A I cannot specifically recall the exact date that I received the DMA Canyon report, however it was around 2019, as part of the support into the investigation of the contaminated water systems QE/RHC and supporting the associated IMTs.

b) Some witnesses (e.g., Christine Peters) have said that, had they had sight of the 2015 reportat the time, they would not have allowed the hospital to open. Do you agree?

A When HPS first had sight of this report, the contents were concerning. This was particularly relevant given that HPS had provided ongoing support into a water contamination related incident with linked patients since 2018 and were unaware of this report until around 2019. Had HPS been asked to provide comment/ response to the DMA Canyon report at the time of publishing or NHSGGCs receipt of the report, HPS would have discussed this with colleagues in HFS and expressed concern to the board regarding the findings/content and the impending opening of the hospital and would have suggested the formation of an action plan to address the issues raised in the report prior to occupation. In light of the potential patient safety and IPC issues identified in the report, it is likely HPS/HFS would also have offered support to complete/review any action plan. It is also likely that HPS would have highlighted the findings to the HAIPU.

22 Water Technical Group

Refer to **Water Technical Group Bundle (Bundle 10)** to assist.

You sat on the water technical group (WTG)

a) What is the purpose of WTG and why was it set up?

A The water technical group was facilitated and set up by NHSGGC. It was established at the request of the IMT Chair (Dr Inkster) in March 2018 to provide support to the ongoing IMT and review water sampling results, consider remedial actions, including point of use filter fitting/replacement, review disinfection options, including chlorine dioxide dosing, drain cleaning and tap replacement.

b) Who else was in the WTG, what were their names and their roles within WTG?

A The membership of the water technical group varied over time, initially supported by HPS/HFS. Whilst the membership/attendance at the group varied: The initial and regular membership included:
Mary Anne Kane (interim director of facilities) (chair), Iain Powrie (Facilities) Iain Kennedy (CPHM) Teresa Inkster (ICD) Annette Rankin (HPS) Ian Storrar (HFS) Eddie McLaughlan (HFS), Colin Purdon (Facilities) Alan Gallagher (Facilities), External membership of T. Wafer and T Makin at several (not all meetings).

Over time the membership changed, with HFS/HPS no longer required; Dr Inkster no longer present and Dr Leanord and S. Devine in attendance.

c) With reference to specific WTG minutes, what issues came to light as a result and whatactions were taken?
The WTG mainly met after an IMT and would discuss any related findings from the IMT. The issue that was emerging was the extent of the widespread contamination of the system with gram negative organisms. The WTG reviewed water testing results, any issues with point of use filters and whether the fitting of these filters was appropriate. The options for the decontamination of the water system were explored: these options included thermal disinfection and chloring dioxide dosing.

d) What were the concerns of the WTG and how did this impact on patients?

A The aim of the water technical group was to support the IMT and work towards a microbiologically safer water system, particularly in light of the extent of the spread of positive results being obtained. As discussed previously, these included installation of point of use filters, water testing and implementation of routine chlorine dioxide dosing. The main concern was the ongoing reporting of cases at IMTs and positive water system results.

e) How did clinical staff and estates get along at these meeting?

A It was routinely Dr Inkster, Dr Kennedy and myself as the clinical representation

at these meetings. At that time Mary Anne Kane (acting director of facilities) was the most senior facilities member who attended and chaired the meetings. These meetings were very amicable, and discussion was facilitated with mutual respect. There was no tension between individuals or disciplines and everyone's input was encouraged.

f) What specific guidance and advice did you give as HPS/ ARHAI representative? Was this advice followed?

A As a member of the group representing HPS, I participated in discussions, including remedial actions and control measures. I cannot recall specific advice given and do not recall there being any concern that specific advice was not being considered/followed.

HAIs in 2016 (Bundle 1 IMTs)

23 Was HPS involved in any of the following incidents? If so, can you respond to the questions a-k in question 13 above.

a) Aspergillus cases in June?

A On 5th August 2016, NHSGGC reported an increased incidence of aspergillus in patients in ward 2A RHC to HPS. There were 2 cases (one confirmed, one probable). These numbers were higher than expected in this patient group. These were non –BMT patients in the early stages of treatment for haematological malignancy. The first case became symptomatic on 29th June 2016. An IMT was held by NHSGGC on 5th August 2016. I was not involved in this, and I am unable to comment on the efficacy of the IMT, specific details on sampling and whether a link with the environment was confirmed.

The hypotheses, investigations and control measures stated in the HIORT are cited as: -

- Contributing factors
- tear identified in ventilation ductwork - now repaired
- condensation from chilled beams creating damp conditions and dust
- construction /demolition work on site

- Control measures

- increased cleaning - twice daily A.plus (dust reported on unit)
- prophylaxis for high-risk patients with AmBisome
- portable HEPA filter units
- enhanced surveillance for new cases
- Investigations
- air sampling
- inspection for water damage

The incident was closed on 17th August 2016 - noted that the estates issues during the investigation were addressed by NHSGGC.

b) 8 cases of Serratia in August 2016?

A GGC contacted HPS on 28th July 2016 regarding 8 patients colonised with *Serratia marcescens* in the neonatal unit. I was not involved in this incident however, on reviewing the submitted HIIORT from NHSGGC, there were several IMTs held. I cannot comment on the efficacy of the IMT. Water sampling was undertaken and reported as negative. This was assessed as HIIAT Green. In total there were 12 babies found to be positive. The incident was closed on 14th October 2016.

c) Cupriavidus in the aseptic sink?

A This was reported to HPS in 2016 via the weekly HIIAT green reporting, with no HPS support requested. At this time HIIAT green reporting to HPS where no support was requested, allowed boards to report incidents with minimal detail.

24 Can you comment on any other HAIs you were involved with throughout 2016?

A There were a number of HIIATs reported to ARHAI by GGC in 2016 (in addition to those covered above), however I was not involved in these and therefore I am unable to provide a detailed response.

25 Throughout 2016 there were ongoing issues with ventilation in the Paediatric BMTunit. Can you describe your involvement in this?

A I had no involvement throughout 2016 with paediatric BMT unit issues with ventilation, however following a meeting with Dr Jones and S Devine in late

2017, an SBAR was produced for NHSGGC relating to environmental/ventilation monitoring in Schiehallion RHC in January 2018. This SBAR has previously been submitted to the public inquiry.

26 Alan Seabourne sent an email in 2016 which contained the following statement (refer to Estates bundle)

Annette Rankin was the person responsible at design, dialogue and evaluation forensuring that appropriate liaison and communication with the IC department andMicrobiology was conducted effectively.

a) Do you agree with Mr Seabourne's description of your role?

A I do not agree that this statement is an accurate reflection of my role at that time. My role during the short period of time that I worked with the new hospital project team in 2008/2009 was for the adult QEUH hospital only. The children's hospital was the remit of the Lead IPCN for women and children. I was not responsible for liaison or communication between the new hospitals project and GGC microbiology. However, I was part of the wider group who attended at the competitive bidder stage, to hear presentations on the new hospital proposals. Whilst I was aware of who the successful bidder was, I was not involved in any detailed dialogue relating to the scoring of the bids or the selection of the preferred bidder.

From a design perspective, once the contract was awarded to Brookfield Multiplex, Iprovided IPC input to the NHSGGC project team for a short period (I left NHSGGC in 2009), for the adult hospital only. This was on areas requested by the project team, at design and architectural drawing stage (for the QEUH only), which included matters like room relationships at 1:200 level. I provided advice on appropriate department layouts and individual room floorplans, to ensure that the clinicaldesign/floorplans for the new adult hospital limited the spread of hospital acquired infections. At this stage I worked closely with the architect and healthcare planner employed for the board on this project. I had no involvement in any detail relating to utilities, such as water or ventilation. I had no dialogue or discussion on ventilation including, chilled beams, natural ventilation, thermal wheels or air changes. At this time (2008/2009) such matters were the remit of the microbiologist/ICD. I had no input and gave no advice on

any equipment, fixtures or fittings and, in particular, had no input into wash hand basin or taps type. I am unaware of the input provided at that time by the IPCT management team/microbiology. I left NHSGGC in November 2009 and had no further input with the NHSGGC QEUH project.

b) Do you have any other comments on this issue?

A I have no other comments. I left NHSGGC in 2009 and can only comment on my input until that time. I am unclear on the role/remit of my successor or the IPCT management team.

27 Please describe any other issues with the built environment which arose in 2016.

A I was not employed by NHSGGC in 2016 and I am unable to comment, other than providing an SBAR in 2015 for BMT, as previously described, and ongoing input relating to this until an updated SBAR was provided in 2017.

Paediatric Bone Marrow Transplant Unit and writing of the 2017 SBAR (Bundle 3 pg. 57)

The responses to this section are covered in detail in the ARHAI BMT Narrative previously submitted to the Public Inquiry.

28 Can you advise how you came to write the 2017 SBAR? When did you first become involved?

A Following submission of the 2015 BMT SBAR to NHSGGC there was ongoing communication between HPS and GGC throughout 2016. NHSGGC requested HPS to review the 2015 SBAR, to identify if there had been any change in the literature that would impact on the SBAR. There was no change in literature or guidance identified, however the SBAR was updated and reissued to NHSGG.

29 Can you explain:

a) When did the concern arise?

b) When was assistance requested from HPS?

c) What was the nature of the concern – specifically what was thought to be wrong with the building system in question?

d) What was the nature of the risk posed to patient safety and care?

e) Who was advised of this?

f) Was the advice in your SBAR followed?

g) In your view was any action taken sufficient to address the concern?

A This is answered in detail in section D above: for the 2015 issue and was a continuation of the issues raised and risks posed. On submission of the 2017 SBAR no further input or support from ARHAI relating to the adult BMT was requested.

30 Can you comment on any of the following? Were HPS Involved?

a) Positive Pressure Ventilated Lobby (PPVL) isolation rooms. Suitability for (i) immunosuppressed patients and (ii) infectious patients.

A Both HPN 04-01 supplement 1 and SHPN 04 supplement 1 advise "*This supplement does not describe the specialist facilities required in infectious disease units or on wards where severely immuno-compromised patients are nursed. Guidance for these facilities will follow in a further supplement to HBN 4".* This additional documentation has not been provided to date.

i. risks posed to patients by PPVL rooms.

A The guidance at the time had immunocompromised patients as a group of patients who were excluded from these rooms. Evidence is still required in this area to fully support the use of PPVL rooms for this patient cohort. The risks are that vulnerable patients are at risk from infection and the rooms require to be built to the exact specification to ensure infection exposure is minimised. An example is the risk posed by aspergillus when rooms are inadequately sealed.

ii. scientific disagreement over the use of these rooms.

A There remains disagreement and a lack of evidence for their use with immunocompromised patients, particularly with regards to airborne transmission. PPVL rooms however do have their place in other settings, such as general ward areas for isolation of patients with infections.

iii. what happened in the QUEH/RHC?

A The detail/engineering components are outwith my area of knowledge and I had no involvement in the PPVL rooms, however my understanding is that these rooms were not built to the required specification outlined in HBN04-01 supplement 1. Particularly with regards to the placement of ventilation grilles, provision of ensuites, and inadequate or incomplete sealing.

b) Thermal Wheel technology.

i. risks posed to patients by thermal wheel technology.

A I do not fully understand the engineering detail, however I believe that the dirty extract mixes with the clean supply and therefore can pose a risk of infection to vulnerable patients.

ii. what happened in the QEUH/RHC?

A I am aware they were present but cannot comment on the impact.

c) Chilled beam technology.

i. risks posed to patients by chilled beam technology.

A In haemato-oncology units the rooms require to be completely sealed with a solid ceiling, however chilled beams do not allow this. In addition, they may present a risk of condensation and require a high level of cleaning and maintenance.

ii. what happened in the QEUH/RHC?

A I am aware via IMTs of reports of condensation or water leaking on to a patient's bed, in addition to reports of these being very dusty at times. I was also present

at an IMT where results sampled from water from the chilled beam *yielded Pseudomonas olivorans* and *Pseudomonas aeruginosa*.

d) Are you aware of any other risks related to ventilation such as cleaning of vents andongoing building work?

A I was not working on the QEUH/RHC site and am not aware of any other risks in 2017. I do not recall HPS being asked for input into any of the above covered by question 26.

27. There were cases of Aspergillus case in 2A. Can you describe your involvement in this asper question 13 above?

A This was reported to HPS as HIIAT green with minimal detail. I note that a PAG was held and within the notes from the PAG it is mentioned that this was discussed with myself. I have no recollection of these discussions so am unable to provide any further information.

28. There were three fatalities from Stenotrophomonas in 2017 (refer to PAG (**Bundle 2 page 44)** to Dr AlanMathers SBAR of 2017) Were you involved? If so, can you describe your involvement?

A I had no involvement with Dr Mathers' SBAR of 2017 and was not aware of the content of this SBAR.

On 26th July 2017 NHSGGC reported two patients with Stenotrophomonas bacteraemia within Ward 2A Royal Children's Hospital NHSGGC, within 8 days. Both of these cases were being considered by GGC healthcare acquired infection. The cases reported were defined as invasive and had resulted in delays to treatment for patients. HIIAT assessed as Red. Whilst I was aware of this incident as I received the updates from HPS, I was not involved until 14th August when HPS were advised by NHSGGC that the typing results for the 2 cases that led to the PAG were both unique and the interpretation made was that they were unrelated. NHSGGC asked if we (HPS) required regular HIIORT updates. I advised that if this incident was being downgraded to green then no further updates were required (in line with the process in place at that time), however if it was to remain red or amber then further updates were required,

until reassessed as green. NHSGGC reassessed as green. I advised the HAIPU that the incident was now green with no further updates expected, however NHSGGC were content to provide updates on one patient's condition if the HAIPU required this. I had no further involvement in this incident.

29 Are you aware of any other HAIs in 2017? If so, please reply to questions a-k in question13 above.

A I have limited this response to those deemed to have a potential environmental link. In addition to those described above, NHSGGC reported a number of incidents. Limited details were reported when HIIAT green was reported: information below is what was provided by NHSGGC to HPS: -

- On 6/2/2017: 2 cases of Serratia colonisation reported from PICU RHC HIIAT green:
- On 3/3/17 2 cases of Serratia were reported: one colonisation, one infection from Neonatal intensive care, RHC. HIIAT Green.
- On 3/3/17 3 cases of *Elizabethkingia miricola* bloodstream infection were reported since September 2016 from wards 2A/B (paediatric haemato-oncology). An action plan was put in place with a focus on the environment. HIIAT Green
- On 3/3/17 General increase over January/February in number of positive blood cultures with mixed organisms reported. Review of cases ongoing
- On 7/3/17 NHSGGC reported an increased incidence of aspergillus in patients in ward 2A RHC over the past seven months. The cases reported were defined as invasive and had resulted in delays to treatment for some patients. Estates undertook a clean of all vents and chilled beams. Patients were asked to wear a facemask if going down to the main entrance as there were building works taking place. Prophylaxis was commenced for all patients on induction of treatment. Regular air sampling was being performed. No IMT was held. On 19th April 1 possible new case was reported based on radiological and clinical evidence. A leak in the ceiling had been reported in the ward area approximately 2 weeks earlier. On inspection mould was found on the tiles. Subsequent high particle counts from adjacent rooms were identified. Work being carried out urgently to replace mouldy tiles. The ward was closed due to rotavirus/astrovirus at that time (not aspergillus).

- Incident was de-escalated to green and closed on 28th April 2017. Ongoing monitoring of the environment was to continue. HPS updated the HAIPU with each HIIORT submitted by NHSGGC.
- On 10/3/ 2017 NHSGGC reported 3 cases of *Serratia marscesens* in Paediatric intensive care unit (PICU). This was assessed as HIIAT AMBER. No HPS Support was requested. It was also reported there was a general increase in environmental gram negatives (Serratia, pseudomonas, Acinetobacter, Stenotrophomonas). Water testing was undertaken and no growth of Serratia found. No IMT held. HAIPU updated by HPS.
- A further HAIORT was submitted on 14th March and the HIIAT de-escalated to GREEN and incident was closed.
- On 2/8/17 2 cases of blood stream infection (1 infection, 1 colonisation) with pseudomonas in PICU, RHC. HIIAT Green.
- On 3/8/17 3 cases of Stenotrophomonas associated with NICU reported.
- On 11/10/17 2 cases of Acinetobacter baumanii colonisation reported in neonatal intensive care, RHC. HIIAT Green. PAG held.
- On 13/10/17 1 new case and 2 existing cases reported of Acinetobacter colonisation in a general medical ward, QEUH. HIIAT Green.
- On 27/10/17 Probable invasive fungal infection/Aspergillus fumigatus HIIAT Green. NICU.
- On 15/11/17 2 cases of *Acinetobacter baumanii* reported from PICU, RHC. One considered HAI to PICU, the other to ward 1E however there is also an epidemiological link to HAI cases in September and October. HIIAT Green.
- On 1/12/17 Three cases of the same type of *Acinetobacter baumanii* surgical site infection reported (from October, November and December) possibly linked to the same bay in PICU, RHC. HIIAT Green

The above incidents reported as HIIAT Green: I am unable to provide detail relating to IMTs, efficacy of control measures, prophylaxis.

HAI INFECTIONS in 2018

30 For EACH INFECTION on Wards 2A and 2B in 2018 can you answer the following questions

a) what was the nature of the infection.

b) was a link to the built environment suspected and if so, in what respect.

c) in what area of the hospital did the infection(s) occur.

d) what sampling / testing was conducted and was a link confirmed.

e) At what stage did HPS get involved

f) what, if any, external reporting occurred.

g) Was there a PAGs or an IMT

h) what control measures were put in place

i) Whether prophylaxis was administered

j) Were the actions taken sufficient to respond to the incident?

k) Can you comment on the effectiveness or otherwise of the IMT?

A The response to the above addresses the water contamination incident and related infections covered by the IMTs rather than each infection individually.

NHSGGC submitted HIORTS to HPS on 2nd, 9th and 12th March 2018, gram negative blood stream infection in wards 2A/B. On 16th March 2018 HPS was asked to support an IMT investigation with a potential water (environmental link). HPS had involvement thereafter at a number of subsequent IMTs until the IMT closed on 27th March 2018. HPS updated the HAIPU. At risk patients were given prophylaxis. Control measures at this time included limiting access to water, including showers. The IMT was chaired by the lead ICT and worked effectively.

A PAG was held on the 18th May 2018, an IMT on 29th May and HPS was in attendance at IMTs from 4th June 2018, due to an increase in cases of blood stream infection with Enterobacter. The hypotheses considered was related to the drains with black grime being reported as emerging from the drains. Prophylaxis was restarted and admission to the wards was limited to an assessment on a case-by-case basis. Control measures included drain cleaning and environmental decontamination with hydrogen peroxide vapour. The HAIPU was updated by HPS after each IMT. From January to June 2018 there were 17

cases associated with wards 2A/B: 6 Enterobacter, 9 Stenotrophomonas, 4 pseudomonas, 2 Acinetobacter, 1 Cupriavidus, 1 Pantoea. The IMT closed on 21/6/18. The IMT was chaired by the lead ICT and worked effectively.

An IMT was reconvened on 5th September 2018 following 3 cases of blood stream infection reported since 5th August with drain associated gram negative organisms. HPS was in attendance. It was reported that drains had been swabbed on 29th August following reports that grime was visible in the drains and samples matched 2 of the 3 cases reported. HPS updated the HAIPU. Control measures included drain cleaning throughout 2018. The findings are detailed in the reports published in May 2018 and December 2018. In summary the infections were environmental gram-negative blood stream infections with a suspected link to the water system. The infections mainly involved children from wards 2a,2b, but also some from the paediatric intensive care unit. ARHAI regularly updated the HAI policy unit. Control measures included the fitting of point of use filters on water outlets. The IMTs in 2018, which were chaired by Dr Inkster, were managed and worked well, discussing prophylaxis (if required), control measures and any additional subsequent actions. Minutes were issued timeously, which accurately reflected discussions.

Decision to close wards 2A/2B and move to 6A and 4B

31

a) Can you describe the events leading up to the decision to close wards 2A and 2B?

A There had been a number of IMTs in 2018 (as detailed above) relating to an increase in gram negative blood stream infections associated with the water system. At an IMT on 13th September, which was being held due to an increase in gram negative blood stream infections and thought to be related to the drains, discussion took place on drain decontamination. The IMT recommended consideration of a short term decant to allow drain decontamination to take place and for a physical review of the environment to identify a permanent solution. This was further discussed at an IMT on the 14th September 2018 and a number of potential options were considered. It was noted that the

recommendations from the IMT were for the executive management team (EMT) and had not been confirmed.

In addition, it was discussed that the Scottish Government had asked if there were any options to move the patients out with the hospital/area temporarily and requested assurances that the children were safe. At the IMT on 17th September Kevin Hill advised that a meeting was held by the executive management team after the IMT, and the recommendations were discussed. The EMT concluded that it would wait until a drainage expert gave a preliminary review on how they would carry out their work. The EMT would wait to see what was found. The IMT continued to recommend a temporary relocation. On the 18th September the chief operating officer attended the IMT and advised that following a meeting that morning it was agreed that the BMT patients in ward 2A would be decanted to ward 4b and the majority of the other patients in the haemato-oncology ward (2A/B) would go to an alternative 28 bedded ward within the QEUH. No final decision had been made with regards to a date or which ward.

At the IMT on the 19th September 2018 the chief operating officer advised that ward 6A would become the decant ward, with existing patients in 6A being relocated to ward 2C Gartnavel General Hospital. On the 20th of September it was agreed that there needed to be a focussed detail on IPC aspects of the IMT and a separate operational needs focus and therefore this would be split into 2 separate meetings. It was agreed that the incident would remain at HIIAT amber until the relocation of the patients back to wards 2A/B. It could be escalated to red if required but it would not go below amber.

b) Can you describe the involvement of 1) HPS and 2) Scottish Government in thisdecision?

A HPS was a member of the IMT from March 2018 and participated in discussions relating to relocation of the patients. Scottish Government was not involved in this decision-making process as it was not an IMT member, however, HPS provided it with an update after each IMT meeting. It was noted at the IMT on 14th September 2018 that Scottish Government had asked if there were any options to move the patients out with the hospital/area temporarily and

requested assurances that the children were safe.

c) Can you comment on

i. the options assessment

A I recall a number of options being discussed/raised at IMTs: these included:

- the WoSCC, which although the preferred option, presented clinical challenges, includinghaving no paediatric intensive care on site and, if a child required PICU intervention orcare, this would require the transfer of a critically ill child by ambulance back to the RHC.
- A stand-alone temporary unit installed on the hospital site was also discussed, however this would not be an immediate solution as it would take several weeks/months to install.
- Temporary relocation outwith the hospital to either Edinburgh or Newcastle however it was unlikely there would be sufficient beds./ward available. The logistics or providing staff to these areas and the impact on patients and families was significant
- A ward on the adult QEUH site was considered, which would allow ease of access to supporting facilities on the RHC site and out of hours medical cover. Ward 6a was selected by the EMT and patients who were then in that ward would be relocated within ward 2C Gartnavel General Hospital without impacting their care.

ii. suitability of ward 6A / 4B for Schiehallion patients; and

A Ward 4b cared for adult bone marrow transplant patients. It had remedialwork undertaken to increase the ventilation specification. Therefore, this was a reasonable consideration for short term decant of paediatric haemato-oncology patients. Ward 6a, whilst not the equivalent specification, was initially intended as a short term decant only (4 weeks) and required mitigations such as point of use filters was considered to be the most viable option.

iii. steps taken to prepare ward 6A to receive Schiehallion patients.

A Preparation was undertaken by NHSGGC.

Incidence of HAIs on Ward 6A

32. Concerns about HAIs began to emerge on ward 6A following the inhabitation by Schiehallion patients. For each infection on Ward 6A post decant can you respond to the questions a-k in 14 above

A Having reviewed the reports ARHAI have from NHSGGC, there was one incident reported relating to ward 6a (prior to temporary decant to CDU). This was Cryptococcus neoformans involving 2 patients. 1 adult, 1 child. HPS did not attend IMTs however was provided with updates which were then passed to the HAIPU.

Whistleblowers

33. Throughout 2018 there were ongoing Whistleblowing procedures involving several Wards. Were you aware of this at the time? What was your perception of it?

A I was not aware of whistleblowers throughout 2018.

2019

Cryptococcus

A detailed response on HPS input into John Hood's report and the cryptococcus subgroup has been provided to the inquiry. The response previously submitted covers this in more detail.

You sat on the Cryptococcus subgroup – (**Bundle 9- Cryptococcus subgroup minutes**)

34. Had you seen/ heard of Cryptococcus in a healthcare setting prior to QEUH?

A I was aware of cryptococcus; however, I had never been involved with either a suspected or confirmed case of cryptococcus prior to QEUH, either clinically in my nursing career or throughout my years in IPC.

35. What were the issues with Cryptococcus at QEUH? When did you first become aware of these issues? What happened in response to these issues?

A Whilst HPS was aware of the 2 cases of cryptococcus via the HIIAT reports, no HPS support was requested and therefore information was based on the HIIATs submitted and the information provided in the HIIAT reports from GGC, rather than attendance at an IMT.

36 What was your involvement at the Cryptococcus Sub-Group Meetings – refer to the minutes - actions taken, internal escalation: HPS involvement.

A Whilst HPS was not a member of the IMT, it was invited to be part of the subgroup which was being formed to explore a number of hypotheses raised by the IMT and discussed at the IMT and produce a report with recommendations for the chair of the IMT. My involvement in the subgroup was attending meetings (where possible) and reviewing and providing comments on the draft report.

37 What, if any, external reporting occurred?

A The subgroup was chaired by NHSGGC: HPS did not report any details externally.

38 What steps were taken in response/ precautions put in place?

A The subgroup was not part of the IMT. It was the remit of the IMT to manage the incident and put control measures/precautions in place. HPS was not a member of the IMT, so I am unable to comment on the control measures.

39 Did you read John Hood's report? If so, when?

A A detailed response on HPS input into John Hood's report has previously been provided to the inquiry.

In summary:

I have read and commented on the report in conjunction with 2 of my colleagues who were also in the group (Ian Storrar, Susie Dodd). There have been multiple versions of the report and there was poor version control. The following summary of when the reports were read is based on an email review.

NSS first received the "draft 2" version of the report on 16th August 2019, for discussion at the subgroup meeting that same day. On 23rd August 2019, an email containing Draft 2 of the report was shared for comments and discussion at the meeting scheduled for the same day. The document entitled "Draft 2" was watermarked "Draft 1 130819".

A final report was issued to NSS on 7th April 2022, by NHSGGC. Over the lifespan of the Cryptococcus Incident Management Team Expert Advisory Sub-Group there were a number of draft reports shared with NSS by NHSGGC. In addition to draft reports, some meeting minutes would include text for inclusion within the draft reports. There was no version control of draft report documents and therefore it was difficult to tell which version was most up-to-date, or indeed on which document NSS was being asked to comment.

NSS's search has identified 10 draft reports shared prior to the final report being shared on 7th April 2022. Noting the difficulties previously stated regarding version control, I cannot be confident that this represents the total number of draft reports shared by NHSGGC.

40 What is your opinion of it- to what extent do you agree/ disagree with its findings?

A In addition to myself, NSS had 2 other representatives on the SLWG and reviewing the report. Due to poor version control and lack of clarity on how evidence from the literature was being sourced and applied, we expressed concern over the report. NSS submitted a large number of comments on the draft reports. It was unclear whether the comments raised were being considered or addressed. There was significant communication with GGC

regarding the report, resulting in the ARHAI clinical lead liaising with NHSGGC. It was agreed that the final report would be a GGC produced report and not one from the SLWG, as the 3 NSS representatives were not in total agreement with the report and its findings. One of the main challenges was the lack of transparency over the literature being selected and used to support/disprove hypothesis. There was concern that there was potential selection bias. HPS offered to undertake a literature review. This offer was at first refused and then laterally accepted. There were significant comments on the reports shared, however it was unclear the impact these comments were having on the report and often the meetings to discuss the report focussed on discussing the comments submitted by HPS/HFS without a clear outcome as to whether the comments were being taken on board or otherwise.

41 What actions were taken following the John Hood report?

A The report was finalised as a GGC report and there were no outstanding actions for ARHAI.

42 What else could have been done? How could matters have been handled differently?

A A literature review utilising agreed methodology undertaken at the start of the SLWG, to support the work and the findings of the group would have been beneficial. Clear discussion on the hypothesis and report production including version control and consultation.

43 What concerns did you have about how matters were dealt with?

A It was not clear whether the comments on the report being made by NSS were being incorporated into the report and it became difficult to progress. The ARHAI clinical lead was approached, who engaged with NHSGG, and the outcome was the report was not authored by the SLWG but became a GGC produced report.

44 The Inquiry has become aware of at least two other cryptococcus cases from QEUH.Are you aware of this? If so, please describe your involvement.

A My colleague (Susie Dodd) was made aware via a cryptococcus subgroup meeting on 26th November 2021. The chair mentioned at the start of the meeting that there were 3 potential new cases of cryptococcus that would be discussed later in the meeting. Unfortunately, ARHAI had to leave the meeting, but followed up with GGC the following day. ARHAI advised GGC that the last case reported to ARHAI was a child related to ward 6a in July 2020. This was later discounted as a case due to the result being considered a false positive. An update was requested by ARHAI on the 3 potential new cases. GGC responded that the cases were historical cases as far back as 2010 and that Dr Hood was reviewing them.

Short-term Decant from 6A – refer to IMTs.

45 Can you describe the events leading up to surrounding the decision to transfer patients out of 6A?

A HPS was not involved in the events leading to/surrounding the decision to transfer patients out of 6a. This decision was taken by the cryptococcus IMT and HPS was advised of this via a HAIORT, that all patients in ward 6A moved to clinical decisions unit for a period of 4 weeks, to allow completion of remedial estates work.

46 Can you describe the involvement of 1) HPS and 2) Scottish Government in this decision?

A HPS were not involved in this decision. I am not aware that Scottish Government had any involvement.

47 Can you comment on

a) the options assessment.

b) suitability of the other wards (4B, 1, RHC and CDU) for Schiehallion patients; and

c) steps taken to prepare these wards to receive Schiehallion patients.

A HPS had no involvement in any of the above.

48 Are you aware of the remedial work to be done on Ward 6A? Was HPS involved?

A I was not aware of the remedial works being undertaken at that time. HPS were not involved.

49 Transfer of patients back to 6A. Can you describe events surrounding this decision? Were HPS/ SG involved?

A HPS were not involved, and I am unable to describe events surrounding this decision.

P HAI Incidents post reopening of ward 6A- to end of 2019 – (Bundle 1- IMT minutes)

50 For each incident can you respond to questions a-k in para 13 above?

A The first HAI reported to HPS (apart from cryptococcus Dec 2018) was following an IMT held on 19th June 2019. A PAG had been held on 3rd June 2019 to discuss 4 cases of gram-negative blood stream infection. In addition, the IMT was informed of a patient case of *Mycobacterium chelonae*. A further IMT was held on 25th June 2019, HPS was in attendance. It was reported at this IMT that there had been 6-gram negative blood stream infections over the previous 3-month period. In addition, 2 cases of M. Chelonae over the previous 12 months. Water sampling had identified 3 shower heads and a tap in the domestic services room positive for mycobacterium and samples taken from some taps without filters (outwith 6a) showed evidence of fungi growth.

At the IMT on 3rd July 2019 2 further patients positive for pseudomonas putida were reported.

On 1st Aug 2019 a further 2 cases were reported, one with Chryse monas and one *Enterobacter cloacae*. At this IMT it was reported that air samples taken from en-suite bathrooms on 15th July (as part of the ongoing cryptococcus investigation) found small counts of pathogenic fungi, like aspergillus. It was agreed at this meeting that the schedule of cleaning the chilled beams would be increased to 6 weekly (instead of 6 monthly). The hypotheses for the previously reported *M. chelonae* was considered to be exposure to unfiltered water (water outwith ward 6a) and this section of the IMT was closed. The hypothesis for the gram negatives was currently unexplained, however the IMT agreed that the filtered water was unlikely to be the source and consideration was given to the chilled beams as a source. It was also agreed that not only the number of gram negatives, but the nature of the organisms was concerning.

At the IMT on the 8th August it was reported that of the 4 samples (2 hot, 2 cold) taken from the chilled beams: the cold-water samples returned a heavy growth of *Pseudomonas oleovorans*, and small number of *Pseudomonas aeruginosa*. Dr Inkster also noted a colleague had reported a swab from a chilled beam grille in June had grown *P. oleovorans*. This was suggestive of a leak from the circulating water. Swabs taken from the chilled beams from patient rooms yielded light growth of gram negatives including Klebsiella, Acinetobacter and Pantoea species. Clinical staff expressed concerns over being in a ward with chilled beams however the whole campus had chilled beams. The deputy medical director agreed to discuss with the medical director to identify any possible area that could house the patients in 6A: it was noted however that the IMT could make recommendations regarding decant, but the final decision would be endorsed by the chief executive. An options appraisal meeting was planned to look at possible solutions should ward 6a be relocated. It was also noted that the HIIAT process was that the final decision on releasing a press statement irrespective of the HIIAT score lay with the IMT chair, but whilst communication should come from the IMT it was senior management who had the final say on press releases and not the IMT chair. The IMTs continued until 14th November 2019. The chair of the IMT changed mid-way through the incident. This is covered further in Qs 50 and 51.

51 In particular can you comment on the following IMTs

a) 14th August 2019 –especially with regard to conduct and interpersonal relationships

A I cannot give a recap of this entire meeting, however, from memory, I recall the IMT on the 14th August 2019 commencing with a more negative tone than some of the previous IMTs. In particular there was a lot of discussion on the draft previous minutes circulated from the IMT held on the 8th August 2019, which named the chief executive and stated "*Kevin Hill hasasked if Ward 4B could give more beds to the paediatric service but they are currently in no position to move patients out with the ward over the next4weeks. Dr Scott Davidson will ask Dr Jennifer Armstrong Medical Directorto see if there is anywhere that could house patients from Ward 6A. The final decision would need to come from Jane Grant the Chief Executive*". There was a lot of discussion/request to remove the name of the chief executive from the minutes. It was only the chief executive's name that was being discussed for removal. It was agreed after much discussion that the name would be removed but the title would remain. There was no request to remove any other name in that paragraph in the minutes. Dr Inkster requested that going forward it may be helpful if meetings were recorded to allow accurate reflection of the discussions that took place. There appeared to be significant tension around the table. There was discussion on the case definition and the deputy medical director emphasised that the numbers of blood stream infections had not increased, as highlighted by Dr Kennedys epidemiology report. This sparked much discussion as some members disagreed with this statement (myself included), as not only was there an increase in number, they types of organism seen were environmental in nature and very unusual. In addition, Dr Kennedy's epidemiology report covered all blood stream infections (gram positive and gram negative) and as the gram-positive rate, often linked to practice, and as a result of significant work undertaken by the clinical team, was very low, this gave a false assurance on overall numbers.

There were also 2 microbiologists present who had been invited to discuss findings from chilled beam sampling and unusual epidemiology compared to the previous Yorkhill site. These discussions created significant tension and disagreement between clinical staff and managerial staff. Whilst this IMT was

challenging as some of the findings and associated risks being presented were being vehemently disputed by some of those present, the meeting was very well chaired by Dr Inkster.

b) 23 August 2019 – events surrounding the appointment of Dr Crighton as Chair. Wereyou surprised by this? What was your opinion of her appointment?

A Dr Inkster had chaired the IMTs since HPS first became involved in 2018.I attended for the IMT on time on 23rd August 2019 and had to wait outside the meeting room alongside some clinical staff, Dr Inkster and other regular members of the IMT, whilst a "pre meet" was being held by "senior membersof GGC". We were not allowed to enter the meeting room for a lengthy period. The meeting started considerably later than planned and, from the start, was chaired by Dr Crighton. Introductions were made but there was no explanation why the chair waschanged, even though Dr Inkster was present. It was when introducing herself that Dr Crighton advised she was the chair of the IMT. I sat beside Professor Gibsonat this meeting, and we quietly shared our confusion over Dr Inkster's position and a new chairperson. Dr Gibson sought clarity on why Dr Inkster was not chairing the meeting. I can't specifically recall the response; however, I do recall there was no clear rationale given for the change and it did feel very awkward and uncomfortable. I asked for this to be recorded in the minutes and that if it could be noted whether due process and governance had been followed. Sandra Devine advised me that this change had been discussed and agreed with Professor Reilly, HPS. The meeting felt incredibly uncomfortable. Following the meeting I sought clarity on the discussions with Professor Reilly and was advised that contact had been made via email by the GGC director of nursing on 20th August to say she was "*in a meeting to discuss IMTs and if it's not an ICD who should/could it be?"*. The question therefore was about whether it was acceptable for a CPHM to chair an IMT if it wasn't an ICD. It was not about the specifics of this IMT or change of chair, it was more a general ask on whether it was acceptable fora CPHM to chair an IMT.

After every IMT I produced a summary email update for the HAI policy unit. Within the update from this meeting, I made factual reference to the chair being changed from Dr Inkster to Dr Crighton *"NHSGGC have replaced the IMT chair*

from the Lead ICD to NHSGGC deputy director of public health". Previously any comments on these updates were on factual accuracy regarding case numbers or control measures, however, on this occasion, the associate director of nursing IPC responded via email "*Chairagreed to be replaced in order for her to have time to review incident, resultsand actions. Other ICDs on the site were asked to chair and declined. National guidance confirms that it is appropriate for a CPHM to chair an IMT* to which my email response was "*Thanks for the clarification, Sandra. The reference to the chair was a factual statement made for information. The rationale and discussion relating to the decision for replacing the chair is a matter for the minutes to reflect today's discussion"* Dr Inkster responded byemail "*The chair did not agree to be replaced to review the incident, results, actions. The chair was asked to demit due to feedback from everyone at the last IMT that the meeting was difficult. This however was not corroborated at the IMT today by senior clinicians, HPS or the microbiologists who were present*".

I would agree that the meeting referredto was difficult, however it was others who made it difficult and not Dr Inkster, I would have said that if anything, Dr Inkster chaired this difficult meeting well and remained patient and risk focussed throughout. I was not asked about this meeting and given the clinical team's surprise at the change of chair I do not believe they had been asked. Irrespective of the reason for the change in chair it felt very disrespectful for the outgoing chair not to be acknowledged or thanked at the start the meeting and no explanation or rational volunteered. Thereafter the meetings (IMTs)appeared to have a shift in focus, with an aim to prove the hypothesis incorrect and promote a conclusion to the incident with an acceptance of cases being a normal rate. An example of this is the chilled beams: despite positive microbiology reported at the IMT on the 14th August 2019, there was a change towards removing chilled beams as a hypothesis and despite the microbiological view (until 23rd August 2019) that there was an increase in numbers and unusual types of micro-organisms, there was more of a drive to accept that this was a normal background rate in both number and type. On the 18th of September 2 microbiologists stated at the IMT that ward 6A was microbiologically safe. Both my colleague (Lisa Ritchie) and I did not support this view. The meetings

continued to be difficult and following discussion with my colleague Lisa Ritchie (who had attended some of the recent IMTs whilst I was on leave) we agreed that it was not in our best interest to attend these meetings alone and thereafter, where possible, HPS was represented by 2 nurse consultants. This was a situation I have never found myself to be in throughout my time at HPS. In addition, IMT notes/minutes became more challenging. Often the minutes were issued late/close to the meeting, contained either inaccuracies or items discussed not appearing on the minutes. This resulted in extensive comments from ARHAI and others which took a lot of time at the start of each IMT. ARHAI requested the meetings were recorded, however GGC advised this was not something they could facilitate. At times there was disagreement with HPS recollection of discussions and some GGC members on the IMT. This was an additional reason that Lisa Ritchie and I agreed that, where possible, HPS would be represented by 2 consultants. I also recall there were occasions when finalised minutes or minutes with the requested changes were not issued, with HPS requesting on the 8th October that final minutes were circulated. Meeting start times also changed to later in the day, which often resulted in meetings going beyond 7pm and staff often having to leave before the meeting was finished.

52 Dr Inkster resigned in August 2019. What do you understand to be her reasons fordoing so?

A Dr Inkster advised HPS by email that she had resigned as lead ICD NHSGGC and took the opportunity to thank HPS Staff for their support.

Whilst I was saddened to hear this, I was not at all surprised as it was becoming more evident that Dr Inkster's position appeared to be becoming untenable. Her views and approach were becoming more frequently challenged, particularly within the IMTs, by other GGC colleagues. There was also disagreement over the reasoning for the sudden replacement of Dr Inkster as IMT chair and a clear and open lack of respect shown to Dr Inkster at that time.

53 Meeting with Teresa Inkster and Prof Leonard. In her statement Teresa Inkster describes a meeting with Professor Leonard around the time ofher resignation in which the risk from drains was discussed. We understand that you were present.

a) What was the outcome of this meeting? Were any control measures suggested and implemented?

A This meeting was relatively informal and held at the request of Professor Leonard, to understand the routes of transmission to patients, particularly from drains. It took place in a coffee shop on the QEUH. Dr Inkster led the discussion on biofilm creep, splash risk and the challenges being faced due to the point of use filters applied reducing the space between the outlet and the sink, resulting in significantly more splash. This additional splash had previously been observed on several occasions by HPS. The current approach of drain decontamination was discussed, and it was agreed at that time that this was a good approach. The outcome from this meeting was a better and shared understanding relating to the potential routes of transmission and risks beingposed by the drains.

b) Was there consensus as to the risk occasioned by drains?

A There was good discussion led by Dr Inkster, and I don't recall any opposing views between Prof Leanord, Dr Inkster or me to those described above, and I believe we left the meeting with a shared understanding and agreement of the risks and potential routes of transmission from the drains.

c) Can you comment on the success or otherwise of any control measures implemented?

A There was agreement that the control measures were appropriate, albeit they required to be monitored. The control measures in place at that time were mainly regular drain disinfection. It is difficult to comment on the success of the control measures as the IMT focus started to move from considering the hospital environment as a source, with a focus on the external environment.

HAIs in 2020

54

a**)** You attended only 1 IMT in 2020, in July 2020. Can you respond to questions a-k inpara 30 above? (**Bundle 1- IMT Minutes**)

A There was a single meeting of an IMT held by GGC on 2nd July 2020, which I attended remotely. This IMT was held to discuss a positive cryptococcus result, which was deemed to be a false positive. HIIAT was green and no further meetings were held.

b) Were you aware of any other issues in QEUH at this time (other than dealt with in question R below)

A There were a number of incidents reported to ARHAI in 2020 (excluding those with no potential environmental link): Most were reported as HIIAT green and therefore ARHAI have limited detail: -

- 17/3/20 Vancomycin resistant enterococci: ward 6A
- 9/4/2020: Ward 6a: Blood stream infections: gram negative organisms (Klebsiella pneumonia, Enterobacter cloacae HIIAT Green No ARHAI support requested
- 17/4/20: Intensive care unit: Blood stream infection: Enterobacter aerogenes HIIAT Green No ARHAI support requested.
- 18/6/20: Wards 10b, 10D, 11B : blood steam infections : Burkholderia stabilis: potentially linked to a wider national incident
- 18/6/20: NICU and SCBU: Mixed organisms including Stenotrophomonas maltophilia, Acinetobacter baumanii, Serratia marcescens HIIAT Green No ARHAI support requested
- 16/7/20 NICU: Acinetobacter ursingii Blood stream infection. HIIAT Green No ARHAI support requested
- 28/7/20 NICU: Klebsiella oxytoca, Enterobacter cloacae (colonisation) HIIAT Green No ARHAI support requested
- 31/8/20 NICU Serratia marcescens Blood stream infection HIIAT Green No ARHAI support requested
- 10/9/20 PICU Colonisation: Acinetobacter nosocomialis, Enterobacter cloacae

HIIAT Green No ARHAI support requested

- 8/10/20 Ward 4C: Stenotrophomonas maltophilia blood stream infection HIIAT Green No ARHAI support requested
- 15/10/20 NICU Serratia marscescens colonisation HIIAT Green No ARHAI support requested
- 26/10/20 NICU Pseudomonas fluorescens colonisation HIIAT Green No ARHAI support requested
- 9/11/20 PICU Blood stream infection : Pseudomonas aeruginosa, Klebsiella pneumonia HIIAT Green No ARHAI support requested
- 23/11/20 Ward 6a Blood stream infection Serratia marscesens, klebsiella pneumoniae HIIAT Green No ARHAI support requested
- 26/11/20 PICU Respiratory, Klebsiella pneumoniae HIIAT Green No ARHAI support requested
- 15/12/20 PICU Klebsiella pneumoniae, Enterobacter cloacae (colonisation) HIIAT Green No ARHAI support requested

Interactions with the Independent Review, Oversight Board, Case Note Review

55 Can you describe any involvement you had with:

a) The Independent Review

A I was interviewed by the 2 chairs of the independent review. Despite requesting this, Ihave never seen a draft or finalised statement/summary of discussion.

b) The Oversight Board and

A I was not involved with the oversight board.

c) The Case Note Review

A I was not involved with the case note review.

HAIs in 2021 – (Bundle 1 IMT Minutes)

56 For each IMT you attended can you respond to the question a-k in para 13 above

A Having reviewed the minutes from this meeting I note that a cluster of *Serratia marscesens* colonisation and blood stream infections were reported within NICU on 30th April 2021 and an IMT held. The minutes from this meeting do not consider an environmental link as the hypothesis. At the third IMT, I raised the point that the new case may suggest an additional hypothesis of an environmental source and perhaps not the original person to person cause that was being explored. The hypothesis was altered to an unidentified source in the unit and possible environment to patient or patient to patient transmission. In total 6 IMTs were held and there were 8 confirmed cases of *Serratia marcescens* and 1 possible case. Environmetal sampling was undertaken looking for gram negative bacteria. It was reported that no gram-negative organisms were isolated from samples taken from the sinks or close to the sinks, apart from a shelf above a sink which was found to have Pseudomonas. A number of samples from the direct patient environment (cots and around the cots) were reported as isolating Serratia marcescens. All taps were replaced with Markwik thermostatic mixing taps, IPS panels were replaced and internal IPS panelling with wet wall and sealed completely. Point of use filters were also in place.

AN IMT was held on 5th August to discuss 3-gram negative blood stream infections in patients in ward 6a. The organisms were Enterobacter cloacae and Klebsiella pneumoniae. The first hypothesis was that all 3 cases had an underlying clinical issue, suggestive of an endogenous source. The 2nd hypothesis was environmental, although the minutes note this as being unlikely as there was no evidence of an environmental source. It was reported that water was tested every 4 weeks and neither of the organisms isolated from the patients were isolated from the water. Point of use filters were in place. This was assessed as HIIAT green. No prophylaxis was given to patients, control measures included: enhanced supervision carried out 4 weekly, root cause

analysis undertaken with a clinician for every gram-negative blood stream infection, point of use filters remain on taps, routine drain decontamination. Environmental swabbing showed no presence of gram-negative bacteria.

HAI Reporting – overview of procedure and practice

Can you describe:

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

A I am unable to comment on the GGC procedure for monitoring or reporting HAIs as I am unaware of the current agreed board processes.

56 The practical operation of the system within the QEUH, including:

a) barriers to reporting HAIs.

b) data collection for different types of infections – fungal, gram negative,gram positive, other; and

c) the use of data sets for infections

A I am unable to comment on points 1-3 as I am unaware of NHSGGC internal processes.

57. The relationship between HPS and the SG HAI Policy Unit, especially what level of oversight there is in practice. Also, what does the oversight look like- formal or informal, meetings, emails or phone calls etc?

A ARHAI has a formal working arrangement with the policy unit, which includes reporting of incidents/outbreaks in line with chapter 3NIPCM and oversight of the ARHAI programmes. Oversight/discussions take place at meetings, by emails or by phone calls. The HAIPU attend ARHAI senior management team meetings every second month to discuss progress on each ARHAI clinical priority programme. ARHAI inform the HAIPU of any incident reported that has been assessed as HIIAT amber, red. ARHAI also assess HIIAT greens and if considered politically sensitive or something that would be anticipated to attract media attention would also be reported to HAIPU. ARHAI also produce a weekly incident and outbreak summary report that is shared on a Friday with the HAIPU.

58 What is your opinion on the adequacy of the system?

A This is very dependent on the cabinet secretary and civil servants/advisors in post at that time. This is driven by the cabinet secretary's interest in the particular area and associated political and media interest. Ms Freeman expressed significant interest in HAI and, as a result, there was a greater engagement over incidents. This had not been seen with her predecessor or successor. During the 2018/2019 water incident at the QEUH/RHC there was significant contact between HPS and SG, including providing updates and responding to cabinet secretary questions.

59 How might it be improved?

A In relation to the QEUH/RHC water incident in 2018/19, communications between HPS and the HAIPU were good. Without a change in remit or role expansion for HPS/ARHAI I'm unsure how this could be improved. However, clarity and strengthening the roles and responsibilities for ARHAI would be helpful, with an agreed standardisation in approach to incident assessment, monitoring and reporting.

CURRENT SITUATION

60 We understand that you are still involved in Infection Control at QEUH. How are things at QEUH now as compared to the period under investigation? Are you now seeingfewer BSIs, fewer unusual infections and /or fewer samples with multiple infections?

A I have not been employed by NHSGGC since 2009 and cannot comment on the BSIs being reported internally within GGC. However, since the repatriation of the children back to the refurbished wards 2a/b in 2022, there have been significantly less incidents reported from wards 2A/B. Relationships between ARHAI and some members of the GGC IPCT have remained challenging, to the extent that the clinical team within ARHAI raised this with the lead consultant (ARHAI). There was constant challenge from some members of the IPCT (GGC) whenever clarity was sought or requests for any further information were made. On the 17th March 2023 the senior nurses wrote to the nurse consultants and

clinical lead (ARHAI) expressing concern that “communication and dealings with NHS Greater Glasgow and Clyde are becoming increasingly strained and resource intensive” Examples were included within this email, which concluded with “*As IPCNs we are trained to investigate complex situations, this includes where we are not party to decisions being made and where the information is not clear or explicit. NHS GG&C, the biggest board, do have complex incidents. As ARHAI Scotland are not frequently invited to attend, we are not privy to the in-depth conversations happening during the IMTs and we are not receiving this level of information through the ORT consistently. We have these discussions easily with other boards but find that concerns about NHS GG&C often lead to extensive meetings with Nurse Consultant colleagues and, occasionally, ARHAI Scotland ICD to ensure any queries cannot be misunderstood, deemed as unnecessary by the board or questioning the ability of the board’s IPCT. My observation is that we get the most “push-back” from one individual within the board and would suggest that this is a communication issue or lack of understanding of how and why we are looking for information to be submitted and in what level of detail. As the chair of the IMTs they may be best placed to complete the ORT to ensure we have all the available information in the detail that is required? I would suggest that this could be resolved through open, honest and supportive discussion to enable us all to remain committed to keeping our patients and colleagues safe while providing the necessary communication with our stakeholders*”.

The concerns raised by the senior nurses were supported by the nurse consultants and this was discussed at a clinical meeting. It was agreed to be progressed via the ARHAI clinical lead. This is now addressed via the clinical lead (ARHAI), who meets with the Director of IPC (GGC) on a weekly basis. The clinical lead (ARHAI) does not meet with any other board on a regular basis, and communications being directed via the lead consultant (ARHAI) does not happen with any other board.

61 Do you have any ongoing concerns as to the safety of the QEUH? If so, what are they?

A I don't believe I am in a position to offer an informed response to this question. My response to this question can only be based on what HIIAT is assessed and also reported to ARHAI, and this may not be a true representation of positive results/testing. However there has been a significant reduction of reporting of infections with environmental organisms to ARHAI since 2020. In September 2023 one of my consultant colleagues contacted the ARHAI clinical lead to express concern over reporting from NHSGGC. These concerns included "*NHS Boards are required to report incident and outbreaks to ARHAI Scotland in accordance with Chapter 3 of the NIPCM, Outbreak Reporting Protocol and Appendix 13 (https://www.sehd.scot.nhs.uk/dl/DL(2019)23.pdf). There is a pattern where the Board have not reported single cases in line with Appendix 13 and/or there has been delayed reporting (e.g., not within 24 hours of HIIAT assessment). The delay has varied from days to weeks/months.*

There have also been issues identified with case definitions, where the scope of the case definition does not fully align with, or is reflective of the incident, meaning cases could potentially be missed".

"*There appears to be an over-reliance on the use of WGS for incident and outbreak investigations, where GGC are utilising results as part of an assessment to advise that cases are 'not linked'. We have previously highlighted that WGS should be used as an aide as part of investigations but should not be the sole factor for decision-making*".

"*In addition to the issues identified in relation to WGS, there is a related issue with the use of typing (or WGS) to rule out an outbreak/incident when incidents relating to water may result in multiple strains of the same organism (or multiple different organisms). Relying solely on WGS or typing to rule out an outbreak/incident with a potential water source may provide false reassurance.*"

I was off work at the time these concerns were raised, however I understand that this was discussed internally and the ARHAI clinical lead raised this with the

NSS director and director of nursing.

Observations

62 Having set out the factual position in relation to these matters above, do you have anyreflections on what went wrong and why at the QEUH, in particular in relation to:

a) the design stage and NHS design guidance.
b) commissioning and validation.
c) failures in reporting lines.
d) organisational and leadership failures.
e) cultural issues.
f) the ability of staff to raise concerns without fear of repercussion.
g) governance of estates and facilities
h) HAI monitoring and reporting.
i) other concerns?

A I am limited in the reflections I can offer as someone external to NHSGGC and not in receipt of all information. However, it is my opinion that there appear to be 2 components: -

Firstly: prior to patient occupation: there appears to be a lack of clarity in IPC involvement, responsibility and decision making in derogations, commissioning, handover and ongoing maintenance.

As a result, it is difficult to offer an opinion on whether the IPC oversight, risk assessment and input was acceptable. IPC should always be involved in commission and handover and have oversight and review ofany results, to assist in providing assurance of a safe environment.

Secondly: The identification, management and approach to what emerged as a significant incident and the ongoing management.

My involvement in ward 4b/BMT was purely in an advisory capacity, providing best practice and approach towards risk mitigation, in an area which was not

included in the original design specification and therefore not purpose built, to allow the repatriation of patients and ongoing function of a specialistunit.

My involvement in the IMTs commencing March 2018 until late 2019 was extensive and continuous, and I witnessed and experienced some challenging behaviours during this time, examples of which have been covered in earlier answers relating to IMTs. From mid/late 2019 there was a developing lack of acceptance/acknowledgment that there was an issue, with a push towards what felt like a “nothing to see here” approach. From a HAI monitoring and approach perspective, ARHAI Scotland can only be aware of those incidents that NHSGGC reports to ARHAI, so I am unable to comment on HAI monitoring and reporting at QEUH/RHC level. However, I believe I have captured a summary of these concerns in my response to the questions above.

PART 2- REPORTS Bundle 6- Reports by HPS, HFS and ARHAI)

In addition to the SBARs of 2015 and 2017, you authored or coauthored the following reports:

1 HPS NSS initial report on findings of water contamination and recommendationsQEUH/RHC May 2018 Final Report

2 HPS Report Water Contamination Summary of Incident and Findings - December2018

3 HPS draft Report GGC Situational Assessment RHC Wards 2a 2b - 5 June 2019

4 HPS Review of NHS GGC Paediatric Haematology Oncology Data - publishedversion (redacted) 29 November 2019

5 NHS Scotland National Water Survey Report Final June 2022

6 ARHAI - Scotland's Approach to Microbiological Water Testing Final July

63 For EACH REPORT can you advise

a) How did the report come about? Is it a requirement when the National Framework is triggered? If so, what are the requirements/ specification for the report?

b) If not, was it commissioned, and if so, by whom?

c) What were its Terms of Reference? What precisely was the paper aiming to study orestablish? Were you given the precise terms of reference, or did you have some leeway?

d) Did you work alone or part of a team? If a team, who did what?

e) To whom was the finalised report sent? Do you know what the report was used for byGGC?

1 *HPS NSS initial report on findings of water contamination and recommendationsQEUH/RHC May 2018 Final Report (Bundle* **6 page 3)**

2 *HPS Report Water Contamination Summary of Incident and Findings - December2018 (***Bundle 6 page 32)**

3 *HPS draft Report GGC Situational Assessment RHC Wards 2a 2b - 5 June 2019 (Bundle* **6 page 194)**

A NHSGGC requested support from ARHAI in March 2018 for a water contamination incident, with potentially linked clinical cases. This support requested was initially in the form of IMT attendance, however Scottish Government invoked the national framework on 20th March 2018. This normally requires ARHAI to provide a situational assessment within 5 days and a final SBAR summary report, however, given the complexities, extent and nature of the incident, ARHAI undertook to produce a more detailed report on the incident, investigations and findings. This resulted in the production of report 1.

Report 1 - advised of a detailed technical report being produced for NHSGGC by 31st July 2018. It was originally envisaged that this report would be a joint ARHAI/HFS (merged clinical and technical) report, however it quickly emerged that the clinical aspect was at risk of becoming lost in such a specialised detailed technical report and ARHAI/HFS agreed after attempting a first draft joint report, that this would become 2 separate reports.

The ARHAI report was published in December 2018 (report 2). The HFS report was then intended for GGC only and not published. I was the lead author of both of these reports; however, I had support from the ARHAI data and intelligence team.

Report 3 - the GGC situational assessment was also commissioned via Scottish Government, invoking the national framework. I was the lead author on this report, supported by the data and Intelligence team/clinical lead ARHAI.

All 3 reports were submitted to NHSGGC for factual accuracy prior to being finalised and issued to Scottish Government and NHSGGC.

4 Report 4 - HPS Review of NHS GGC Paediatric Haematology Oncology Data - publishedversion (redacted) 29 November 2019 (**Bundle 6 page 250)**

A This is better answered by the data and intelligence team/ARHAI clinical lead.

5 Report 5 - NHS Scotland National Water Survey Report Final June 2022 (**Bundle 5 page 206)**

This report was undertaken in response to a recommendation made in report 1: which states that ARHAI will undertake a review of NHS current approach to water safety. This was undertaken via a questionnaire issued to each board relating to microbiological water testing. A summary report was produced for each board which identified their own board and anonymised other boards: this allowed comparison with other boards. A full report with all identifiers was issued to Scottish Government.

6 Report 6 - ARHAI - Scotland's Approach to Microbiological Water Testing Final July

This appears to be an appendix of report 5 rather than a stand-alone report.

Epidemiology reports

DATA AND METHODOLOGY

64 Your samples were taken from ECOSS. Did you consider other sources, such as CLABSIandLIMS (which were considered in Report number 3 above). If so, why were these excluded?

A I would like to defer a response to this question to those from ARHAI data and intelligence team/ clinical lead who were more closely involved in this aspect.

65 You included fungal infections in your data sets. By contrast, these were excluded from the2019 report since “it could not be established if all positive fungi blood cultures were being processed through ECOSS.” Can you comment on this?

A I would like to defer a response to this question to those from ARHAI data and intelligence team/ clinical lead who were more closely involved in this aspect.

66 Use of SPC charts- what are the limitations of their use, and how does this affect the results?

A I would like to defer a more detailed response to this question to those from ARHAI data and intelligence team/ clinical lead who were more closely involved in this aspect. However, SPCS may not be sensitive enough to pick up trends in real time and may offer inappropriate assurance without an accurate ascertainment of an appropriate baseline.

67 You used the paediatric hospitals in Aberdeen and Edinburgh as comparators. Were any other comparators considered?

A I would like to defer a response to this question to those from ARHAI data and intelligence team/ clinical lead who were more closely involved in this aspect.

68 You note that differences in the patient population may introduce bias. Can you elaborate?Are socioeconomic factors relevant?

A I would like to defer a response to this question to those from ARHAI data and intelligence team/ clinical lead who were more closely involved in this aspect.

69 You note that; ***In summary, the overall incidence of Gram-negative, Gram-positive and environmental bacteria blood cultures increased in the 2A/2B Group after the move to the RHC. In the RHC Other Group, the incidence of Gram-negative bacteria and fungal blood culture did not change, and the incidence of Gram-positive and environmental bacteria blood cultures increased***. What are the possible reasons for this?

A I would like to defer a response to this question to those from ARHAI data and intelligence team/ clinical lead who were more closely involved in this aspect.

70 You note that polymicrobial episodes were common, especially where environmental bacteria are concerned, and that this can be associated with younger patients and central venous catheters. However, both Dr Harvey-Wood and Dr Murphy considered that the incidence of polymicrobial samples were out with what would normally be expected. Do you agree or disagree? If so, why?

A I would like to defer a response to this question to those from ARHAI data and intelligence team/ clinical lead who were more closely involved in this aspect.

71 You further note that, compared to other hospitals, the QEUH had higher levels of environmental and fungal infections but that gram positives were lower compared to other hospitals. It has been argued by some witnesses that increased line care has led to a decreased rate in gram-negative bacteria and this accounts for the (real or perceived) with other institutions. To what extent do you agree/ disagree?

A I would like to defer a response to this question to those from ARHAI data and intelligence team/ clinical lead who were more closely involved in this aspect.

Difficulties accessing information and data sharing.

72 The Case Note Review, Independent Review and the Oversight Board reports all comment on inadequate data collection and sharing within GGC Did you experience this?

A I would like to defer a response to this question to those from ARHAI data and intelligence team/ clinical lead who were more closely involved in this aspect.

73 What was the nature of these difficulties? In particular did you experience:

a. Data noted with no location or date.

A I would like to defer a response to this question to those from ARHAI data and intelligence team/ clinical lead who were more closely involved in this aspect.

b. Limited organisms being tested for?

A I would like to defer a response to this question to those from ARHAI data and intelligence team/ clinical lead who were more closely involved in this aspect.

c. Inconsistent recording of data – e.g., IMT minutes not matching sample; information on one system not matching another system

A I would like to defer a response to this question to those from ARHAI data and intelligence team/ clinical lead who were more closely involved in this aspect.

74 Re bacterial typing in particular, some commented that information had to be collated from several different systems and the numbers of environmental samples were limited and lacking in location information as well as comparisonswith other microorganisms. Not enough bacterial isolates were included. There was no database recording all typing data.

a) What do you believe was the basis/cause of these issues?

A I would like to defer a response to this question to those from ARHAI data and intelligence team/ clinical lead who were more closely involved in this aspect.

b) Did this impact on the preparation of your report? In what way?

A I would like to defer a response to this question to those from ARHAI data and intelligence team/ clinical lead who were more closely involved in this aspect.

75 The Case Note Review in particular (pg. 7) was critical of the fact that there was noelectronic database for typing results. One of their recommendations was to develop a “comprehensive and searchable database that allows details of microbiology reference laboratory reports to be compared between samples of the same bacteria obtained from different patients or environmental sites.” Can you comment as to whether this now been achieved?

A I would like to defer a response to this question to those from ARHAI data and intelligence team/ clinical lead who were more closely involved in this aspect.

Infection rates

According to many witnesses, infection rates at QEUH were unusual both in frequency and type. However, it is acknowledged that it was difficult to measure empirically as there was nodata readily available for many of the (rarer) organisms.

76 Do you consider that there were more bloodstream/ patient infections than normal?

A During the period of 2016-2021, HPS/ARHAI received reports of a significantly higher number of cases of gram-negative blood stream infections, particularly in RHC and Schiehallion, compared to those reported before 2016, and compared to those being reported from any other healthcare premise across NHS Scotland. Therefore, I would consider there to be significantly more BSI than *normal* during this period.

77 more unusual **bloodstream** infections?

A The organisms being reported were often unusual, many of which I had never dealt with before, nor had they ever been reported to HPS/ARHAI before. Not only were they individually unusual but to have so many uncommon organisms being reported from the same/similar patient cohort within the same healthcare premise within the same time frame span made this even more unusual.

Whole Genome Sequencing and Typing

78

a) Can you comment on what typing was conducted within GGC during the period inquestions, by which we mean the opening of the hospital in 2015 up to the end of 2019. Didit increase during this period?

A I am not in a position to comment on this as I don't have access to the typing requested by NHSGGC.

b) Has it increased since 2020?

A I am not in a position to comment on this as I don't have access to the typing requested by NHSGGC.

c) Some witnesses take the view that while typing can be used to confirm a link, an absenceof typing cannot be seen to exclude a link. To what extent do you agree/ disagree?

A I agree with this statement. I believe in the position that, with regards to environmental sampling, in particular related to water, that typing should be utilised to include and not exclude. Therefore, this means that the absence of an exact match does not mean the environmental source can be excluded. Environmental typing, particularly related to water sampling, can be very complex and require a significant number of samples to obtain an acceptable representation of the microbial flora. I understand that at least 30 different isolates from each culture plate are required to be confident that a particular strain was not being missed. The presence of biofilms in water systems can complicate the use of typing when trying to exclude links between organisms

in water and clinical samples, and further complicated if the system has undergone chemical disinfection.

d) The CNR took the view that, even in the absence of typing, it is possible, taking all the evidence as a whole, to identify a “probable” link. To what extent do you agree / disagree?Why?

A I agree with the statement made by the CNR. Typing should not be relied upon in waterborne incidents, particularly when the typing does not match for the reasons I have detailed in point c above. It is also more difficult to exclude such unusual infections with a time/place and person link on the basis of typing.

79 As you will be aware, the CNR concluded that the vast majority if the cases they studied were either possibly or probably linked to the hospital environment.

a. In **very generalterms** do you agree or disagree with their findings?

A The incidents covered by this inquiry all have a potential environmental link, and I have not seen evidence during the incident or presented since, that excludes the environment as a possible cause in all or most cases. On reading the CNR I felt it was a robust report and have no reason to doubt the conclusions made by the authors.

b) Do you consider yourself qualified to comment on the link between potential defectsin the built environment and infections in patients?

A I have gained extensive knowledge, skill, and experience in Infection Prevention & Control in the Built Environment. I have supported a significant number of incidents across NHS Scotland since joining HPS/ARHAI in 2009, many of which are considered environmental in nature. This expertise has typically been acquired through a combination of formal education, practical experience, and continuous learning. I am frequently approached for advice, consultation, and contributions to academic, professional, and clinical support/advice. I therefore do consider I am qualified to comment, however, I also recognise my area of remit/expertise and acknowledge that I am unable to comment on technical engineering components.

Appendix B

DOCUMENTS TO BE PUT TO WITNESS

ANNETTE RANKIN BUNDLE:

- Bundle 1- IMT MINUTES A42909010
- Bundle 2 PAG MINUTES A 42907101
- Bundle 3 NHS NSS SBAR A43273121
- Bundle 4 NHS GGC SBAR 4A2959603
- Bundle 9 CRYPTOCOCCUS SUBGROUP A45379981
- Bundle 10 WATER TECHNICAL GROUP A471411680
- Bundle 7 REPORTS PREPARED BY HPS, HFS and ARHAI A439099077