SCOTTISH HOSPITALS INQUIRY

Bundle of documents for Oral hearings commencing from 19 August 2025 in relation to the Queen Elizabeth University Hospital and the Royal Hospital for Children, Glasgow

Witness Statements – Volume 2

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Scottish Hospitals Inquiry

First Supplementary Statement of Dr Christine Peters

May 2025

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Introduction

1. This statement has been prepared to assist the Inquiry's experts with their analysis and consideration of GGC's expert report (now being referred to by the Inquiry as "the HAD report") and its accompanying data. A second supplementary statement dealing with other outstanding matters will follow in due course.

Comments on the HAD Report Data sorted by specific document within the data folders

IP Haem Onc Selected Consultants from 2023 by Sector.xlsx[1]

2. There are two obvious potential errors in analysis which may or not have been mitigated and may or may not affect the ultimate conclusions. Clarification is required.

Issue One

3. This spreadsheet sorts entries by, amongst other things, "IPE Admission Hospital" (Column I). If one filters the spreadsheet to review the entries in Column I which purport to relate only to the QEUH, and then cross checks that list of entries against the specific ward listed (Column K), it becomes evident that a number of the entries which have been allocated to the QEUH do not in fact relate to QEUH wards.

4. For the sake of brevity only two examples are provided. This issue affects more than one line entry and a list of other examples can be provided if it would assist the Inquiry experts in their task.

5. Examples:

    i. Line 2979 – listed as "QEUH" in Column I, but is in fact noted to be a Beatson Oncology Centre patient (Ward B9) in Column K.
    ii. Line 2154 – listed as "QEUH" in Column I, but is in fact noted to be a Southern General Hospital patient (Ward 1) in Column K.

Issue Two

[1] A52270095 - Bundle 44, Volume 1, Page 230 - Document 88 on Inventory. Not included in the bundle as it contains patient identifiable information.

6. A similar issue arises with the sector classification (Column O). If one filters by "South" sector patients and then cross checks the ward (Column K), one finds examples of patients who are attributed to the south sector erroneously.

7. Example[2] –

    i. Line 11460 on sheet "Total N S BMT" is listed as "south" sector in Column O, but is in fact noted to be a Beatson patient (Ward – Beatson Assessment Unit) in Column K.

Adult Haem Onc 2013 – 31Aug23 – Matched GMC.xlsx[3]

Issue One

8. In this spreadsheet, if one filters by South sector but then checks where the blood culture in question was actually taken one identifies examples of blood cultures that are attributed to the South but that are actually taken elsewhere.

9. Example:

    i. Line 4281 – listed as "South" sector in Column G, but is in fact noted to be a Beatson Oncology Centre patient (Ward B7) in Column D.

10. A similar issue appears elsewhere – if one filters by QEUH (Column C), and cross checks against the ward location (Column D), then one sees cases which are not in fact QEUH patients.

11. Example:

    i. Line 76 is listed as "Queen Elizabeth University Hosp" in Column C but when the location in Column D is checked, the entry in fact relates to ward 24 in the Southern General Hospital. In theory this could be mitigated by restricting the dates field under reference to

[2] For the sake of brevity only one example is provided. This potential error is replicated elsewhere on the spreadsheet. A list of further examples can be provided if it would assist the Inquiry.
[3] A52270095 - Bundle 44, Volume 1, Page 228 - Document 48 on Inventory. Not included in the bundle as it contains patient identifiable information.

the QEUH opening date, but if that has been done it is unclear where this data sits in terms of "other hospitals[4]" combined data.

12. These potential issues may or may not have been mitigated and may or may not affect the ultimate analysis. Clarification is required.

Issue Two

13. If one filters by BMT patients, it is clear that there is no blood culture date for the Beatson BMT patients from 2013 or for the early part 2014. The first entries appear in March 2014. On the face of it, the data from the Southern General Hospital from the whole of 2013, and January to March of 2014, has been omitted. This may or may not have been mitigated, perhaps with access to other data that has not been shared. If it has not, then it is likely that it would affect the ultimate analysis. Clarification isrequired.

Issue Three

14. The spreadsheet discloses misallocation of positive blood cultures to "North" consultants when in fact the patient in question was located in QEUH.

15. Example:

Line 6530 is allocated to the "North" in Column G. In fact, when one cross checks this allocation against Column D (location) the positive blood culture in question (Klebsiella) was obtained on Ward 4CH (haematology) at the QEUH and not in the north sector.

16. This affects a relatively small number of positive results, and a larger number of negative results. It may not affect the analysis significantly but is potentially demonstrative of shortcomings with the data processing in general.

[4] See HAD report, Figure 2

Complete Aspergillus Positives, Adults 2013 – 2023 & Paeds 2005 – 2022 – matched GMC.xlxs[5]

17. No explanation is provided for the date ranges used in this analysis. The paediatric data does not go beyond 2022 and the adult data does not go beyond 2023. There is data available for cases in 2024. I do not understand why this was not included in the analysis.

18. I am currently working on an audit of Aspergillus cases in the course of my role at QEUH. I hold a complete set of Aspergillus data for the purposes of this piece of work and I can identify from that that there are positive cases which appear to be missing from the data provided. I would like to provide my spreadsheet to the Inquiry experts so that the data relied on by the HAD authors can be cross checked against my own figures.

19. I also note that the HAD authors have excluded from their analysis cases where the patients were being cared from in the ICU, but had previously been patients in a BMT unit. The rationale for this approach is not clear and requires clarification.

Annexe to info request for supporting evidence for Prof Tom Evans Reports with annotated responses from Prof Thomas Evans as received from NHS GGC – Phylogenic Trees.pdf[6]

20. This document is very difficult to read but the tree does not appear to include all 7 cases which are listed in the word document which was also provided entitled "Cupriavidus Human Samples". In particular, the tree does not include the data from patient [redacted]

21. No table has been provided of the SNP differences between the respective isolates. This is significant. It would appear that some of the isolates are significantly more closely related than the HAD approach would tend to suggest. A table of the SNP differences would be of assistance.

[5] A52270095 - Bundle 44, Volume 1, Page 224 - Document 6 on Inventory. Not included in the bundle as it contains patient identifiable information.
[6] A52270095 - Bundle 44, Volume 1, Page 232 - Document 105 on Inventory. Illegible therefore not included in the bundle.

Organism Specific Comments

"Enterobacter species tree" document

22. There are only 6 environmental samples taken across 3 dates separated by a year. This is insufficient to give context to the human WGS. These are listed in the spreadsheet "*Enterobacter Sequencing (Updated).xlx*s[7]" and are unrelated to the human cases in time and specific place.

23. There appears to be a clustering of 19-8101092 and 19-8101079. The first patient is labelled as "2B" which refers to the ward location where the sample was taken. However, this individual had been an inpatient in ward 2A up until the day before. It is very unlikely that these two samples which are linked in time, place and person are more closely related to each other than to all of the rest of the isolates by chance

24. Patients 19-8101074 and 19-8101072 are very similar. These samples were obtained only one month apart and are the only two representatives of one species "Enterobacter genomo spO" This is unlikely to have occurred by chance and has not been commented on in the HAD report.

25. Similarly, the clustering of a human isolate from ward 2A with sink isolates from ward 2A (19-8101078, 19-8101231, 19-8101232) all appearing very similar. It is unlikely that in over a year of separation this level of relatedness is simply by chance.

26. Importantly, one patient (with CHI[redacted]) has: (i) two isolates in the Enterobacter species tree in what appear to be relative clusters of relatedness; and (ii) isolates in the Stenotrophomonas tree in clusters (see the document called "Stenotrophomonas tree with CHI numbers.pdf[8]"). It is unlikely that these results have occurred by chance. Cross analysis of multiple organisms in time, place and person would be required to truly contextualise the likelihoods of relatedness.

[7] A52270095 - Bundle 44, Volume 1, Page 232 - Document 113 on Inventory. Not included in the bundle as it contains patient identifiable information.

[8] A51839081 - Bundle 44, Volume 1, Document 45, Page 705.

27. Further clusters 19-8101077-A and 19-8101095-Y look to be very closely related comparatively on the tree. The patient with CHI [redacted] (Enterobacter 19-8101095-Y) is also on the Stenotrophomonas tree in a cluster. Again, what are the chances of an Enterobacter and a Stenotrophomonas cluster? This patient (CHI [redacted]) was also in ward 2A. (NOTE: [redacted] had 2 Stenotrophomonas and both need to be sequenced).

28. A further clustering effect is seen with 19-8101104 and 19-8101100. Both patients were seen in ward 2A a few months apart. Also, the first of these is represented in a Stenotrophomonas cluster.

29. Overall, this data does not rule out environmental sources and in my view actually gives more credibility to the environmental hypothesis. It would be useful to have SNP distance tables made available.

Stenotrophomonas tree with CHI numbers.pdf[9]

30. There are no results for those with repeat positive bacteraemias. For example, one patient had 5 bacteraemias but only had one WGS. This is a significant missed opportunity to ascertain diversity within the host. This patient died and therefore the WGS is of paramount importance. The other patient who died also had another isolate which was not subject to WGS. In my view, this is too high a rate of "non growth from beads" to be credible as a reason for the limited scope of WGS. Further, there are 6 paediatric Stenotrophomonas bacteraemia cases without WGS results. One patient had only 2 out of 6 isolates subject to WGS, and these appear very far apart on the tree. In my view, this is significant information that points strongly to the need for incorporation of a wide variation in SNP difference in this context.

31. The diversity of the environmental isolates is wider than the clinical cases and many of the clinical cases sit in branches flanked by environmental isolates.

32. There is an error with the sample M19.5505741 which purports to be from RAH outpatients when it is in fact from ward 4B at BMT at the QEUH.

9 A51839081 - Bundle 44, Volume 1, Document 45, Page 705.

33. Case [redacted] had a sample taken in ARU but was regularly seen in ward 5C for treatment and the source was considered to be a PICC line infection.

34. Case [redacted] had a sample taken in ACAD[10] at the Victoria Hospital but was a ward 4C patient who had a line inserted in ward 4C at the QEUH and had been discharged 2 weeks previously from ward 4C/

35. It is interesting to note that the samples from one leak in the ceiling contained isolates that are distantly related, yet they came from one source. This is not commented upon when seeking context for the diversity in human isolates.

36. The isolates from the basement tank that are closely related over 8 months point to a biofilm source with a predominant strain but only 4 samples were subjected to WGS.

37. There may be an error in the labelling of "SMG-20-1657 W19.1845968.A - Basement Tank A&C, Bulk Filtrate CWST 2A Drain (4789)- QEUH, KID - 2019-10-31". Does this refer to a drain or water?

38. SNP distances between the following apparently close cases are required: M19.5526947 human HAI PICC line infection and the water samples, W18.1840896, w18.1840897.

39. In relation to M17.5521105.D, M20.5370084.D and M19.5371654.Z – what is the SNP difference and what is the explanation if not biofilm? As the case was an HAI infection, on the face of it this is evidence of a hospital environmental link.

40. It would be important to know the SNP difference for cluster M19.5523757.F, M18.5512619.H, M19.5371805.F and M19.5371621.

41. It is important to note that patient M19.5523757 had been in ward 6A prior to developing the Stenotrophomonas HAI bacteraemia and then, only 3 months later, the ward 6A isolates were grown. This may be evidence of an environmental link.

[10] "Ambulatory Care and Diagnostic Centre"

42. A second ward 2A patient in 2018 also had a closely related bacteraemia – is this likely to happen by chance given the vast diversity of samples?

43. Similarly, the cluster [redacted] and [redacted] would benefit from careful analysis because the first patient had been in ward 2A a few days prior to the isolate being taken in ward 2B and is closely clustered with a basement tank isolate.

44. The second patient [redacted]) also has another result in the tree (see the cluster highlighted in the Enterobacter section above at point 24). What are the chances of this patient having clustering results twice by coincidence?

45. The eight paediatric and adult cases at the bottom of the tree are flanked by environmental samples including from the basement supply tank. This appears to bein keeping with a water environmental source. Of most interest are:

    - Patient who died [redacted]) in [redacted] and the relatedness to patient [redacted](NOTE: there is an error in the sample details M20.5500487 as the CHI does not match the lab number – this should be checked) and patient [redacted].

<u>WGS of Mycobacterium chelonae</u>

46. Data which relates to the whole genome sequencing undertaken for Mycobacterium chelonae is available but is not considered by the authors of the HAD report. It is unclear why this analysis was not undertaken and an explanation should be sought.

<u>Data not included or sought</u>

47. The data omits final identification of organisms of relevance – for example the "mould" (line 36604 in *Adult HaemOnc 2013-31Aug23 Matched GMC.xlsx*[11]) is in fact a Fusarium which is significant. In another example, "Presumptive Mycobacterium" (lines 22890 and 22892 of the same spreadsheet) is in fact a Mycobacterium chelonae which is also significant. The Fusarium case occurred at

[11] A52270095 - Bundle 44, Volume 1, Page 228 - Document 48 on Inventory. Not included in the bundle as it contains patient identifiable information.

a time of dirty water ingress to the unit housing the patient which adds to its significance and ought to be considered.

The report does not provide details about how many cases were previously considered an outbreak or about unusual infections or clusters in other hospitals. This information is important to obtain because the assumption is that all of these cases are "normal". It is important to check regarding Pseudomonas and Burkholderia outbreak IMTs in Yorkhill, which Dr Peters had been aware of from Dr Balfour and Kathleen Harvey Woods.

48. Detail of further interventions in water and ventilation that would impact the rates of infections.

49. Clinical timelines of relevance - it is not noted or discovered that certain patients with significant rates of pathogens in their blood cultures had very recent admissions to the QEUH, e.g., M abscessus, Pseudomonas oryzihabitans and Stenotrophomonas. The clustering analysis does not seem to take into account the patients' full admission history in relation to the positive blood cultures and thus will miss true clusters and epidemiological links.

50. The report relies heavily on the concept of gut colonisation. The policy at Yorkhill and the QEUH included screening faeces on admission and weekly thereafter for organisms such as ESBLS, VRE and Gentamycin resistance. As a result of this process, colonisation with environmental organisms was picked up. Of note is that very few cases had gut colonisation with these organisms. For example, one Stenotrophomonas patient who died had 20 negative faecal screens for Stenotrophomonas prior to a Stenotrophomonas line infection and a protracted hospital inpatient stay.

Data analysis

51. A number of bacteria are omitted from the "could be transmitted from the environment" group, e.g.:

Baccillus

https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0194346

Exophilia

https://www.tandfonline.com/doi/full/10.1080/21505594.2019.1596504%40kvir20.20 19.11.issue-SI3#abstract

E coli

https://pmc.ncbi.nlm.nih.gov/articles/PMC9424950/,

https://www.thelancet.com/journals/lanmic/article/PIIS2666-5247(21)00117-8/fulltext

Kocuria rhizophilia

https://pmc.ncbi.nlm.nih.gov/articles/PMC2566074/

Fusarium ("mould')

https://pubmed.ncbi.nlm.nih.gov/11692299/#:~:text=Fusarium%20species%20was%20recovered%20from,from%20the%20hospital%20water%20tank

Mycobacterium

https://www.journalofhospitalinfection.com/article/S0195-6701(21)00181-X/abstract

https://pubmed.ncbi.nlm.nih.gov/17046106/#:~:text=Abstract,essential%20to%20prev ent%20potential%20outbreaks.

Rhodotorula

https://pmc.ncbi.nlm.nih.gov/articles/PMC11083281/#:~:text=However%2C%20in%20an%20immunocompromised%20patient,and%20mortality%20associated%20with%20it.

Candida

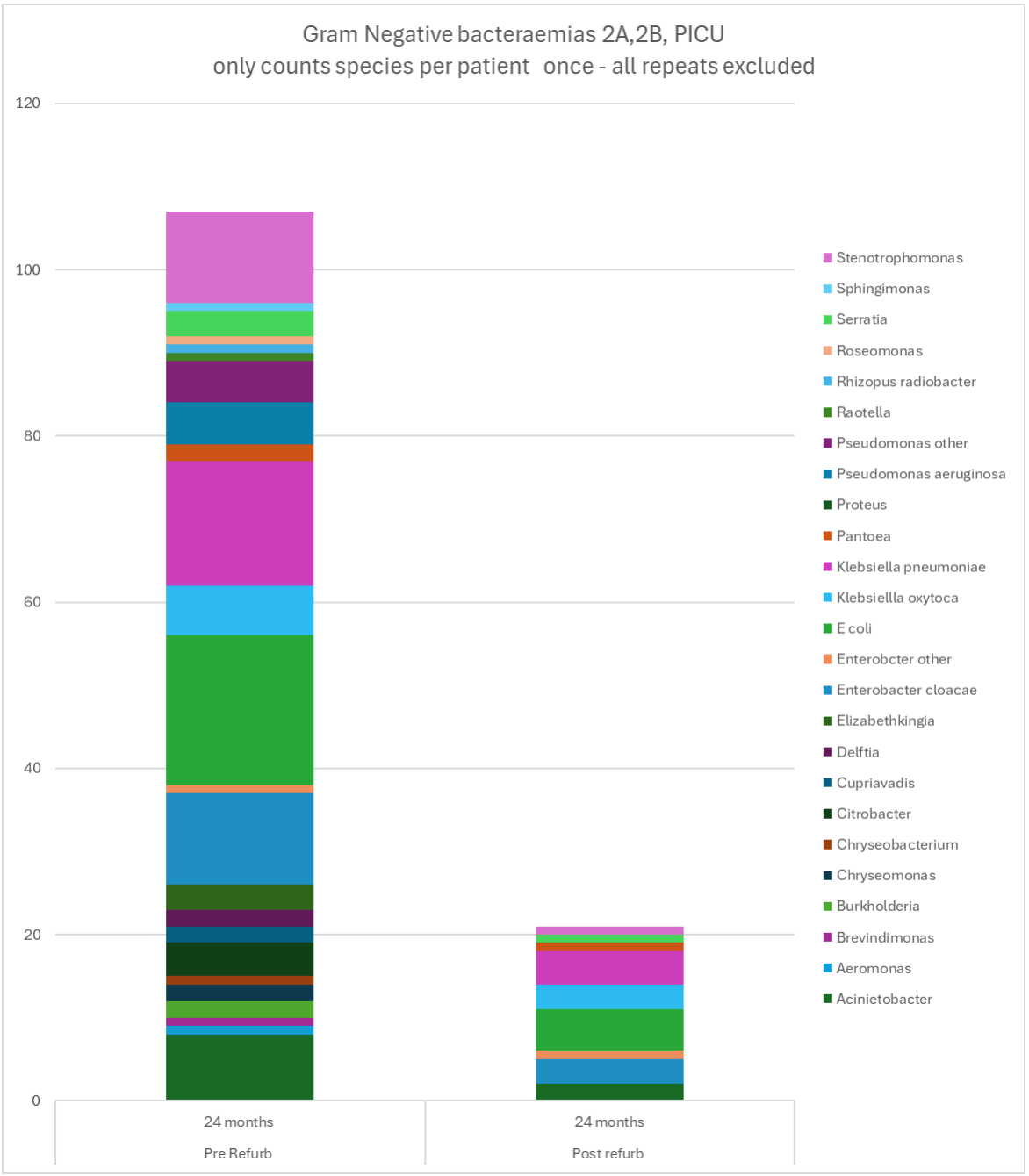
https://academic.oup.com/cid/article-abstract/47/2/e17/359460?login=false

Lack of pre/post refurbishment analysis of Ward 2A

52. There is a failure to take the obvious opportunity to scientifically test the hypothesis that the various building defects raised infections which was presented

by the complete refurbishment of ward 2A combined with years of data relating to the periods pre- and post-decant. I have undertaken my own work which I would be delighted to provide to the Inquiry and its experts and which demonstrates a clear decrease in infections post- refurbishment. I attach as Appendix A to this statement a graph which illustrates the initial findings of this work.

APPENDIX A


Gram Negative bacteraemias 2A,2B, PICU
only counts species per patient once - all repeats excluded
120
100
80
60
40
20
0
24 months
Pre Refurb
24 months
Post refurb
Stenotrophomonas
Sphingimonas
Serratia
Roseomonas
Rhizopus radiobacter
Raotella
Pseudomonas other
Pseudomonas aeruginosa
Proteus
Pantoea
Klebsiella pneumoniae
Klebsiellla oxytoca
E coli
Enterobcter other
Enterobacter cloacae
Elizabethkingia
Delftia
Cupriavadis
Citrobacter
Chryseobacterium
Chryseomonas
Burkholderia
Brevindimonas
Aeromonas
Acinietobacter

Scottish Hospital Inquiry

Glasgow 4 Part 2

Consequential Witnesses statement of
Kathleen Harvey-Wood

Your professional practice at Yorkhill

1. Whilst you have already provided a detailed CV in your earlier statement. Please could you summarise your connection to, involvement with or association with the paediatric haemato-oncology service in the Schiehallion Unit at Yorkhill from 2005 to 2015 and the extent of your experience/knowledge/understanding of environmentally relevant bacteraemia at Yorkhill?

A.

1.1 I was employed by NHS Greater Glasgow and Clyde as a Principal Clinical Scientist in Paediatric Microbiology, retiring after 40 years of service in May 2023.

1.2 2003, due to a Clinical Scientist colleague leaving to take up a promoted post with another Health Board, I was given responsibility for the Virology Laboratory and to set up and run the Molecular Section in the Microbiology Department at Yorkhill. This involved developing Molecular Polymerase Chain Reaction (PCR) assays for various viruses, bacteria and fungi, which were used quite extensively by the Paediatric Haemato-oncology service. PCR is a rapid and more sensitive technique to detect infections compared with traditional culture methods.

1.3 From 2005 to 2015 my connection to Schiehallion Unit (SCH) at Yorkhill was attending weekly ward MDT meetings to discuss Virology and PCR results.

Telephoning and reporting out Virology results, advising on further investigations and viral screens.

1.4 The Paediatric Virology Laboratory and Molecular Section moved from Yorkhill to the new Laboratory Building, QEUH in April 2012 and was then moved to the Virology Department at Glasgow Royal Infirmary (GRI) in August 2015 after Yorkhill Hospital had transferred to QEUH/ RHC site.

1.5 One of Principal Clinical Scientists, who was responsible for the Bacteriology clinical liaison and reporting of results for the SCH Unit, Yorkhill, retired in 2013. The post was not replaced, and the responsibilities and workload were reassigned.

1.6 I then took on the responsibility for the Bacteriology Clinical liaison for the SCH Unit (at Yorkhill Hospital) which involved telephoning results to Clinicians, visiting the ward daily with an excel spread sheet of the Bacteriology results, including the positive blood cultures and attending the weekly MDT meetings. I had previously covered these duties on a Saturday morning (on the rota) and when the Clinical Scientist was on annual leave or sick leave.

1.7 I helped with guidance on interpretation of results and advised which investigations were needed for the Haematology / Oncology patients in the SCH Unit. I also requested additional tests where appropriate and was also involved in testing bacteria for antibiotic sensitivities. I subsequently become more involved with the Bacteriology Clinical service provision to SCH when the Virology Laboratory and Molecular Section was transferred to GRI in 2015. This is when I started looking at the blood stream infections and gathering data.

1.8 The Principal Clinical Scientist, responsible for SCH Unit clinical liaison and a Senior Nurse, SCH, managed the patients line care. Weekly excel spreadsheets of blood culture and line infections/line site infections results

were produced. I don't have access to any of this information or data. They both retired around the same time and neither of the posts were replaced.

1.9 I did have an awareness of environmental infections at Yorkhill. My Clinical Microbiology liaison responsibility was for PICU ward at that time. This also included the SCH patients who were critically unwell, bacteraemic and requiring PICU Care.

1.10 At Yorkhill, any increase in BSI infections was investigated in collaboration with the Infection Control Nurse, Pamela Joannidis and Estates Staff. Environmental screening was performed and a source of the outbreak found. I am not saying there were no Environmental infections at Yorkhill. From time to time there were "outbreaks ", however they were always addressed and work undertaken/ investigations to find the source and corrective or remedial action taken at an early stage.

1.11 I can recall an outbreak of Ps.aeuruginosa in PICU (2017) that was linked to the sink taps. Using Pulsed-field gel electrophoreses (PFGE) typing, which is a technique used to separate very large DNA molecules by applying an electric field in a gel matrix, isolates of Ps.aeruginosa from patient and environmental samples matched and the source of Ps.aeruginosa from the taps was found. There will be records of this outbreak in the Microbiology Department. I handed over and emailed historical documents of relevance to the Public Inquiry to Dr Christine Peters before I retired.

1.12 There was what we described as a "spring bloom" at Yorkhill, occurring in spring season when the temperature starts to rise. There are factors that can lead to increased risk of infections during the spring months. This could be due to changes in patient populations, increased activity and seasonal variation in microbial activity. Changes in temperature and humidity during spring could affect the survival and transmission of some pathogens (1). In the spring, hospital water systems can experience a bloom of environmental organisms including opportunistic pathogens like Legionella and

Pseudomonas which can lead to infections. These “blooms ”are often triggered by increased temperatures and nutrient levels in the water and can be exacerbated by factors like stagnation and biofilm formation.

1.13 From memory and as far as I remember the term “spring bloom” was an observation and used also by my colleagues in Microbiology. It was not investigated as it did not have a detrimental effect on patients at Yorkhill.

Incidence of environmentally relevant bacteraemia cases at Yorkhill

2. Please review the list of ‘microorganism species of environmental concern’ from 2005 to 2022 listed in Tables 11A to 11F of the HAD Report (Bundle 44, Volume 1, Pages 97 to 106) and the conclusion of the authors expressed on page 109 of the bundle that refers to the “significantly higher number of cases observed historically when the haemato-oncology paediatrics service was located at Yorkhill compared with QEUH cases”. On the basis of your expertise and experience, to what extent would you accept that there was a significantly higher number of environmentally relevant bacteraemia cases in the paediatric haemato-oncology patient population at Yorkhill from 2005 to 2015 compared to the QEUH/RHC from 2015 to 2022? Please explain the basis of your answer.

A

2.1 Based on my expertise and experience and working in Yorkhill hospital for 32 years, I would not accept that there was a significantly higher number of environmentally relevant bacteraemia cases in the paediatric haemato-oncology patient population at Yorkhill from 2005 to 2015.

2.2 Question is what is the relevance of comparing BSI infections in another older hospital building (Yorkhill opened in 1914 and remained on this site for 100 years, it was rebuilt in 1972) compared to new build hospital on a different site that has single rooms, different water supply and ventilation system.

Looking at the data provided, I have made the following observations.

P97-106 Tables 11A - 11F of the HAD Report.

2.3 What is the definition of “cases” used? Why are the cases added together to give a total number for both hospitals. If the purpose of the report was to compare environmental infections between the two paediatric hospitals.

2.4 Paediatric population patient definition not clear. What age group was compared? Yorkhill admitted children up to age 13 yrs. RHC admits children up to the age 16 yrs. So different demographics. There are also the teenage cancer patients some of which may be older than 16 yrs and have not yet transitioned to adult Haem/Oncol service.

P 95 “examination of individual cases of bacteraemia attributable to environmentally relevant microorganisms”.

2.5 Vague definition of environmental microorganism.

2.6 Not all the environmental organisms were included in the cases of bacteraemia and what was the criteria used for defining a relevant microorganism.

2.7 For example, the environmental gram negative Herbaspirillum spp was not included. There was no data provided on gram positive environmental organisms and Non-Tuberculous Mycobacteria (NTM) eg Mycobacterium chelonae.

2.8 Why only 2 fungal species included in the data : Cryptococcus neoformans at RHC -1 case (very rare infection in Paediatrics and was the first time I had seen this infection in my 40 years as a Clinical Scientist working in Paediatric Microbiology) and 2 cases of Scopulariopsis brevicaulis at Yorkhill.

2.9 Each organism listed in the tables in alphabetical order have the year and month isolated and for both hospitals in separate columns. If the organisms was not isolated that year it is not noted. Should have included each year of

the period examined to the tables and added 0 cases if no organism of that species was isolated.

2.10 Note decrease of organisms and cases in 2015 the year of the move to RHC and when there was also lower BSI. In new hospital buildings in the UK, the risk of blood stream infections can be significantly reduced through careful design and implementation of IPCT measures from the planning stage (2).

2.11 Then there is an increase in cases from 2015 to 2018 and note the decrease seen in environmental organisms/ cases after 2018. This is due to interventions, e.g. Chlorine dioxide added to the hospital water system.

2.12 Will discuss additional interventions later.

2.13 If look at the years 2020, 2021 & 2022 post interventions, there is 0 isolates/cases for most of the environmental organisms as these years are not included in the tables.

2.14 **A column in the tables refers to Clusters.** Chapter 3 P67 describes the definition of clusters and Table 3 Ranking of Clusters.

2.15 A probable cluster is defined as “greater than or equal to 2 cases from the same ward and are less than or equal to 1 month apart in time”.

2.16 The tables show more probable and possible clusters at Yorkhill; this may be due to patients being less likely to be in other wards in the hospital and be in the same ward compared to at RHC. The patients are exposed to the same risks of transmission if in the same ward.

2.17 The HAD Report did not note or document the mixed BSI infections and how was a cluster defined if the infection was due 3 or 4 different organisms.

2.18 The wards column in both of the hospitals Yorkhill and RHC was not discussed. Of note is that cases of environmental organisms were found in both the Adult (QEUH) Paediatric (RHC) hospitals at the QEUH site.

2.19 The paediatric Haemo-Oncology patient, SCH unit was moved to Ward 6A and 4B, QEUH in Sept 2018 and CDU, RHC for 3 weeks 22.01.18 -12.0.19. At RHC more wards were involved compared with Yorkhill. Cases were documented in other wards in RHC showing the environmental contamination was widespread these included: CDU,ED, 2C, 3C, NICU, Clinic 1 OP, PICU.

Page 96 Acinetobacter Cases (Table 11A P 97).

2.20 Acinetobacter was more frequently grown from Yorkhill (Table 11A). Yorkhill cases reported with 7 of the 8 cases of unspeciated Acinetobacter. The authors refer to the changes in a diagnostic tool to speciate these organisms. "It is important to note that some of the differences observed in Acinetobacter spp. maybe attributable to changes diagnostic tools to speciate these organisms."

2.21 P96. "Matrix Assisted Laser Deabsorption / Ionization "MALDI" became available at QEUH" (inferring move in 2015) – date not given. The MALDI technology became available at the Microbiology Dept when it moved to QEUH in May 2012, which includes 3 years at Yorkhill before the hospital moved.

2.22 The MALDI will have allowed for more accurate and faster identification of the Acinetobacter species from 2012. The main benefit of this technology is the rapid results available in hours rather than 24-48 hrs.

2.23 The MALDI diagnostic tool would have enabled the Acinetobacter spp to be speciated. However, it is the genus that is relevant as various species were isolated at both hospitals.

2.24 Table 11A shows that Feb 2012 was the last month that Acinetobacter was reported out at genus level from Yorkhill. A possible cluster of Acinetobacter at genus level was described at Yorkhill in March and April 2010, these 2 cases may have not been of the same species. Not sufficient evidence at the genus level of identification to describe as a possible cluster.

2.25 P96 Acinetobacter cases were described as normal at Yorkhill, “however this pattern was the norm at Yorkhill, suggesting that this may be the usual presentation in this population” …. compared with sporadic cases at QEUH. In my opinion as a Microbiologist, Acinetobacter BSI cases would not be described as normal (3). A BSI infection with an environmental organism is not considered a normal infection. Any BSI is not normal. The presence of any microorganism in the blood is considered abnormal as the blood stream is sterile.

Table 14 Stenotrophomonas maltophilia Cases

2.26 Yorkhill 2008 n= 9 (highest year) RHC 2018 n =11highest year cases from 5 wards/ 4 wards if CDU=CDIthe organism was isolated from other wards in RHC and is more widespread, indicating a hospital issue and not local to SCH Unit 2019 n = 4 (cases fallen)

2.27 There were no new cases of S.maltophilia after 2019. Years 2020, 2021 and 2022 not included in the data so assume there was 0 cases.

2.28 Also of note there was no cases of Steno.maltophilia from June 2015 to May 2016 during first year post move to RHC.

P108 : “Among 66 bacteraemia cases attributable to Stenotrophomonas 1/3 were from RHC and 2/3 were from Yorkhill”.

2.29 The period examined covers 17 years Jan 2005 to Dec 2022, which is comparing 10 years before move to 7 years after move, so the time periods being compared are different with a longer period of time at Yorkhill. Time period should have been 7 years at both sites.

2.30 After the opening of the refurbished SCH Unit, I emailed Dr Bagrade, Lead Infection Control Doctor, to bring to her attention details of the first case of colonisation with Steno.maltophilia which was isolated from a faeces sample and is not part of the normal faecal flora. The Lead ICD was not interested in

this case and was told not to look for Steno.maltophilia in faeces. There is an email trail to support this.

2.31 Page 32 of the HAD Report, “S.maltophilia is found very widely in hospital environment but comparatively rarely causes infections even in the immunocompromised and careful strain typing is needed to identify any actual environmentalsource”.

2.32 S.maltophilia is now recognised as an important pathogen in Haem/ Oncol patients associated with high mortality rates particularly in BSI. This requires close liaison with IPCT to ensure environmental screening is performed and taking the relevant samples is vital in managing these infections (4).

P109 Conclusion and Table 16 Clustering data:

2.33 P109 “Significantly higher number of cases observed historically when haem/oncol paediatric service was located at Yorkhill “

2.34 “There were 1.9 times more bacteraemia cases attributable to potential environmentally transmitted pathogens at Yorkhill compared to QEUH”.

2.35 **P114 Table 16** “2 fold lower incidence of cases at QEUH compared with historical cases at Yorkhill”. Authors refer to Fig 13 which is a graph of BSI incidence among adult haem/oncology patients.

2.36 The authors data from the tables does show more cases at Yorkhill. This is observed historically - what is the relevance to the new hospital cases when comparing a different location and building. I don’t accept that this is significant in relation to the environmental infections at RHC/QEUH. From memory Yorkhill environmental BSI infections did not have the same consequences or concerns at the time regarding patient morbidity or safety.

Rate of change of incidence of environmentally relevant bacteraemia cases between Yorkhill and QEUH/RHC

3. Please review Figure 22 of the HAD Report and the text discussing it (Bundle 44, Volume 1, Pages 116 to 119) and the conclusion of the authors in the second bullet point on page 119 that "Among paediatric haemato-oncology patients, we see an ~2 fold decrease in incidence and cases of bacteraemia attributed to environmentally relevant microorganisms following transfer of services from Yorkhill to QEUH; lower incidence at QEUH was statistically significant". To what extent is this conclusion consistent with your experience at Yorkhill and subsequently at the QEUH/RHC? Please explain the basis of your answer.

A.

3.1 "Environmentally relevant microorganisms "- a definition would be helpful as not given and did not provide data for all the environmental microorganisms.

3.2 Following transfer of services from Yorkhill to RHC, QEUH, one would expect there to be a decrease in incidence of and cases of bacteraemia attributed to environmental organisms. As moving patients to a new hospital building, particularly one with a high proportion of single rooms which can contribute to a decrease in infection rates, especially for airborne and contact-transmitted infections, due to the improved design, construction and maintenance of a new hospital. However, this decrease was only seen for the first year after the move.

Fig 22. Graph

3.3 There is no legend on the graph - assume red line is Yorkhill and the blue line is RHC.

3.4 Not sure if this is Fig 19 graph with the trend lines added? as the peaks and troughs are of different values and are higher in Fig 22 than in Fig 19.

3.5 Legend is incorrect in Fig 19 as blue line is labelled as BMT and red line as North, which does not refer to Paediatric patients.

3.6 Both graphs are described as using BSI/ 1000 days data for environmental relevant organisms and the Y axis have the same scale 0- 25.

3.7 Graph Fig 22 shows peaks and troughs of BSI, with peaks seen at Yorkhill which were narrower with more troughs below 5% BSI incidence rate.

3.8 It is worth noting that the troughs at RHC are higher (2017-2020) than Yorkhill, showing that the BSI incidence was controlled at a lower level at Yorkhill.

3.9 Reduction of BSI in 2015 post move then increase seen in 2016. This was also documented in Dr Christine Peters / Kathleen Harvey- Wood Report (Bundle 19, Doc 19, P 143), with a maximum peak seen in 2018 at RHC which correlates with the documented water incident.

3.10 Following interventions introduced late 2018 and the move back to the refurbished SCH unit in March 2022 - BSI infections fall post 2018 and in 2022, falling to levels similar to 2015 when the patients were first transferred to RHC when the hospital opened.

3.11 Of interest is the trend lines described as “fitted line showing change over time” - this can be seen to be decreasing in Yorkhill prior to the move and a stepwise jump after the move.

3.12 Both the trend lines for Yorkhill and RHC are on a downward trajectory. The trend line before Yorkhill moved is lower than the RHC trend line after the move.

P119 - bullet point 2 authors conclusion:

3.13 “2 fold decrease in incidence of cases and bacteraemia attributed to environmentally relevant microorganisms following transfer of services to QEUH from Yorkhill ”

3.14 The conclusion made in the second bullet point in page 119 drawn from Fig 22 graph, the interpretation of the data made by the authors bears no resemblance to the accuracy. The decrease is from late 2018 onwards and is due to many interventions and mitigations which I have discussed in my response to other questions.

I have also reviewed other graphs of BSI incidence. 7.2.7 P94

3.15 Data is obtained on bed days where available from Jan 2005 to Dec 2022 for RHC. Should read: Data is obtained on bed days were available from Jan 2005 to June 2015 for Yorkhill and June 2015 to Dec 2022 for RHC. Yorkhill moved to RHC/ QEUH on 15th June 2015.

3.16 Why were bed days used as a denominator for BSI, as at Yorkhill patients remained in hospital for longer, different chemotherapy regimens and antibiotics were available at that time. Now have newer chemotherapy and monoclonal antibody regimens and new antibiotics to treat environmental infections. Patients may have other complications which would lengthen the bed stay time such as a concurrent viral infection eg during HINI epidemic in 2009, Adenovirus, Cytomegalovirus (CMV), Epstein-Barr virus (EBV), post bone marrow transplant. Now have new antiviral drugs available for treatment (5)

3.17 Haemo-Oncol patients have a higher risk of contracting viruses because their immune systems are suppressed so are at a greater risk of complications.

3.18 Many treatment protocols that a decade ago would have required hospital admission can now be given on a day care basis so have less bed days. Adjustments of standard of care to shorten hospital treatment include outpatient therapy and switching to oral antibiotics allowing earlier discharge.

3.19 More paediatric Haemo-oncology patients now also attend day care which is an area in the SCH ward (also there was an area in ward 6ADC QEUH when the ward was transferred to QEUH).

3.20 The patients attend for chemotherapy, iv antibiotics, blood samples are taken. There is now a Paediatric outpatient parental antibiotic therapy (OPAT) service at RHC (6). Intravenous antibiotics can be given once daily as an outpatient. Day care cases are also exposed to environmental organisms. A BSI may be acquired from a day care visit.

3.21 Aware that the incidence of bacteraemia rates by 1,000 beds is often measured in hospitals and is a standard for HCAIs. This helps track the rate of BSI in relation to the total number of patient days spent in the hospital. Is this the appropriate denominator for defining the incidence of environmental Infections?

What was the definition of a BSI used - how many days after admission?

P94, Fig 17. Graph title: "Incidence of all cases of bacteraemia among paediatric patients over the study period".

3.22 The graph shows incidence of ALL bacteraemia and the results of all years 2005-2022. Y axis is labelled as bed days (per 1,000).

3.23 Authors comment "At time of move to QEUH, bacteraemia incidence was similar to rates at Yorkhill but steadily declined from early 2018 onward."

3.24 No description of the period from 2016 after the move to the peak in 2018. Graph shows a decline from late 2018.

7.2.8 P 95 Section Heading "Bacteraemia attributable to environmentally relevant microorganisms in Paediatric patients in GGC".

3.25 Title of the section is loosely descriptive: Does this include all Paediatric patients in GGC and not just the Haem/Oncology patients only? There were paediatric patients in a children's ward at Royal Alexandra Hospital (RAH), the paediatric ward is now closed.

3.26 They looked at the of incidence of environmentally relevant bacteraemia cases as shown in **P95 Fig 18 Graph** title: "Incidence of bacteraemia from

organism of potential environmental concern among paediatric patients over the study period."

3.27 As for tables - vague definition of "environmental concern"

3.28 The blue line should be labelled RHC/ QEUH and not BMT.

3.29 The years are presented in a 2-year interval scale on the X axis compared with yearly interval scale on the X axis as in Fig 17 Graph. Intervals start at 2004 when there was no data.

3.30 If the X axis was spaced out the peaks would be clearer. The Y axis scale has also different labelling and intervals compared with graph. Fig 17(0-50) which makes direct comparison more difficult. There were peaks and troughs of BSI infections at Yorkhill but the peaks were not prolonged and actions were taken. The RHC peak in 2018 is a double peak and includes the year 2019.

3.31 The graph is described as showing BSI "Steadily declines from 2018 onwards". This suggests that whatever factors are influencing bacteraemia incidence overall are also having an impact on bacteraemia attributable to environmental relevant pathogens. Further suggesting that the environment is unlikely to be playing a significant role" Would expect a decrease in BSI in 2015 as patients have moved into in a new clean hospital with single rooms, improved treatment practices, line care, new Hickman line products and sites.

3.32 Again as for Fig 17, there was no description given of the period from 2015 to the peak at 2018.

3.33 In 2018 there were further interventions - a new guideline on line management was introduced and the Central Line Associated Bacterial Infections(CLABSI) Group which was set up in May 2017 started to show improvements in resolving BSI by late 2018. Chlorine dioxide was added to the water, hot and cold-water temperatures were monitored, POU filters were added to the taps (mid 2018), metal parts inside the taps were replaced with plastic ones.

What is meant by an 'Outbreak'

4. At section 2.2 the authors of the HAD report discuss what is meant by an outbreak. Do you have any comment on their approach either in general or by reference to the application of such an approach from your perspective as a clinical scientist?

A.

4.1 In my perspective as a Clinical Scientist, I would refer to the National Infection Prevention and Control Manual NIPCM (Last updated:15 May 2023). Chapter 3-Healthcare Infection Incidents, Outbreaks and Data Exceedance (7) and Appendix 13 (8).

4.2 My responsibility was to inform the IPCT by telephone or email of 2 cases of the same organism (species level) isolated from SCH patients or if the laboratory results showed an increase in the number of cases as described in the NIPCM: A healthcare associated infection outbreak

a) Two or more linked cases with the same infectious agent associated with the same healthcare setting over a specified time period.
   or
b) A higher-than-expected number of cases of HAI in a given healthcare area over a specified time period. A healthcare infection data exceedance

c) A greater than expected rate of infection compared with the usual background rate for the place and time where the incident has occurred.

4.3 Following the detection of an outbreak the IPCT should undertake an initial assessment using the Healthcare Infection Incident Assessment Tool (HIIAT).

4.4 Detection and recognition of a Healthcare Infection incident/outbreak or data exceedance.

4.5 An early and effective response to an actual or potential healthcare incident, outbreak or data exceedance is crucial. The local Board IPCT and HPT should be aware of and refer to the national minimum list of alert organisms/conditions listed in Appendix 13" (8).

4.6 In addition there is the GGC Outbreak and Incident Management Plan (9).

4.7 The HAD report P20 refers to "two or more cases of infection caused by genetically distinct micro-organisms". They mention that the "genetic sub typing is slow". However, it is not feasible or practical to wait for typing results and 2 cases should not be ignored and the first 2 isolates should be sent for typing. I would consider it important for IPCT to act on and investigate an "outbreak" if 2 organisms of the same species were isolated in time and place before another case is found, as waiting would put patients at risk. I would also refer to Appendix 13 (8), which is regularly reviewed. This was not referred to by the HAD Report.

4.8 Environmental bacteria are not "normally" associated with Hospital Acquired Infections (HAI) and interestingly since the problems at RHC, 3 additional environmental organisms have been added to Appendix 13 (8) , P3 Table 1, Section Environmental Bacteria - previously 4 organisms were listed, have added the environmental bacteria: Chryseomonas indologenes, Cupriavidus pauculus, Sphingomonas.spp., so now 7 environmental organisms are listed.

4.9 In addition Appendix 13 has been updated to v3.3 15 May 2025 and includes Non-Tuberculous Mycobacteria (NTM) also known as environmental mycobacteria that are "more likely to be encountered" e.g. Mycobacterium chelonae and Myocbacterium abscessus.

4.10 The HAD report refers to the source of BSI infections from the gastrointestinal tract. Faecal/ oral route and gut colonisation. This would be considered as an endogenous infection and NOT related to the environment. Endogenous infections arise from microorganisms already present in the body. While exogenous infections are caused by pathogens from external sources and are

introduced from outside the body from the environment. It has been reported that we are seeing a smaller percentage of exogenous hospital acquired infections (HAI's). The majority have an endogenous origin (P.Gastmeier 2020) (10), which has not been the case in the QEUH, where the increase in infections were exogenous.

4.11 HAD Report P22 "environmental bacteria occur widely in the general environment" and refer to a publication by S.Khan et al (2016) (11).

4.12 Tap water was collected from residences in Glasgow, what post codes? - not given, was hot or cold water sampled?

4.13 Both gram negative and gram positive organisms were confirmed in the tap water.

4.14 Cupriavidis, Sphingomonas and Burkholderia spp (11) (table 2) were found in low levels in domestic water supply.

4.15 No Steno.maltophilia, Ps.aeruginosa, Acinetobacter, Serratia, Chryseobacterium, or Elizabethkingia were found.

4.16 The paper discusses antibiotic resistant bacteria prevalence found in municipal drinking water and not in hospital water. The aim of the study was to look for presence of resistance genes using PCR methodology.

4.17 I am not sure of the relevance of this publication as to "what is meant by an outbreak".

4.18 However patients are exposed to hospital water stored in tanks and hospital plumbing systems. The important point to make is that these are Haemotology/ Oncology patients who are immunosuppressed, on chemotherapy and have lines in situ.

4.19 Point of use filters (POU) are now fitted on the taps should filter out these organisms (12) (13 - Fig1).

Polymicrobial BSI

5. Can you assist the inquiry as to whether there was any change in the number of patients presenting with multiple microorganisms in a single blood culture (that might be referred to as polymicrobial BSI) between Schiehallion at Yorkhill and Schiehallion at the RHC?

A.

5.1 As I am retired and no longer employed by NHSGGC, I am unable to obtain or access the data on BSI results prior to 2014 to compare SCH at Yorkhill and SCH at the RHC.

5.2 From memory I was not aware of there being a problem with multiple micro-organisms isolated from blood cultures taken from Haem/ Oncol patients at Yorkhill prior to the move.

5.3 However, there were 11 mixed blood cultures in 2014. Blood cultures with more than one organism post move of the SCH Unit to RHC/ QEUH are shown in the in Graph: Number of mixed blood cultures per year (CP/KHW Report Bundle 19, Document 19, page 148): of note it is the significant increase (as shown by the standard deviation bars) from 11 mixed blood cultures in the first year after the move to QEUH site in 2015, to 36 blood cultures in year 2016- 2017 and 40 blood cultures in 2017-2018. This was of concern, with some blood cultures isolating 3 or 4 different environmental organisms.

5.4 The HAD Report has produced no data on the mixed blood cultures/ BSI infections.

Positivity rates in Blood Cultures seen at Yorkhill

6. Please refer to the October 2018 draft Report (Bundle 19, Document 19, Page 143) and the earlier presentation (Bundle 27 Volume 6, Document 9, page 107) that you prepared with Dr Peters. Do you hold any data showing the

‘positivity rates in Blood Cultures seen” at Yorkhill prior for any of the period from January 2005 to June 2014? If so, can you produce a chart (with associated data tables) covering that period in the same format as the chart at Bundle 19, Document 19, Page 146 and interpret that data for the Inquiry?

A.

6.1 As I am retired from NHSGGC , I hold no data and have no access to the laboratory telepath system to enable me to gather the data of the blood culture results from the period Jan 2005 to June 2014 or to produce a chart of the percentage positive blood cultures prior to June 2014 in the same format as the chart in Bundle 19, Document 19, page 146.

Scope of the HPS Reviews

7. Please refer the minute of the PICU IMT meeting on 6 June 2018 which makes reference to an increased incidence Acinetobacter within PICU at which you were present. (Bundle 1, Document 25, P105 – 108) . Was there any discussion at this meeting or any other point in 2018 of the need to extend any analysis of historical infection rates back to 2005 in order to capture the incidence and cases of bacteraemia attributed to environmentally relevant microorganisms at Yorkhill back to that date?

A.

7.1 PICU IMT was held due to the increased incidence of Acinetobacter within PICU. From memory the Acinetobacter infections were isolated from Bronchoalveolar lavage (BAL) samples and not BSI. The remit of the IMT was to investigate the source of the infections, swabbing of sink drains and removal of 3 trough sink drains. The issue of sharing equipment and staffing levels were also discussed.

7.2 There was no discussion at this IMT regarding a look back exercise to extend the analysis of infection rates back to 2005, in order to capture the incidence and cases of bacteraemia attributed to environmentally relevant

microorganisms at Yorkhill back to that date (and was not documented in the minutes) or as far as I can remember at any other point in 2018.

7.3 PICU Consultants were emailed a monthly excel spreadsheet with the positive blood culture results and percentage positive blood culture rate from PICU patients. In addition, an annual report of the positive blood cultures, number of blood cultures taken from the patients and percentage positivity rate for the year was also emailed. This data was produced (also for PICU, Yorkhill Hospital) and emailed by myself as part of my clinical liaison responsibilities for PICU.

Additional information to assist the Inquiry

8. The Inquiry is attempting to understand the extent to which it can be said that the adequacy of ventilation, water contamination and other issues have or have not adversely impacted patient safety and care at the QEUH/RHC. Do you have any further information that you have not yet given the Inquiry that you consider would assist the Inquiry in understanding that issue?

A.

8.1 In my opinion the adequacy of ventilation, water contamination and other issues HAVE adversely impacted on patient safety and care at QEUH/ RHC.

8.2 In answering this question, I have raised more questions than answers and as to why the HAD Report states P95 7.2.8 “Further suggesting that the environment is unlikely to be playing a significant role in harbouring and transmitting pathogens to paediatric patients “

8.3 In the Had Report (Tables 11A- 11F), it is not clear if they just looked at BSI infections in Haematology/ Oncology patients. But have concluded that this applies to paediatric patients without the data to support this finding.

8.4 Have the authors interpreted this from the graphs (Fig 17, Fig 18 &19)? **If the findings of the HAD Report have shown that there is no environmental**

source and no increase in BSI infections at QEUH/ RHC why then were there:

a) IMT's to discuss BSI infections and an increase in positive blood cultures (CP/KHW Report Bundle 19, Vol 9, Page 143 -167)
b) The introduction of Point of use filters put on the taps, which are still in use today in some wards RHC and including in the QEUH adult hospital.
c) Shower heads and taps changed to different manufacturer.
d) Chlorine dioxide added to the water storage tanks and water system in both hospitals and this is still being performed now.
e) Hydrogen Peroxide Vapour (HPV) cleaning of Wards 2A and 2B (IMT 06.06.18 Bundle 1, Doc 24, p99-104). This was performed twice in June 2018. HPV was used in other wards in RHC eg PICU, NICU.
f) Drain cleaning with Actichlor to treat a source of environmental bacteria linked to drains. Links in time, place and person (see question 4).
g) Cupriavidius was found in drains (14) (15). Drain testing also isolated Sphingomonas, Kleb.oxytoca, Pantoea and Kluyvera.
h) SCH patients were given antibiotic prophylaxis - Ciprofloxacin, due to the risk of infection with environmental organisms.
i) Why then was the SCH unit closed to new admissions and patients transferred to ward 6A/4B in the adult QEUH hospital on 26.09.18?
j) Patients were transferred to other Paediatric Hospital in Edinburgh and Paediatric ward, Aberdeen 02.08.19.
k) NIPCM Chapter 4 - Infection Control in the Build Environment and Decontamination (16) now includes POU and water testing added to the manual due to the water issues at QEUH /RHC is now a Scotland wide guideline.

Ventilation

a) Rooms in SCH (2A/2B) were very humid before the refurbishment. I experienced this myself when on the ward and they had a fan in the doctors' room.

b) Unable to control the temperature in the QEUH/RHC hospitals. This is still a problem even today as patients have to ask for a fan in the room as they are too warm and humid. Humidity and uncontrolled temperature are ideal conditions for environmental organisms to thrive.
c) SCH ward (before refurbishment) had 3 air changes per hour when the hospital was built which should have been 10 air changes per hour. General wards should have 6 air changes per hour.

Why were the SCH unit wards 2A & 2B, RHC closed and refurbished if the environment is unlikely to be playing a significant role in harbouring and transmitting pathogens?

a) The unit was closed for 3 and a half years from Sept 2018 to March 2022 at a cost of £8.9 million. The refurbished ward has now its own ventilation system units separate from the rest of the hospital. Hepa filters were installed and air changes are now 10 per hour.
b) The opening of refurbished SCH unit was covered by the press and TV. STV video (17) reports that Tom Steele is “happy with the air, heating, water and that the systems have gone through due diligence”.
c) The Microbiology Department was not involved in environmental screening prior to the opening of the unit and NHS Scotland Assure did not sign off the re-opening.
d) Prof Brenda Gibson has commented in her witness statement (12.06.23 P56 Paragraph 240) that since returning to the refurbished ward (March 2022) infections have reduced dramatically. “If there was a problem this has resolved”.
e) This reduction in BSI from 2022 can be seen in both the HAD report graphs and tables.
f) Only 2 Fungal species were included in the environmental BSI cases tables 11A- A11F. (g) Air sampling was routinely performed (weekly) in the SCH Unit at Yorkhill Hospital and SPC charts produced and reported. This air

sampling service was transferred to the Microbiology Dept at GRI, when the Clinical Scientist responsible retired in 2013.

g) H. Kennedy et al 2011 (18), the authors note that patients at the highest risk of invasive fungal infections (stem cell transplant) should be nursed in cubicles with HEPA filtration which has been shown to effectively reduce spore counts.
h) As far as I am aware air sampling is not being performed in the refurbished SCH ward since it re-opened and there is no routine programme of air sampling.
i) PICU, RHC: concerns with infections in PICU and ventilation specification. After the Royal Hospital for Children & Young People, Edinburgh opening was cancelled 24 hours before it was due to open, PICU, RHC was then reviewed and ventilation upgraded.

Current ongoing issues

a) Why are there ongoing problems in QEUH/ RHC if the “infections show no link to the environment”?
b) There have been incidences where the hospital water was still not to be used as recently as this year, when a probe into the water was found to still be unsafe, 7 years after the water incident in 2018 (19).
c) Staff have had to use hand gel as the water was not safe due to high levels of Chlorine dioxide in the hospital water system (20).

Summary

8.5 In summary, due to the inadequacy of the ventilation, water contamination, increase in environmental BSI infections and the impact on patient safety the above mentioned mitigations were required to be put in place, which were effective in reducing the cases of BSI infections.

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Fig 1

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Declaration

I believe that the facts stated in this witness statement are true. I understand that proceedings for contempt of court may be brought against anyone who makes, or causes to be made, a false statement in a document verified by a statement of truth without an honest belief in its truth.

Signed: [redacted] Print name: KATHLEEN HARVEY-WOOD

Appendix A

A43255563 - Bundle 1 – IMT Minutes

A48381842 - Bundle 19 – Documents Referred to in the Quantitative and Qualitative Infection Link Expert Reports of Sid Mookerjee, Sara Mumford & Linda Dempster.

A49871632 - Bundle 27, Volume 6 – Miscellaneous Documents

A52317814 - Bundle 44, Volume 1 – NHS GGC Expert (HAD Report)

Scottish Hospital Inquiry

Glasgow 4 Part 2
Questionnaire for 'Consequential Witnesses'
Jennifer Rodgers

The Inquiry has decided to hear the evidence of Professor Hawkey, Dr Agrawal and Dr Drumwright in respect of their report on the evidence of risk of infection from the water and ventilation systems at the QEUH/RHC ("the HAD Report") [Bundle 44, Volume 1, Document 1, Pages 5 to 223]. As a consequence, the Inquiry is seeking further evidence from certain witnesses who previously gave evidence in Glasgow 2 or Glasgow 3.

You have been identified as someone likely to have direct knowledge of key issues arising from that report. To assist in gathering this information effectively, we have provided you with a short questionnaire. This includes questions tailored to your prior involvement, along with access to relevant documents in the Objective Connect space, including Bundle 44, Volume 1 (the report by Professor Hawkey, Dr Agrawal, and Dr Drumwright), and Bundles 6 and 7. We ask that you respond to each question as fully as possible, to help ensure the Inquiry's understanding is accurate and complete.

To answer the questions please type your answer in the answer area marked [Type your answer here] below the question, you will note that your type comes up in a different font from that of the question – this is to allow your answer to be read with ease.

Please do not insert pictures or documents into your written answers. All our hearing bundles are on our website https://www.hospitalsinquiry.scot/. If you would like to refer to a document within our bundles which captures your answer to the question, then please refer to the relevant document in the format (Bundle X, Document Y, Page Z).

If you wish to refer to your own document, then describe the document in your statement, list all such documents at the end of the statement and provide us with a copy of that document in order that we can process the document in accordance with Inquiry protocols.

Your work at Yorkhill

1. Whilst you have already provided a detailed CV in your earlier statement. Please could you summarise your connection to, involvement with or association with the paediatric haemato-oncology service in the Schiehallion Unit at Yorkhill from 2005 to 2015 and the extent of your experience/knowledge/understanding of environmentally relevant bacteraemia at Yorkhill?

A. As detailed in my CV, previous statement and oral evidence to the inquiry, following a time as Senior Charge Nurse, then Quality Lead I commenced the Lead Nurse post at Yorkhill Hospital in November 2013. The Shiehallion Unit was one of the areas within my Lead Nurse portfolio alongside other wards,

departments, and services. I provided line management and professional leadership for the Senior Charge Nurses within my areas of responsibility. I went on Maternity leave in October 2014 and returned to the Chief Nurse role following the move to RHC in September 2015.

Within the Lead Nurse role at Yorkhill, I had a good knowledge and understanding of infection prevention and control practice, line care and the clinical risks from bacteraemia. I do not recall there being data reporting on environmentally relevant bacteraemia at that time.

Incidence of environmentally relevant bacteraemia cases at Yorkhill

2. Please review the list of 'microorganism species of environmental concern' from 2005 to 2022 listed in Tables 11A to 11F of the HAD Report (Bundle 44, Volume 1, Pages 97 to 106) and the conclusion of the authors expressed on page 109 of the bundle that refers to the "significantly higher number of cases observed historically when the haemato-oncology paediatrics service was located at Yorkhill compared with QEUH cases". On the basis of your expertise and experience, to what extent would you accept that there was a significantly higher number of environmentally relevant bacteraemia cases in the paediatric haemato-oncology patient population at Yorkhill from 2005 to 2015 compared to the QEUH/RHC from 2015 to 2022? Please explain the basis of your answer.

A. I have no reason to doubt the content of the tables provided. I do not have access to the raw data or clinical details but would be content to review if provided by the inquiry

Rate of change of incidence of environmentally relevant bacteraemia cases between Yorkhill and QEUH/RHC

3. Please review Figure 22 of the HAD Report and the text discussing it (Bundle 44, Volume 1, Pages 116 to 119) and the conclusion of the authors in the second bullet point on page 119 that "Among paediatric haemato-oncology patients, we see an ~2 fold decrease in incidence and cases of bacteraemia attributed to environmentally relevant microorganisms following transfer of services from Yorkhill to QEUH; lower incidence at QEUH was statistically significant". To what extent is this conclusion consistent with your experience at Yorkhill and subsequently at the QEUH/RHC? Please explain the basis of your answer.

A. From memory, during my period as a Lead Nurse at Yorkhill I recall line infections occurred, these were discussed between clinicians with support from clinical scientists at appropriate unit meetings. I do not have access to any records from these meetings. In reference to the RHC reduction in incidence of central line infections, this was in the context of the focussed CLASBSI Quality

Improvement Group work which commenced in early 2017 and is described in my previous statement paragraphs 86-110

Comparison between the susceptibility of adult haemato-oncology patients and paediatric haemato-oncology patients to bacteraemia attributed to environmentally relevant microorganisms.

4. From your own professional expertise are you able to assist the Inquiry as to the extent to which it is appropriate to consider that adult haemato-oncology patients as a class and paediatric haemato-oncology patients as a class have a similar susceptibility to bacteraemia attributed to environmentally relevant microorganisms?

A. In my professional experience babies and children have additional risk factors when compared to the adult population not discounting the well documented differences in the physiology and pathophysiology of the child / adult. Additional factors include simply the age and stage of a child. They may be crawling on the floor, central line dragging, or being close to or tucked into their nappy. Young children explore their world with small hands going everywhere then tugging, pulling or poking at their line or line dressing. Families and staff work to mitigate these risks, but they are often not fully eradicated.

Specific infections of microorganism species of environmental concern at Yorkhill from 2005 to 2015

5. Accepting that much time has passed please review the list of 'microorganism species of environmental concern' from 2005 to 2022 listed in Tables 11A to 11F of the HAD Report (Bundle 44, Volume 1, Pages 97 to 106). Can you recollect any details of any of the investigations into the infections there listed at Yorkhill from 2005 to 2015 and whether any that occurred after the publication of the National Infection Prevention and Control Manual in 2012 were investigated as 'healthcare infection incidents' and/or reported to HPS?

A. I cannot recall any IMTs specifically around line infections for Schiehallion at Yorkhill in the time period I was Lead Nurse. My recollection is that line infections were discussed locally at multidisciplinary team (MDT) and unit meetings. The Incident & Outbreak chapter of the National Infection Prevention and Control Manual did not exist until 2016 therefore at that time processes differed, both in terms of Incident Management and reporting requirements to HPS.

IPC practice in the Schiehallion Unit at Yorkhill from 2005 to 2015

6. Accepting that much time has passed can you assist the Inquiry by giving an assessment of the extent to which at the Schiehallion Unit at Yorkhill from 2005 to 2015 the investigation of bacteraemia cases from potentially environmentally relevant microorganisms such as those listed in Tables 11A to 11F of the HAD Report (Bundle 44, Volume 1, Pages 97 to 106) (a) formed a part of IPC practice, (b) were the subject of investigation by the IPC team and/or (c) were reported to HPS?

A. This question would be better directed to the IPC team.

Awareness of risk of bacteraemia from potentially environmentally relevant microorganisms at Yorkhill from 2005 to 2015

7. Accepting that much time has passed can you assist the Inquiry by giving an assessment of the extent to which the awareness of and management of the risk of bacteraemia from potentially environmentally relevant microorganisms was a significant part of practice at the Schiehallion Unit at Yorkhill from 2005 to 2015?

A. In terms of nursing practice, even prior to the data collection period of this report (pre-2005) a general understanding of infection risk and focus on education, practice and standards for line care had been in place.

At that time nurses may not have been fluent in the named environmental microorganisms, but they would have been aware of the risks, how to carry out aseptic technique and how to react to the symptoms of a potential infection.

Nurses would receive specific training to access central lines in Schiehallion and other areas within Yorkhill. They would be assessed as competent by an educator / appropriately trained professional prior to being able to independently access central lines

CLABSI in the Schiehallion Unit at Yorkhill from 2005 to 2015

8. Accepting that much time has passed can you assist the Inquiry by giving an assessment of the extent to which at the Schiehallion Unit at Yorkhill from 2005 to 2015 any particular efforts were made to promote line safety of the sort later carried out at QEUH/RHC under the CLABSI (Central Line Associated Blood Stream Infections) from 2016?

A. Around 2010 onwards I recall the concerted national effort to improve safe, high quality care across Scotland and to implement the Scottish Patient Safety Programme (SPSP) Bundles.

The publication of the Francis Report early in 2013 and the Berwick report later that year highlighted the need for the NHS to build safe services driven by utilising data and improvement science within a culture of learning and transparency. At Yorkhill we worked to introduce and build data sets and reporting systems on the care bundles set out by the national paediatric safety programme including Peripheral Venous Line (PVL) insertion and maintenance; Paediatric Early Warning Scoring (PEWS); Ventilatory Associated Pneumonia (VAP) and SBAR communication. Linked to these were the introduction of Active Care Rounding, Safety Huddles and person-centred care approaches.

The Schiehallion unit was involved in all this work.

I recall the Advanced Nurse Practitioner within Schiehallion staying close to any issues arsing around central lines and working alongside the nurse educators and nursing team to implement any required changes to practice, policy or education.

At that time central line bundles for paediatrics did not exist within the national SPSP programme, but I recall we began designing and testing these at ground level initially within the Neonatal Intensive Care Unit.

In the years that followed the understanding of line infections, in general terms shifted from being something viewed as being (despite best efforts) a potentially unavoidable consequence of treatment to then having in place ‘bundles’, techniques and approaches to further minimise those risks and therefore reduce the overall infection burden.

This time period and onwards was pivotal in a change of approach to safety, quality, scrutiny, assurance and reporting which positively impacted infection rates not just in this cohort but more generally.

Scope of the Reviews by HPS

9. Please refer to paragraph 146 of your statement which addresses the IMT meeting on 6 June 2018 at which you were present and a proposed piece of work by HPS (Bundle 1, Document 24, Pages 99 to 104). Was there any discussion at this meeting or any other point in 2018 of the need to extend any analysis of historical infection rates back to 2005 in order to capture the incidence and cases of bacteraemia attributed to environmentally relevant microorganisms at Yorkhill back to that date? If there was, please describe who was involved and produce any records you have of such discussions or meetings?

A. I recall the meeting on 6th June 2018. My understanding was HPS had been commissioned to undertake a review by Scottish Government. The review was to include historical data from Yorkhill, current data from RHC as well as benchmarking against similar populations in NHS England. HPS were setting the scope for the review and would let us know what was required. At a later date, Dr Iain Kennedy undertook detailed work to review the historical bacteraemia types and incidence at Yorkhill. That data was discussed at IMTs and several other meetings. Dr Kennedys data and the IMT minutes are held by the inquiry.

Additional information to assist the Inquiry

10. The Inquiry is attempting to understand the extent to which it can be said that the adequacy of ventilation, water contamination and other issues have or have not adversely impacted patient safety and care at the QEUH/RHC. Do you have any further information that you have not yet given the Inquiry that you consider would assist the Inquiry in understanding that issue?

A. No further information to add at this time.

Declaration

I believe that the facts stated in this witness statement are true. I understand that proceedings for contempt of court may be brought against anyone who makes, or causes to be made, a false statement in a document verified by a statement of truth without an honest belief in its truth.

Signed: [redacted] Print name: JENNIFER RODGERS MBE

Scottish Hospital Inquiry

Glasgow 4 Part 2
Questionnaire for 'Consequential Witnesses'
Prof Brenda Gibson

The Inquiry has decided to hear the evidence of Professor Hawkey, Dr Agrawal and Dr Drumwright in respect of their report on the evidence of risk of infection from the water and ventilation systems at the QEUH/RHC ("the HAD Report") [Bundle 44, Volume 1, Document 1, Pages 5 to 223]. As a consequence, the Inquiry is seeking further evidence from certain witnesses who previously gave evidence in Glasgow 2 or Glasgow 3.

You have been identified as someone likely to have direct knowledge of key issues arising from that report. To assist in gathering this information effectively, we have provided you with a short questionnaire. This includes questions tailored to your prior involvement, along with access to relevant documents in the Objective Connect space, including Bundle 44, Volume 1 (the report by Professor Hawkey, Dr Agrawal, and Dr Drumwright), and Bundles 6 and 7. We ask that you respond to each question as fully as possible, to help ensure the Inquiry's understanding is accurate and complete.

To answer the questions please type your answer in the answer area marked [Type your answer here] below the question, you will note that your type comes up in a different font from that of the question – this is to allow your answer to be read with ease.

Please do not insert pictures or documents into your written answers. All our hearing bundles are on our website https://www.hospitalsinquiry.scot/. If you would like to refer to a document within our bundles which captures your answer to the question, then please refer to the relevant document in the format (Bundle X, Document Y, Page Z).

If you wish to refer to your own document, then describe the document in your statement, list all such documents at the end of the statement and provide us with a copy of that document in order that we can process the document in accordance with Inquiry protocols.

1. Your professional practice at Yorkhill

Whilst you have already provided a detailed CV in your earlier statement. Please could you summarise your connection to, involvement with or association with the paediatric haemato-oncology service in the Schiehallion Unit at Yorkhill from 2005 to 2015 and the extent of your experience/knowledge/understanding of environmentally relevant bacteraemia at Yorkhill?

I was a Consultant Paediatric Haematologist on the Schiehallion Unit, Yorkhill between 2005 and 2015. I was Head of the Department, Programme Director of the Bone Marrow Transplant Programme from 2011 onwards when the programme was

first JACIE accredited and Director of the Haemophilia Unit for some time.

Paediatric Haematology- Oncology – both malignant and benign - relocated in 1996 from a general paediatric ward to a refurbished Unit in an area which had been vacated by Child and Family Psychiatry. It was named the Schiehallion Unit. I don't remember the source of funding but my aim with this move was three-fold: (1) to provide a safe environment for immunocompromised patients where they were not exposed to children admitted to a general ward with transmissible infections, primarily viral , who posed a risk to them; (2) to provide cubicle accommodation with en-suite facilities for isolation; and (3) to accommodate the entire multidisciplinary team recognising that treating children with a live threatening disease requires a team. The Unit consisted of two adjacent wards – an inpatient and outpatient facility, accommodated medical staff; nursing staff- ward, outreach, research; pharmacy; social work; data management/ administration; a class room and a parent suite of three bedrooms, a sitting room and a kitchen. This is what came to be known as the family of Schiehallion.

Between 2005 and 2015 I was responsible for the leukaemia service and the transplant programme. It has already been accepted that these are the patients at greatest risk of bacterial and fungal infection because of their profound and lengthy neutropenia and exposure to steroids. I would therefore have been aware of most, if not all, positive blood cultures.

I had an understanding of Infection Control to the level expected of a consultant in my position, but I had no expert knowledge of Infection Control. A Clinical Scientist from Microbiology carried out air sampling / environmental monitoring including laying plates to monitor for fungal infection. We had a very good relationship with her and daily communication. She would have made us aware of all positive blood cultures and any environmental concerns. In addition I remember her being accompanied to our meeting by a colleague on a Friday lunchtime when all positive microbiology was discussed.

I don't recall any serious concerns that the environment was unsafe. I do acknowledge that we saw positive blood cultures with organisms considered environmental However, as a clinician responsible for treating these infections/children my focus was on their pathogenicity and the vulnerability of the child rather than the source of infection. That was the responsibility of Infection Control.

I would add that 2005 is 20 years ago and remembering detail is difficult.

2. Incidence of environmentally relevant bacteraemia cases at Yorkhill

Please review the list of 'microorganism species of environmental concern' from 2005 to 2022 listed in Tables 11A to 11F of the HAD Report (Bundle 44, Volume 1, Pages 97 to 106) and the conclusion of the authors expressed on page 109 of the bundle that refers to the "significantly higher number of cases observed historically when the haemato-oncology paediatrics service was located at Yorkhill compared with QEUH cases". On the basis of your expertise and experience, to what extent would you accept that there was a significantly higher number of environmentally relevant bacteraemia cases in the paediatric haemato-oncology patient population at Yorkhill from 2005 to 2015 compared to the QEUH/RHC from 2015 to 2022? Please explain the basis of your answer.

The data are the data and if correct, they suggest that there were more environmental infections at Yorkhill than QEUH. The numbers for Yorkhill span almost 11 years against 7 years QEUH. The difference, although still in favour of QEUH, is less marked when corrected for bed days. This would not have been my impression and I am surprised that this is what the data suggests. Comparing the relative number of infections by site, I would previously have considered all positive blood cultures of concern rather than just those considered / determined as environmental. I think that I remember a senior nurse keeping a database of all blood cultures. However this could not be transferred to RHC/QEUH because the IT department could not support the system

3. **Rate of change of incidence of environmentally relevant bacteraemia cases between Yorkhill and QEUH/RHC**

Please review Figure 22 of the HAD Report and the text discussing it (Bundle 44, Volume 1, Pages 116 to 119) and the conclusion of the authors in the second bullet point on page 119 that "Among paediatric haemato-oncology patients, we see an ~2 fold decrease in incidence and cases of bacteraemia attributed to environmentally relevant microorganisms following transfer of services from Yorkhill to QEUH; lower incidence at QEUH was statistically significant". To what extent is this conclusion consistent with your experience at Yorkhill and subsequently at the QEUH/RHC? Please explain the basis of your answer.

This finding of a 2 fold decrease in infection rates at QEUH is not consistent with my impression as a clinician working on these Units. However if this data are correct it suggests that there was a decreased incidence of infection from environmental organisms at QEUH, although less marked than 2 fold when bed days are used to correct for the difference in years studied .

4. **Comparison between the susceptibility of adult haemato-oncology patients and paediatric haemato-oncology patients to bacteraemia attributed to environmentally relevant microorganisms**

From your own professional expertise are you able to assist the Inquiry as to the extent to which it is appropriate to consider that adult haemato-oncology patients as a class and paediatric haemato-oncology patients as a class have a similar susceptibility to bacteraemia attributed to environmentally relevant microorganisms?

If by class you are referring to age, I think that children may be more susceptible to infection than adults. Susceptibility to bacterial/fungal infection is related to depth and length of neutropenia, exposure to steroids and other immunosuppressants, the need for central venous access etc. Children and adults have a different disease spectrum. Adults are more likely to have chronic haematological disease and children nearly always acute disease. That determines treatment. Acute haematological disorders are more likely to require treatment which results in profound and prolonged neutropenia and steroid use. I would therefore expect the children to be more vulnerable, with the exception of transplant patients who may have an equal risk irrespective of age, because of similar lengths of neutropenia and a similar exposure to immunosuppressants.

If by class you are referring to organisms - susceptible patients will be equally at risk. However although perhaps more vulnerable to infection, children are more resilient and tolerate infection better than adults.

5. Specific infections of microorganism species of environmental concern at Yorkhill from 2005 to 2015

Accepting that much time has passed please review the list of 'microorganism species of environmental concern' from 2005 to 2022 listed in Tables 11A to 11F of the HAD Report (Bundle 44, Volume 1, Pages 97 to 106). Can you recollect any details of any of the investigations into the infections there listed at Yorkhill from 2005 to 2015 and whether any that occurred after the publication of the National Infection Prevention and Control Manual in 2012 were investigated as 'healthcare infection incidents' and/or reported to HPS?

I would not have been responsible for reporting Healthcare incidents to the HPS. I cannot recall attending an IMT or any other investigation of an infection caused by a "microorganism species of environmental concern "either before or after 2012. However, much time has passed.

6. IPC practice in the Schiehallion Unit at Yorkhill from 2005 to 2015

Accepting that much time has passed can you assist the Inquiry by giving an assessment of the extent to which at the Schiehallion Unit at Yorkhill from 2005 to 2015 the investigation of bacteraemia cases from potentially environmentally

relevant microorganisms such as those listed in Tables 11A to 11F of the HAD Report (Bundle 44, Volume 1, Pages 97 to 106) (a) formed a part of IPC practice, (b) were the subject of investigation by the IPC team and/or (c) were reported to HPS?

I can't recall any IPC investigations of infections potentially related to environmental organisms. I do not know if they were reported to HPS. Professor Craig Williams was the lead for IC and therefore there was a Control of Infection team responsible for monitoring the environment and acting on findings.

7. Awareness of risk of bacteraemia from potentially environmentally relevant microorganisms at Yorkhill from 2005 to 2015

Accepting that much time has passed can you assist the Inquiry by giving an assessment of the extent to which the awareness of and management of the risk of bacteraemia from potentially environmentally relevant microorganisms was a significant part of practice at the Schiehallion Unit at Yorkhill from 2005 to 2015?

Awareness of the risk of infection to the vulnerable patients we cared for at Yorkhill was always an important part of our clinical practice. The risk of bacteraemia from potentially environmentally relevant microorganisms was a part of this, and I would have had an awareness that the environment posed a risk and some of the organisms which were associated with water contamination. However, whenever an infection arose, as clinicians our priority was always how to best deal with this from a clinical perspective in terms of saving our patients' lives, rather than focusing on the source of infection, which was an issue for infection control. In these circumstances I would probably have been more concerned by the pathogenicity of an organism, whether it formed a biofilm, whether it was resistant to frontline antibiotics, whether the CVL should be removed, etc. For example, I can recall incidences of Pseudomonas and Stenotrophomonas at Yorkhill when we focused on getting the CVL out as soon as the patient was stable and to decide on the most appropriate antibiotics. Cotrimoxazole was the usual advice for Stenotrophomonas but because it can extend / increase the neutropenia it was not an antibiotic that the haematology team were comfortable with. Therefore, as a clinician, I can confirm that awareness and management of risk of both fungal and bacterial infections was an important part of my practice at the Schiehallion Unit at Yorkhill from 2005 to 2015. However, in terms of the source of those infections, and in particular whether they were environmental in origin would have been the remit of Infection Control. The organism causing a positive blood culture would have been identified in microbiology, the home of Infection Control, and this would then be communicated to the clinicians on the ward by a phone call from a microbiologist. I do not know whether the Infection Control team would say that management of the risk of bacteraemia from potentially environmentally relevant microorganisms

was a “significant part” of their practice on the Schiehallion Unit at Yorkhill from 2005 to 2015 but it was my understanding that it was within their remit.

8. CLABSI in the Schiehallion Unit at Yorkhill from 2005 to 2015

Accepting that much time has passed can you assist the Inquiry by giving an assessment of the extent to which at the Schiehallion Unit at Yorkhill from 2005 to 2015 any particular efforts were made to promote line safety of the sort later carried out at QEUH/RHC under the CLABSI (Central Line Associated Blood Stream Infections) from 2016?

I don’t remember there being a CLABSI group at Yorkhill. However the nursing staff who were those handling the CVLs followed the best clinical practice at that time and adopted any new recommendations.

9. Data Presented to IMTs in 2018 and 2019

Please review the Transcript of your evidence on 12 June 2023 at Col 176 when you mention that after the change of the Chair of the IMT “There was lots of data presented about rates of infections and Yorkhill and whether or no these were really any different from what we had seen since the move”. Do you have any opinion as to whether rates of infections at Yorkhill were really any different from those you had seen since the move to the RHC? What is the basis for your opinion?

Early after moving to the QEUH the clinicians did feel that they were seeing an increase in unusual gram negative bacteraemia. We thought that we were seeing organisms that we hadn’t seen before and raised this with microbiology including questioning whether this was a real change or due to something as simple as the renaming of organisms. I definitely had concerns in 2017 when we saw a number of outbreaks of viral gastroenteritis - norovirus and rotavirus -and concerns about suspected cases of fungal infection. Although the number of the latter was small, even two suspected fungal infections would have raised concerns. As clinicians we were not in a position to look back over a number of years and decide if we were seeing a true increase or a pattern of normal fluctuation. Our responsibility was to raise any potential concerns with Infection Control and allow them to decide if there was a problem or not. That is their job not ours. Ours is to treat the patient.

10. Enteric Infections

The Inquiry has heard evidence that some Bloodstream Infections (‘BSI’) can arise by breakthrough from the patient’s gut. It has been suggested that that the Inquiry would be entitled to assume that if you and your colleagues considered that one of your patients had such an infection as a result of gut breakthrough such a case would not require to be escalated to a PAG or IMT within the IPC system. Do you have a view on this?

I am not sure who would suggest this to the Inquiry and it is not correct. The need for an IMT or PAG related to an episode of infection, at least after relocation to RHC /QEUH, was decided by Infection Control and Infection Control alone. They decided on the need for the meeting, arranged the meeting and sent out the requests to attend. The clinician attended to provide a background on the patient and an update on their condition. Whilst there was discussion around the source of the infection and clearly that was important, the clinical team focused on whether the infection was line related i.e. colonising the line, forming a biofilm and unlikely to be eradicated without line removal or whether there was an alternative source for the infection ie the gut when the central line could be saved. However the two possible sources were not mutually exclusive and consensus not always reached. Infections could originate in the gut and could still colonise the line which would require removal. The IMT/PAG would try to reach consensus on the source and the need to remove the line. The removal of a central line is not the only issue – it is the establishment of peripheral venous access to deliver antibiotics before a second line can be sited. Siting of a second central line whilst there is still circulating bacteria risks infecting the second line but obtaining peripheral venous access in a small child can be very difficult. Clinicians were asked to document that they had told the parents the name of the organism and the decision re the need for line removal. If we were unable to site a peripheral line because of technical difficulties this had to be recorded. There were some instances when we knew that it would be impossible to gain further central access and because interrupting treatment was clinically unacceptable we continued to use the line with the knowledge that there was risk, but it was the lesser of the two risks.

11. Polymicrobial BSI

Can you assist the inquiry as to whether there was any change in the number of patients presenting with multiple microorganisms in a single blood culture (that might be referred to as polymicrobial BSI) between Schiehallion at Yorkhill and Schiehallion at the RHC?

I can't remember /know the respective numbers but this occurred at both sites. We considered that a definite line infection and removed the CVL. I assume that microbiology/ Infection Control can answer this with accuracy.

12. Clinical Output Specification for the Schiehallion Unit

You discuss your involvement with the planning of the new Schiehallion Unit from paragraphs 78 to 90 of your statement and the specification of the old Yorkhill Unit at paragraphs 100 to 102. The Inquiry has been provided with the Clinical Output Specification for the Paediatric Haemato-Oncology Ward (Bundle 16, Document 16, page 1599) which appears to have been produced by a date in the first half of 2009.

a) Did you or any of the clinicians within the Schiehallion team have any involvement in the production of this Clinical Output Specification?

I have no recollection of ever having seen this document, or having been involved in its production and know of no one else being involved, but clearly can't be certain.

b) To what extent does section 7 of the Clinical Output Specification adequately define the ventilation needs of the Schiehallion patient specification with reference to the need for HEPA filtration, pressure gradients and air changes?

It does not describe the ventilation needs of the Unit .There is no mention of the number of air exchanges or pressure gradients. It refers to a double door system to enter the ward. My recollection is that these were not installed although they were after the renovation.

13. Isolation Rooms September 2011

The Inquiry has an email exchange between Mairi MacLeod and Coral Brady from September 2011 (Bundle 46, Volume 3, Document 5, Pages 716 to 717) about air filtration systems in the new transplant rooms, parts of which were copied to you. Can you remember how this exchange arose and what information about HEPA filtration for the new Schiehallion Unit was reported back to you at that time?

Coral Brady was our Business Manager and Alanna McVeigh the Quality Manager for JACIE for the paediatric Transplant Unit .Transplant Units which relocate have to be re-inspected within 6 months of relocation. Ms McVeigh was asking for the information on HEPA filtration via Coral Brady for this application. To the best of my knowledge the response from Mairi MacLeod was that there was a technical team working with the Project team on this and that we would be involved when required and no further details were provided. This is what was reported back to me. These discussions were at a management / Project management level. All communication was via Mairi MacLeod and we had no direct access to the technical team.

14. Isolation Rooms July 2014

The Inquiry has an email exchange between Mairi MacLeod and Janis Hughes from July 2014 (Bundle 46, Volume 3, Doc 4, pages 713 to 715) about isolation rooms and the Schiehallion Operational Policy parts of which appear to have been p0copied to you. Can you remember how this exchange arose and what information about the numbers and types of isolation rooms for the new Schiehallion Unit was reported back to you at that time?

The number of rooms were as expected from the Schiehallion model. I think that the issue was whether or not there could be a negative pressure isolation cubicle suitable for a transplant patient with a viral infection whose excretions one would not want to be cleared into the corridor and infect other patients / relatives/staff. It is possible to have negative pressure isolation rooms for this purpose. I have read the email chain. I don't remember the role of Janis Hughes. However, I would have expected Mairi MacLeod who I assume has no expert knowledge of ventilation to have passed the query to the technical team and asked them to make direct contact. This did not happen.

15. Mr Seabourne's Email of 23 June 2016

The Inquiry has an email from Mr Seabourne who was the Project Director during Stages 1, 2 and the start of Stage 3 to Mr Hall of Currie & Brown dated 23 June 2016 in respect of the ventilation (Bundle 12, Document 104, Page 813). To what extent were you aware of the narrative set out in his email and are you able to assist the Inquiry as to whether you consider the narrative to be accurate?

I note that I was not copied into any of this email exchange and I don't know if the narrative is accurate or not.

16. Additional information to assist the Inquiry

The Inquiry is attempting to understand the extent to which it can be said that the adequacy of ventilation, water contamination and other issues have or have not adversely impacted patient safety and care at the QEUH/RHC. Do you have any further information that you have not yet given the Inquiry that you consider would assist the Inquiry in understanding that issue?

I would like to take this opportunity to explain my unhappiness with the facilities provided at the RHC which features in a number of Witness Statements and how I believe this impacted on patient care. I totally accept that I was / am the architect of a Unit believing in the merits of a team and of a close relationship / environment of staff to families / children and that the move to RHC/QEUH was sking a move to an environment of distance from essential clinical staff to patients /families.

Children and their families cared for in our Unit may be resident for a prolonged period and should be provided with acceptable family friendly accommodation, particularly when many Charities would furnish this given appropriate space. I have no recollection of signing off the plans for the Unit prior to relocation. I repeatedly refused to do so because of the inadequacy of the accommodation. However I was under great pressure to do so and may have relented under duress and some inappropriate behaviour. I note that the architect who has

written the most detailed and referenced Witness Statement cannot locate a sign off.

This had nothing to do with concerns of risks of infection related to water, drains or ventilation. I never considered that such issues would arise. I expected and trusted Facilities / Estates and Control of infection to guarantee us a safe environment.

However we were promised a like for like facility and this we did not get. There was no parent accommodation; pharmacy - one of the most important disciplines in the team was accommodated in what could as best be described as a large cupboard; there was no accommodation for Social Work; medical staff were accommodated in an office block 10 minutes at best from the ward; non-ward nursing staff used hot desking. Interaction with the Project team was unhelpful and unconstructive. Any request for more space was met with charges that our discontentment was solely due to our discontentment about the loss of Offices on the ward. We did succeed with the help of a group of parents to persuade management to convert a room into a parent's kitchen where mothers could at least make a cup of coffee, but failed to persuade Management of the clinical need to have experienced medical staff close to a vulnerable patient group – transplants - who could become critically ill very suddenly. From charitable funds we also paid for addition accommodation at Marion House which was Young Lives accommodation for our families. We lost our school room and other facilities.

In 2022 after the renovations these concerns were recognised and what changes that could be made were made. A cubicle was converted for the use of pharmacy and office space adjacent to the ward, which had been for administrative use, was given over to the Transplant team who were the group looking after the sickest patients. Edinburgh learnt from the error of the West and although medical accommodation was communal, it was located adjacent to the ward.

Declaration I believe that the facts stated in this witness statement are true. I understand that proceedings for contempt of court may be brought against anyone who makes, or causes to be made, a false statement in a document verified by a statement of truth without an honest belief in its truth.

Signed: [redacted] Print name: BRENDA GIBSON

Date : 30:7:25

Appendix A

A43255563 - Bundle 1 – IMT Minutes

A43293438 - Bundle 6 – Miscellaneous Documents

A43940545 - Bundle 7 – Reports prepared by HPS, HFS and ARHAI

A47069198 - Bundle 12 – Estates Communications

A47851278 - Bundle 16 – Ventilation PPP

A48381842 - Bundle 19 - Documents Referred to in the Quantitative and Qualitative Infection Link Expert Reports of Sid Mookerjee, Sara Mumford & Linda Dempster.

A49871632 - **Bundle 27, Volume 6** – Miscellaneous Documents

A52317814 - **Bundle 44, Volume 1** – NHS GGC Expert (HAD Report)

A52859616 - Bundle 46, Volume 3 – Correspondence on Potentially Deficient Features

SCOTTISH HOSPITALS INQUIRY

Bundle of documents for Oral hearings commencing from 19 August 2025 in relation to the Queen Elizabeth University Hospital and the Royal Hospital for Children, Glasgow

Witness Statements – Volume 2