Scottish Hospital Inquiry
Witness Statement of
Dr Dominique Chaput

Witness Details

1. My name is Dominique Chaput. I am a Healthcare Scientist in Infection Prevention and Control at NHS Greater Glasgow and Clyde and am based in the Scottish Microbiology Reference Laboratories, Glasgow (hereinafter referred to as the "Reference Laboratories"). I first joined the Reference Laboratories as a Healthcare Scientist in May 2021, and in August 2022, I moved to my current role, which is split between the NHS GGC Infection Prevention and Control Team (IPCT) and the Reference Laboratories. I have two direct line managers: the Consultant Clinical Scientist in the Reference Laboratories and the Deputy Lead Infection Control Doctor for NHS GGC.

Qualifications

2. I obtained a Bachelor of Science with First Class Honours in Biochemistry and a Minor in Mathematics from Mount Allison University (Canada). I was then awarded a Rhodes Scholarship to attend the University of Oxford, where I first obtained a MSc in Environmental Change and then a DPhil in Microbial Ecology. My doctoral work used DNA-based methods to characterise microbial communities that form biofilms in extreme environments.

Professional Background

3. After my doctorate, I moved to Washington, DC (USA) to take up the Secretary's Distinguished Research Fellowship at the Smithsonian National Museum of Natural History. My postdoctoral research focused on microbial communities and biofilms in natural and engineered water systems. I also collaborated with scientists at NASA and at the Joint Genome Institute to characterise environmental microorganisms, including by whole genome sequencing. After 4.5 years at the Smithsonian, I moved back to the UK for a postdoctoral research position at the University of Exeter, where I was the senior Postdoctoral Research Associate on a large Biotechnology and Biological Sciences Research Council-funded consortium project looking at the microbiomes of aquaculture systems in Bangladesh, Malawi and India. I have maintained ties to collaborators at various institutions in the UK and abroad and continue to publish academic papers (listed at orcid.org/0000-0002-9736-2619 and on Google Scholar). I am a peer reviewer for the journals FEMS Microbiology Ecology, Microbial Ecology,

mSphere, Soil Research, Aquatic Microbial Ecology, Transboundary and Emerging Diseases, Virus Research, and Viruses.

Role as Healthcare Scientist

4. I have held various laboratory and data analysis roles since I joined the NHS in 2021. In the Reference Laboratories, I was trained to carry out bioinformatics analysis for our routine bacterial whole genome sequencing service, including assessing the similarity of bacterial isolates and alerting Public Health Scotland of any closely-related cases. More recently, I established a pan-bacterial testing service for NHS GGC, which went live in August 2023. Prior to this, NHS GGC was sending samples to UK Health Security Agency (Colindale) for testing, as no other NHS laboratory in Scotland offers this specialist service. I oversee the day-to-day running of this service, including processing samples from receipt to final result, and coordinating a small team to ensure continuous cover. The service serves two purposes: detecting bacterial DNA directly from primary clinical samples to confirm infection, and identifying unusual bacterial isolates that the routine diagnostic laboratory obtained from clinical samples but that are proving difficult to identify by the usual methods. Finally, I provide scientific and data support to the IPCT and to the Water Safety Technical Group, for example during the recommissioning of RHC Ward 2A/2B prior to its reopening, and I maintain a research programme into the microbiology of the hospital-built environment.

Review of expert panel's position with regard to Gram negative bacteria, fungi, and mycobacterial species in paediatric haemato-oncology BSI data

Overview report

5. As further detailed below, I have produced a report, entitled, "*Overview of Gram negative bacteria, fungi, and mycobacterial species in paediatric haemato-oncology BSI data; GGC versus four comparator units*", dated 6 December 2024 (the "Report").[1]

6. The Report is incorporated herein for the sake of brevity.

The nature of the review

[1] Bundle 44, Volume 4, Document 1, Page 3.

7. I undertook this review, the results of which formed the Report, to consider the position taken by Mr. Mookerjee and Dr. Mumford/ Ms. Dempster in their reports and oral evidence, in respect of the list of GNBs and fungi present in the Schiehallion BSI data (set out in Mr. Mookerjee's report[2], par 8.1.16, pp 25-26). Mr. Mookerjee was instructed by Dr. Mumford to focus on the species in that list in formulating his expert report. These organisms have been variably presented to the Inquiry as 'rare', 'unusual', or 'environmental'.

8. Mr. Mookerjee requested comparator data from other hospitals by Freedom of Information ("FOI") requests. He obtained agglomerated tables of organisms identified in paediatric haemato-oncology blood stream infections over the period 2015-2022. The data from those comparator sites was then measured against the Schiehallion BSI list. The exercise did not appear to take into account any other 'rare', 'unusual', or 'environmental' organisms that were found in the comparator sites but not in the Schiehallion. The methodology used in this analysis, therefore, appeared to be flawed from the outset. For a valid comparison, the Inquiry's experts would have had to draw up a list of all 'rare/unusual/environmental' organisms found across Schiehallion and all of the comparator sites, and then calculate infection rates based on the totality of that list. Mr. Mookerjee should also have presented the full list of organisms found across all sites in his report instead of listing only those found in the Schiehallion unit.

9. During the course of Dr. Mumford's and Ms. Dempster's oral evidence on 12 and 13 November, I realised that the focus only on GGC's list of organisms was a fundamental flaw in the experts' methodology.

10. Having become aware of the flaw in their approach from their oral evidence, I liaised with the legal representatives for GGC, and Counsel immediately posed the Rule 9 question on 13 November, namely:

    - "*Were any environmental organisms found in the comparator hospitals' blood culture data that were not in the 2A blood culture data? If so, were these included in Mr. Mookerjee's analysis? Would excluding these not artificially increase the comparative rate of 'environmental' infections in 2A?"*

11. This was interpreted and asked by Counsel to the Inquiry to Dr. Mumford, as follows:

[2] Bundle 21, Volume 1, Document 1, Page 3.

- "*Is there a risk or a problem with this methodology that it might be the case that in, I mean, one of those other units, there's another group of organisms that occur in the environment, perhaps a couple of species that didn't happen to occur in Glasgow and, therefore, weren't on the Mookerjee list? Because they weren't in Glasgow but they are in one of those other hospitals and, therefore, might that distort the conclusions that can be drawn from his work?*"

12. Dr. Mumford's response was that there might have been a few, but the numbers were so low that it would not have impacted on the results of their analysis.

13. My review of the data followed thereafter. In my review, I examined the lists of organisms reported in the FOI returns from GOSH, Leeds, Cardiff, and Oxford to assess the accuracy of the position taken by Mr. Mookerjee and by Dr. Mumford/ Ms. Dempster that 'rare/unusual/environmental' organisms occurred predominantly in GGC but not in the other hospitals.

14. My methodology was first to use the same filtering criteria as Mr. Mookerjee described in his expert report, removing all Gram positive bacteria, those Gram negative bacteria that were not identified to genus level (e.g. 'Gram negative bacillus'), and all species belonging to the genera Escherichia, Campylobacter, Fusobacterium, Haemophilus, Moraxella, and Neisseria. Dr. Mumford confirmed that she instructed Mr. Mookerjee to carry out these filtering steps. Like Mr. Mookerjee, I also kept the fungal entries.

15. However, unlike Dr. Mumford and Mr. Mookerjee, I also examined the prevalence of nontuberculous mycobacteria in GGC and in the four comparator hospitals, as these organisms are well known to occur in water distribution systems and have been a focus of the Inquiry due to cases of *Mycobacterium chelonae* at the QEUH.

Unusual environmental bacteria found in the comparator hospitals

16. All comparator hospitals had Gram negative bacteria and fungal species that would be considered rare, unusual, and/or environmental by Dr. Mumford / Ms. Dempster / Mr. Mookerjee's definition.

17. Across all five sites (GGC plus the four comparators), a total of 105 different organisms met Dr. Mumford/ Mr. Mookerjee's filtering criteria: 88 Gram negative bacterial species and 17 fungi. Of the 88 different Gram negative bacterial species found across the five sites, fewer than half were detected at any one site. GGC saw 36 out of 88 GNB species, meaning 52 species of 'environmental/rare/ unusual' GNBs were seen elsewhere but not in GGC. Similarly, GGC saw only 5 out of the 17 fungal species.

18. Of the 36 GNB species seen in GGC, 21 were also seen at one or more of the other sites, as were three of the yeasts. Fifteen GNB species and two fungal species were seen only in GGC, but each of the comparators also saw numerous Gram negative bacteria and fungi that were not detected at any of the other four sites: 14 GNB and five fungal species were unique to GOSH, 14 GNB and one fungal species were unique to Leeds, six GNB species were unique to Oxford and five GNB species were unique to Cardiff. As expected, larger hospitals with higher numbers of beds, admissions, and positive blood cultures, as well as more complex referred patients, have longer lists of 'rare/unusual/environmental' organisms.

19. Blood stream infections due to Mycobacteria or presumptive mycobacteria occurred at all sites except Cardiff, and more frequently at these sites than in GGC. These cases included five named species (*M. chelonae*, *M. fortuitum*, *M. mucogenicum*, *M. ratisbonense*, and *M. smegmatis*), cases identified to genus level only (*Mycobacterium* species), as well as cases identified as 'acid fast bacilli' (presumptive mycobacteria). GGC saw one of these species, *M. chelonae*, which is also the only named mycobacterial species seen at multiple sites (*M. chelonae* cases were also reported at GOSH and Leeds).

20. The Report sets out these data in more detail, including lists of the organisms found at single and across multiple sites. The Report also highlights caveats around how each site deduplicated their data. Mr. Mookerjee claimed that BSI data from GGC and from all comparators were deduplicated in the same way to allow comparison of rates of infection, but the FOI returns make it clear that he has either misunderstood or misrepresented the data provided by each site. The comparison he carried out is not valid and should not have been attempted with these data sets.

The effect of this discovery on the conclusions reached by Mr. Mookerjee, Ms. Dempster and Dr. Mumford

21. Focusing only on the list of organisms seen at GGC without providing the broader context, namely the lists of organisms seen at other sites, is highly prejudicial and paints an inaccurate picture of NHSGGC having higher infection rates and a greater diversity of 'rare/unusual/environmental' organisms than the comparator hospitals.

22. Throughout the Glasgow III hearings, the Inquiry frequently highlighted lists of organisms seen in the Schiehallion unit and asked various witnesses, including Dr. Inkster and Dr. Mumford, whether the individual species on these lists have a background rate of infection. As these witnesses stated that there should be no background rate for most of the organisms on GGC's list, the clear implication is that the mere detection of these species in GGC points to deficits in the built environment and/or negligence on the part of GGC. However, my review shows that a similar diversity of 'rare/unusual/environmental' organisms was seen at the comparator hospitals, and had Dr. Mumford or Dr. Inkster been asked what the background rate of infection should be for these species instead of those on GGC's list, in all likelihood their answers would have been similar: that for many species on the comparators' lists, there should be no background rate of infection.

23. The Report does not support the opinion of Dr. Mumford, Ms. Dempster and Mr. Mookerjee. As part of their ongoing obligation to the Inquiry, it is submitted that they should reconsider the data and the conclusions which flow therefrom. Mr. Mookerjee, Dr. Mumford, and Ms. Dempster requested and reviewed the infection data from the comparator hospitals, and they had a duty to disclose to the Inquiry any evidence that might contradict their opinion.

Data examined

24. The data examined as part of this analysis were the lists of organisms reported in the responses to the Inquiry's FOI requests, from GOSH, Leeds, Cardiff and Oxford. I was a member of the sub-group which reviewed the expert reports of Mr. Mookerjee; and of Dr. Mumford and Ms. Dempster, so had had sight of that information as part of that process. However, the sub-group's focus, given the short timescales involved, was to respond to the content of Mr. Mookerjee's and Dr. Mumford/ Ms. Dempster's reports, not to scrutinise the FOI data on which these reports were based. As such, I did not

examine the lists of organisms in the original FOI returns until after Dr. Mumford's and Ms. Dempster's oral evidence.

Further assistance

25. Should the Inquiry require any further assistance with other matters relevant to the Inquiry's Terms of Reference, I would be happy to assist.

Declaration

26. I believe that the facts stated in this witness statement are true to the best of my knowledge, information, and belief. I understand that this statement may form part of the evidence before the Inquiry and be published on the Inquiry's website.

Signed: Dominique Chaput Print Name: Dominique Chaput

Appendix A

Scottish Hospitals Inquiry - Hearing Commencing 19 August 2024 - Bundle 21 Volume 1 - Expert Reports

Scottish Hospitals Inquiry - Hearing Commencing 19 August 2025 – Bundle 44 Volume 4 – Reports by Dr Chaput and Dr Mumford & Miscellaneous Documents