Scottish Hospitals Inquiry

Supplementary Questions for the CNR Expert Panel

Professor Michael Stevens

1. It appears from the Public Health Commentary authored by Dr Emilia Crighton, NHS GGC Director of Public Health and submitted to the CNR in February 2021 that she and NHS GGC then considered that it would be useful to carry out additional epidemiological analysis and specifically that:

   a. An analysis comparing infection rates within the NHSGGC Unit to the combined Aberdeen and Edinburgh Units was carried out by HPS in 2019 (Bundle 7, Document 6, Page 214) should be included in the Case Notes Review; and

   b. That that the use of statistical methods (like indirect standardisation) would be more suitable to assess the chance of a real excess number or cluster to avoid the cognitive bias of "Clustering Illusion".

   How did the Expert Panel respond to this Public Health Commentary in general and the request that additional epidemiological analysis be carried out?

A These comments were made both in the Public Health Commentary provided as Appendix 1 to NHS GGC's response to our draft report and in the main body of its response to the draft report. My response to your questions is: a) we agreed that we should include a section critiquing the HPS 2019 report in our final report. This was inserted in the final report as Section 8.2.3 (page 93); and b) we understood the possibility of 'clustering illusion' and the need to avoid the 'association is not causation' bias. Our decisions about the possibility of a link between an infection and the hospital environment were nevertheless influenced by the clustering we observed. This is described in section 3.6.6 (pages 43-45) of our report, and also in Section 4.3.5 (pages 56-57). Standardised statistical techniques, including indirect standardisation, are

available for comparing the incidence rate of ‘events’ between populations even if they have differing characteristics. However, data from a reference population is required for such calculations and I was not aware of appropriate reference data for infection rates in paediatric haematology-oncology patients against which data collected at NHS GGC, or another treatment centre, could be compared.

2. Can you provide further details beyond what you stated in your earlier statements as to the role that NHS GGC or its staff had in (a) defining the remit of the Case Notes Review, (b) setting the selection criteria for cases within it and (c) the decision to include all Gram-negative bacterium in the scope of the review?

A I am unable to provide further details about the involvement of NHS GGC or its staff in a) agreeing the remit (as reflected in its Terms of Reference) of the Case Note Review or b) setting the selection criteria for cases within it. With regard to c) I wish to point out that all Gram-negative bacteria were NOT included in the scope of the review. Gram-negative non-environmental bacteria (such as E. coli and Proteus) were not included.

3. Why does the CNR Overview Report not contain any comparative data on infection rates?

A Although the HPS 2019 report shows SPC charts for infections in paediatric haematology-oncology patients at NHS GGC using data points expressed as rates per 1000 occupied bed days, we did not have access to similar incidence rates for infection in paediatric haematology-oncology patients at other treatment centres for comparison. I should emphasise that whilst evidence for a difference in infection rate compared to another treatment centre would have been of interest, our review was less about infection rate and more about the nature and pattern of infections, and whether there was evidence to suggest that some of these might have been acquired from the hospital environment. I would also like to reiterate an important point of emphasis about the HPS 2019 report (also referenced in section 8.2.3 of our final report) specifically that the comparison made by HPS with the Children’s

Hospitals in Edinburgh and Aberdeen was based on whole hospital data, i.e. the data were not restricted to haematology oncology patients. Moreover, the data for Edinburgh and Aberdeen were combined for the purposes of this analysis. This then does not provide direct experience of the haematology-oncology population with their associated risk for blood stream infection. Importantly, however, the report states (page 17) that between June 2015 and September 2019 the rate of environmental with enteric infections was statistically significantly higher at RHC Glasgow than for Edinburgh and Aberdeen combined. Despite the caution with which HPS themselves treated their findings, this report is not consistent with the reassurance that NHS GGC seems to have derived from it.

4. If a comparative epidemiological analysis was to be carried out to compare the rate of infections in the patient cohort covered by your review knowing what you now know about the Schiehallion Unit and its patient group how would you go about selecting comparable hospitals to compare it with and do you have in mind any particular hospitals/units with which a comparison could be made?

A At the time of our investigations and the writing of our report, I was not aware of any routinely collected data about the incidence and type of infection in haematology-oncology patients in other, potentially comparable treatment centres in the United Kingdom. Creating this resource would be the necessary first step to undertake a prospective study to explore variability in rates of infection. The data collection would require an agreed protocol to define the types of infection to be recorded (much as was done to define the infections to be included in the Case Note Review) and a minimum clinical dataset to identify key characteristics of the patients involved (for example, age, gender, diagnosis, cancer treatment etc.), type of infection and patient outcome: an approach similar to that which we initiated for retrospective data collection within the Case Note Review. The number of children and young people with infection within each treatment centre and the casemix (principally the age range of patients, the nature of their different diagnoses and modalities of treatment – particularly the presence of a bone marrow transplant

programme) would need to be defined as a way of selecting treatment centres most likely to offer appropriate comparison with NHS GGC. Centres of similar size and complexity in terms of number of patients and casemix would not be found in Scotland. The treatment centres in Edinburgh and, in particular, Aberdeen, are much smaller than Glasgow and have a less complex case mix. Centres in England with characteristics which might serve as appropriate comparators to Glasgow would include Manchester, Birmingham, Bristol, Cambridge, Leeds and Newcastle.

5. In applying your methodology to the cases in the review what consideration did you give the possibility that any particular infection was a commensal infection arising from a colonised patient by reference either to the particular circumstances of the infection, the epidemiology of the infections observed in the hospital and any published papers about the prospect that particular bacterial was more or less likely to be arise from colonised patients?

A We discussed the possibility of endogenously acquired (patient derived) infection from commensal bacteria at several points in our report (see Section 3.6.6, page 44; Section5.6, page 68; Section 8.2, page 88).

I believe that the facts stated in this witness statement are true. I understand that this statement may form part of the evidence before the Inquiry and be published on the Inquiry's website.

Professor Michael Stevens
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