ROYAL STATISTICAL SOCIETY
DATA | EVIDENCE | DECISIONS

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*Via email*

10 November 2023

Dear Tim,

**Re. Statistical aspects of the Lucy Letby Inquiry**

Thank you for your letter alerting us to the publication of the Inquiry's Terms of Reference. We are writing to confirm upon which matters we think the RSS would be able to help and to outline the approach we would recommend.

Our experience is most relevant to question 13 in the Terms of Reference: "Should concerns, including about hospital or clinical data, have been raised earlier than they were? When? What should have been done then?". There are well established statistical approaches for identifying unusual patterns of events and alerting hospitals such that these patterns can be investigated further to determine the root cause. We have identified five questions that we think are important to address under this heading:

1. What local or national data-driven systems were in place to provide alerts to unusual patterns of events – in particular, neonatal deaths? Given that there are statistical systems that have been developed to identify unusual patterns of mortality (eg, MBRRACE, CQC Mortality Monitoring system) were any of these in use, covering both the Trust in question and Trusts more widely with regard to neonatal deaths.
2. If there was such a system in place, was an alert issued at any point during Letby's tenure?
3. What was the pattern of events, in particular neonatal deaths, before, during and after Letby's tenure? Using local data, can a change from the hospital's past performance be detected? What light does national data shed on the long term performance of the hospital?
4. If a rigorous statistical monitoring system had been in place, would it have issued alerts? At what point?
5. What type of system could be implemented for monitoring neonatal adverse outcomes in the future?

The third and fourth questions are the crucial ones from a statistical perspective.

With regard to our third question, if it is possible to access mortality data for the hospital going back a number of years before Letby was in post, statisticians will be able to assess whether established statistical monitoring techniques could have flagged concerns around neonatal deaths at the Countess of Chester Hospital. This would give an indication of the point in time that an alert would have been raised so that it could be investigated. It may also support the case for implementing and maintaining a statistical alert system in future.

Statisticians have provided valuable input into other formal inquiries – for instance in the infected blood inquiry an expert group of statisticians played a pivotal role in addressing questions about mortality as well as making recommendations for how data could be used to help prevent such situations happening again. Though the statistical element may be less immediately obvious in this case – there is an important opportunity to make sure that the UK makes the best use of its data to ensure that alerts over suspicious deaths are raised as quickly as possible.

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In terms of how we would propose to work with the Inquiry, we would be open to a discussion on this matter. We are aware of situations where past inquiries have appointed a statistician to work directly with the inquiry team and we would be pleased to put the Inquiry in touch with a member of the RSS with suitable expertise. Alternatively, we would be pleased to work organisationally with the Inquiry and convene a wider group of members to address these questions.

Please let us know if a follow-up discussion would be helpful.

Yours sincerely,

Dr Andrew Garrett
President

Dr Sarah Cumbers
Chief Executive