



# Covid-19: Leading statistician slams UK's reporting of swab tests as "travesty of science"

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A leading statistician has criticised the UK government's daily reporting of covid-19 swab test results, saying that no inference can be drawn reliably and that the failure to report by sample date could lead to serious misrepresentation of the pattern of the epidemic.

"The UK's data collection and reporting of swab testing is a travesty of statistical science, as you can draw no inferences whatsoever about the evolution of the epidemic," said Sheila Bird, former programme leader at the MRC Biostatistics Unit, Cambridge Institute of Public Health. "Politicians only seem to be interested in the number of tests performed rather than what is actually happening in the epidemic," she told *The BMJ*.

The Department of Health and Social Care publishes the number of patients who have been tested for coronavirus and the number of positive tests. These are broken down into categories with figures reported daily for pillars 1, 2, and 4<sup>1</sup> (see box). Pillar 1 includes patients in hospital with a medical need, as well as the most critical workers and their households.

Bird, a member of the Royal Statistical Society's covid-19 taskforce, said that it makes no sense that swab test results from people in pillar 1 are combined rather than reported separately. There are potentially more direct exposure routes among the most critical workers than their household members, she warned, adding, "The grouping into pillars is a political construct and is not the way an epidemiologist would have organised the results."

Furthermore, said Bird, swab tests should be reported by the date the swab was taken, not when the lab reported the results. As a former member of the pandemic advisory group for swine flu, she said that this was a lesson that the group had learnt from that outbreak in 2009-10.<sup>2</sup> She said that swab test results should also include the age group—and, ideally, the sex—of the people tested, to give useful information about the pattern of the epidemic.

This basic demographic information is already collected in Scotland, as all swab tests have an associated community health index number (CHI number), which includes the year of birth and sex of the person tested. Bird said that the CHI numbers used in Scotland enabled more helpful analysis because serial tests for the same person were readily linked.<sup>3</sup>

## Double counting

A further issue is that suspected covid-19 patients in hospital may be tested two, three, or four times, which can lead to double

counting of patients and meaningless data. For example, patients could first test negative because of a failure of the nasal and throat swab technique and then be positive on a second test. They may then have two further negative tests to show that they are no longer infectious and can be discharged. Unless great care is taken to track serial tests on the same patient this can lead to serious misrepresentation of swab test positivity for each person, Bird told *The BMJ*.

She asked, "What confidence can we have that, when the lockdown ends, the UK's public health system will be able to rapidly and transparently detect a resurgence of cases (which requires monitoring by sample date), and hence isolate and quarantine contacts?"

A spokesperson for Public Health England said that the total numbers of lab confirmed cases in England are reported by the date that the swabs were taken, at <https://coronavirus.data.gov.uk/>, and the distribution of cases and deaths in England by age and sex are reported in the weekly report at <https://www.gov.uk/government/publications/national-covid-19-surveillance-reports>. The spokesperson added that Public Health England was working on improved systems to distinguish cases by the place the test was taken and data linkage, which might allow for a subset of cases.

In response, Bird questioned why these data were not reported at the daily covid-19 press conferences. She also said that the test results within the pillars needed to be broken down and reported in more detail.

### Pillars of testing

- Pillar 1: Swab testing in Public Health England labs and NHS hospitals for people with a medical need and for the most critical workers and their families
- Pillar 2: Swab testing for key workers and their households
- Pillar 3: Mass antibody testing to help determine whether people have immunity to coronavirus
- Pillar 4: Surveillance testing to learn more about the disease

- 1 Department of Health and Social Care. Coronavirus (COVID-19): scaling up our testing programme. Apr 2020. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/878121/coronavirus-covid-19-testing-strategy.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/878121/coronavirus-covid-19-testing-strategy.pdf).
- 2 Royal Statistical Society. Evidence to House of Commons Select Committee on Science & Technology inquiry into scientific advice and evidence in emergencies. Mar 2011. <https://www.parliament.uk/business/committees/committees-a-z/commons-select/science-and-technology-committee/news/110302-scientific-evidence-report-published/>.
- 3 Scottish Government. Covid-19—a framework for decision making. Apr 2020. <https://www.gov.scot/publications/coronavirus-covid-19-framework-decision-making/>.

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