



HOUSE OF LORDS

SCIENCE AND TECHNOLOGY COMMITTEE

The Science of COVID-19

Witnesses and proposed questions for 12th evidence session 4pm-5pm on Monday 29 June 2020 Contract tracing

Witnesses:

- Prof Christophe Fraser, Senior Group Leader in Pathogen Dynamics, Nuffield Department of Medicine, University of Oxford
- Professor Noel McCarthy, Professor of Epidemiology, University of Warwick; and Honorary Consultant Epidemiologist, PHE
- Professor Allyson Pollock, Clinical Professor of Public Health, Newcastle University; and co-Director of the Newcastle University Centre of Excellence in Regulatory Science, Newcastle University

Proposed Questions:

Some questions might be more relevant for some witnesses than others; each witness is not necessarily expected to respond to all questions, but is welcome to do so. Some of the supplementary questions may be asked if they have not already been addressed, and if time permits. Members may ask other questions pertaining to the topic of the evidence session.

I. What are the key principles behind contact tracing as part of a public health response to an outbreak?

The goal of contact tracing is to break the chain of transmission of the virus in order to limit its spread. The WHO 14 April Strategy Update document emphasises the importance of stopping cases becoming clusters, and stopping clusters becoming explosive outbreaks.¹

Contact tracing requires **speed** (in identifying and notifying suspected cases, rapid testing of suspected cases, rapid notification of positive tests by laboratories, and rapid tracing of contacts), **adherence** to self-isolation, quarantine and **monitoring** (of cases and contacts throughout self-isolation and quarantine), and **trust** (in the services).

Contact tracing is an extremely complex intervention involving the index case, contact, and tracers. This requires a system-wide approach utilising and building on existing public health infrastructure and capacity, with strong linkage to primary and community health care. While it is relatively easy to get a contact tracing system up and running, it is very hard to make it effective at reducing transmission. High quality advice is available from a number of sources including the WHO, and the European Centre for Disease Prevention and Control has excellent resources and advice.²

¹ World Health Organization. COVID-19 strategy update. 14 April 2020.
https://www.who.int/docs/default-source/coronaviruse/covid-strategy-update-14april2020.pdf?sfvrsn=29da3ba0_19

² European Centre for Disease Prevention and Control. Contact tracing for COVID-19: current evidence, options for scale-up and an assessment of resources needed. 05 May 2020.
<https://www.ecdc.europa.eu/en/publications-data/contact-tracing-covid-19-evidence-scale-up-assessment-resources>

- **Are there good examples of how it has been done historically?**

The system of contact tracing is part of the UK's long established system of infectious disease control going back to the nineteenth century, and has evolved over time. It is undertaken on a daily basis by environmental health officers, through sexual health clinics (approximately half a million people with sexually transmitted infections (STIs) are assisted to contact their sexual contacts each year), and by public health teams and for a range of infectious diseases including STIs & HIV, salmonella, TB, Ebola, etc. Although these systems have been severely weakened, eroded, and fragmented in recent decades they should have been an ideal basis for seeking advice and for establishing contact tracing for covid. Instead public health has been sidelined and there is a visible lack of strong public health leadership.^{3 4} (Please find appended my BMJ article for information on the notification system and contact tracing.)

- **At what stage(s) during a pandemic is contact tracing most important?**

There are a number of considerations. First it depends on approach to scale - whether it is being thought of as one national epidemic or hundreds or thousands of local outbreaks - the more the epidemic is conceived of the latter, the more effective contact tracing is in stopping the spread immediately.

Contact tracing may be less effective when there are many cases, but it is still of some effect in stopping spread and it is vital for understanding transmission and clusters, eg, superspreading events, and it will always be necessary and effective in closed communities and institutions. Even with many cases it's still of some effect in stopping the spread immediately, but it remains important for understanding transmission and clusters - it becomes more like a data source for informing further responses to the epidemic.

The fact of a 'pandemic' - ie, that the virus is spreading in many other parts of the world - is more relevant to other control measures (such as international travel restrictions and quarantine), but in any case the UK didn't introduce these.

Contact tracing is an important public health measure throughout an epidemic and not just in the early and late stages.⁵ Contact tracing works alongside other interventions, including hand hygiene, and social distancing.

While the focus on hospitals during the early phase of the epidemic was necessary, an equal focus should have been on primary care, community health services, contact tracing, and testing services.

Contact tracing would have enabled more understanding of transmission and clusters. It is reported that some cases shed and spread more than others.⁶

Most of the discussion around the spread of SARS-CoV-2 has concentrated on the average number of new infections caused by each patient. Without social distancing, this

³ Roderick P, Pollock AM, Macfarlane A. Getting back on track: control of covid-19 outbreaks in the community. BMJ 2020;369:m2484. <https://www.bmj.com/content/369/bmj.m2484>

⁴ Independent SAGE, Final integrated find, test, trace, isolate, support (FFTIS) response to the pandemic report. 18 June 2020. <https://www.independentsage.org/final-independent-sage-integrated-find-test-trace-isolate-support-fftis-response-to-the-pandemic-report/>

⁵ Pollock AM. Rapid response: re: Covid-19: how doctors and healthcare systems are tackling coronavirus worldwide. BMJ 2020;368:m1090. <https://www.bmj.com/content/368/bmj.m1090/rr-6>

⁶ Kupferschmidt K. Why do some COVID-19 patients infect many others, whereas most don't spread the virus at all? Science. 20 May 2020. <https://www.sciencemag.org/news/2020/05/why-do-some-covid-19-patients-infect-many-others-whereas-most-don-t-spread-virus-all>

reproduction number (R) is about three. But in real life, some people infect many others and others don't spread the disease at all. In fact, the latter is the norm, [Jamie] Lloyd-Smith [of UCLA] says: "The consistent pattern is that the most common number is zero. Most people do not transmit."⁷

An LSHTM paper estimates that 80% of infections are caused by around 10% of the infected people.⁸

○ **What information needs to be collected when contact tracing?**

It is critical that data flows locally to public health teams and is sufficiently detailed. The list of information and variables for suspected cases and confirmed cases is set out in the notification regulations in England and for Scotland (ethnicity is not required in Scotland)

Suspected, reg 2(2): <http://www.legislation.gov.uk/ukxi/2010/659/regulation/2/made>

Confirmed, reg 4(2): <http://www.legislation.gov.uk/ukxi/2010/659/regulation/4/made>

Or under the Scottish Act (eg no ethnicity):

Suspected - s. 13(6) - <http://www.legislation.gov.uk/asp/2008/5/section/13>

Confirmed - s. 16(6) - <http://www.legislation.gov.uk/asp/2008/5/section/16>

The information to be collected must include

- *Index case and contacts*: demographic details eg age, gender, place of residence, place of work, occupation, ethnicity
- *Clinical information*, whether and when tested, date of onset of symptoms, knowledge about possible source of transmission etc
- *Information from case on the contacts*: age, gender, place of residence, place of work, occupation, ethnicity - the look back period is currently 2 days prior to symptoms. [In South Korea and Singapore it is 14 days. People are asked to recall and it is not automated through phones ie it is shoe leather epidemiology. The extended look back period is vital to identify clusters of cases and allows investigation of possible sources for infection in index cases. The 2-day lookback period only allows detection of forward transmission from the index case to potential contacts.]
- *Information on requirements for self-isolation or quarantine*
- *Information on monitoring of cases and contacts* during self-isolation and quarantine
- *Information from contacts*: follow-up and monitoring of cases in self-isolation and contacts in quarantine

Information should also be collected on the performance of the public services and private providers.

There are examples from other infections, eg, STIs and HIV.⁹ Prof Claudia Escourt has developed new national chlamydia contact tracing outcomes via LUSTRUM programme work.¹⁰

For suspected cases it is essential that the government operationalises the legal basis for notifying infectious diseases, which has been ignored. This is the mechanism for notifying suspected cases and positive tests.

⁷ Kupferschmidt K. Case clustering emerges as key pandemic puzzle. Science. 22 May 2020.

<https://science.sciencemag.org/content/368/6493/808.full>

⁸ Endo A, Abbott S, Kucharski AJ, Funk S. Estimating the overdispersion in COVID-19 transmission using outbreak sizes outside China. Wellcome Open Res 2020;5:67.

<https://doi.org/10.12688/wellcomeopenres.15842.3>

⁹ Sullivan AK, Rayment M, Azad Y et al. HIV partner notification for adults: definitions, outcomes and standards. BASHH Guidelines.

https://www.bashhguidelines.org/media/1070/hiv_partner_notification_standards_2015.pdf

¹⁰ <https://www.lustrum.org.uk/>

- **How important is public trust in contact tracing strategies?**

Public trust is essential. The public has trust in NHS public health providers, who carry out contact tracing for STIs, HIV, TB, etc. Contact tracing is a highly complex multifaceted intervention. Unlike in other infections in which there is a readily identifiable advantage to the contact (such as rapid vaccination to prevent infection as with Hepatitis B), covid contacts are being asked to be altruistic in quarantining and to make sacrifices with no readily identifiable individual health gain and probably discomfort and/or economic hardship.¹¹ Public understanding of why it is important is vital to achieving behavior change. Relationships are key.

There are issues of trust and data privacy, destruction policies for data, and now there are reported scams with people being contacted and asked for a credit card number. There will be concerns, too, about employment. The contact tracing services (outward only) call handlers use an 0300 number, (0300 013 5000), which is not familiar and may result in people not answering or responding to texts. Contact tracing trials for STIs have found simple solutions to this such as using text messages with “NHS-no-reply” content, linking to a website, etc.¹²

2. How many, or what proportion of, contacts need to be identified for a test and trace strategy to be effective at reducing transmission (in this pandemic)? What is the maximum possible impact effective contact tracing could have on R?

- **How quickly do they need to be contacted and asked to self-isolate?**

Speed is of the essence - contacts should be identified and spoken to on the same day as a suspected case is told they are test positive.

- **What proportion of contacts need to follow self-isolation advice for the strategy to reduce transmission?**

The Royal Society’s DELVE has demonstrated the importance of self-isolation.¹³ Models assume that a high proportion of people may need to go into quarantine — but that is a lot less expensive and onerous for the economy than (a) closing down health services for all but covid, (b) diverting all health care resources to covid, (c) closing down the economy, (d) depriving children of schooling, and (e) undermining the mental health and wellbeing of the public.

- **Based on past experience, what is the likely level of compliance with self-isolation advice, and what strategies might be effective at increasing levels of compliance?**

¹¹ Michie S, van Stralen MM, West R. The behaviour change wheel: A new method for characterising and designing behaviour change interventions. *Implement Sci.* 2011; 6: 42.

<https://implementationscience.biomedcentral.com/articles/10.1186/1748-5908-6-42>

¹² Estcourt CS, Howarth AR, Copas A et al. Accelerated partner therapy (APT) partner notification for people with Chlamydia trachomatis: protocol for the Limiting Undetected Sexually Transmitted infections to RedUce Morbidity (LUSTRUM) APT cross-over cluster randomised controlled trial. *BMJ Open* 2020;10:e034806. <https://bmjopen.bmj.com/content/bmjopen/10/3/e034806.full.pdf>

¹³ The Royal Society. Success of test, trace and isolate programmes depends on speed, compliance and monitoring. 27 May 2020. <https://royalsociety.org/news/2020/05/success-of-test-trace-and-isolate-programmes-depends-on-speed-compliance-and-monitoring/>

This is very complex and it is important to understand the barriers and obstacles to compliance for self-isolation for cases and for quarantine for contacts. These include financial, domestic, work, home, and cultural. The COMBI framework is useful to consider - Capacity, Opportunity, Motivation, Behaviour, and Inequalities. (The government does not report on the extent to which it monitors the process and outcomes for cases and contacts who are asked to self-isolate or go into quarantine.)

3. The data for 4 to 10 June suggests that contacts were not identified for a quarter of people who tested positive. What are the main barriers to identifying contacts (for example, tracing capacity, memory, unwillingness to cooperate)?

We don't know –these data are not reported or collected. We do not know the extent to which the process itself is contributing to lack of case finding and testing. It is essential the government conducts or commissions qualitative research, using semi-structured telephone interviews on a sample of people notified as index cases and contacts to explore their ideas, beliefs, and understanding of contact tracing, and their experience of the process, barriers, and facilitators to each stage of the process. This would allow a deep understanding of what is going on at present and give pointers to elements which could be adapted or introduced to improve the process.

- **What level of training, supervision and support do staff need to effectively deliver contact tracing?**

There are currently two systems - the established local public health outbreak teams for 'complex cases' and a new centralised privatised system for non-complex cases. Sitel, the "customer experience" company, is understood to have recruited 5,000 level 3 call handlers, who had applied for roles as sales advisers on three month contracts. The numbers employed by Serco and Sitel have been reported by them as 25,000.

Call handlers on Twitter, in the Guardian, and in personal communications report their training as one day of virtual training with 200 people with one company PowerPoint delivered by Sitel and 4.5 hours of self-learning, with no checking for understanding.^{14 15}

They also lack the networks into GPs and other local NHS services that can support households in a time of stigma, strain and fear. It is important to note that for sexual health, contact tracers also have counselling backgrounds and are extremely skilled in behaviour change and soft skills as these are essential to enable the index to feel willing to provide contact details and for the contacts to understand and act on the advice given to them.

Those call handlers that have reported their experience anonymously report having had very little work - as little as one contact every ten days and a 20 minute questionnaire. This is borne out by the partial and limited data on test and track - see below.

- **How can the proportion of people sharing their contacts be improved?**

It is essential to understand why contacts have not been reached or followed up, but this will require door to door visits in some instances and skilled tracers and rapid research - see above. Trust in the process of care, of testing, and of services is key.

¹⁴ Perraudin F. 'No one had any idea': contact tracers lack knowledge about Covid-19 job. The Guardian. 20 May 2020. <https://www.theguardian.com/world/2020/may/20/no-one-had-any-idea-contact-tracers-lack-knowledge-about-covid-19-job>

¹⁵ Charara S. England's contact tracers are unprepared, confused and bored. Wired. 29 May 2020. <https://www.wired.co.uk/article/nhs-coronavirus-contact-tracing-calls>

4. Currently first-degree contacts are only identified and asked to isolate once a positive case has been confirmed. What effect would it have on transmission if first-degree contacts isolated from when the suspected case first showed symptoms, rather than waiting for the test result?

We don't know. My communicable disease consultant colleagues tell me that the crucial issue is that the suspected case lets all close household contacts know - households being where the risk of transmission is highest and they receive advice around social distancing and keeping apart from the case and maintaining social distancing and protective measures.

- **Currently first-degree contacts are not tested unless they also develop symptoms. Would there be any benefit to testing first-degree contacts before the onset of any symptoms?**

All tests include false positives and false negatives and so can be harmful and wasteful. A negative test does not mean the individual does not have covid. Countries differ in their approach. Neither Germany nor Switzerland test contacts unless they become symptomatic. Switzerland currently advocates two tests and a quarantine period of ten days (that being the time period when around 95% of cases arise and also implements monitoring and support measures for cases and contacts. The advantage is that this would pick up some early positives among the contacts and these people (now indexes) could undergo a second round of notification and further impact on transmission networks.

- **Should second-degree contacts be contacted, either to inform them of the possible risk of exposure, or to ask them to self-isolate? Would this have any effect on transmission?**

We assume that a second-degree contact is a contact of a contact. This has been considered in Singapore but deemed unnecessary, It is assumed that the yield would be too low for the resources required.

5. Is it enough to contact only the known contacts of the infected person? What proportion of transmission is through known contacts?

Household contacts are the main source of transmission (secondary attack rate 10-20% vs 0-5% for contacts outside household, estimated by Adam Kucharski et al (LSHTM)).¹⁶ The proportion of known contacts depends on the setting. During lockdown, or with strong restrictions on the size of permitted gatherings, most contacts will be household contacts.

- **What methods are there for identifying contacts the infected person does not know by name?**
- **Which of these methods is most effective?**

6. How successful has the UK's contact tracing strategy been so far?

¹⁶ Kucharski AJ, Klepac P, Conlan AJK et al. Effectiveness of isolation, testing, contact tracing, and physical distancing on reducing transmission of SARS-CoV-2 in different settings: a mathematical modelling study. The Lancet Infectious Diseases online first. 16 June 2020. [https://doi.org/10.1016/S1473-3099\(20\)30457-6](https://doi.org/10.1016/S1473-3099(20)30457-6)

It is not yet effective because of under-ascertainment of cases and contacts, and no evidence that follow-up, monitor, and support of cases and contacts in self-isolation and quarantine is happening.

An effective whole system approach requires swift management of suspected cases and test-positive cases for case finding and isolation purposes. Contact tracing and testing should be seamless and local. Instead, contact tracing for 'complex cases' is dealt with by local public health teams, including for nursing homes, prisons, and other institutions.¹⁷ Non complex cases are diverted to parallel centralised, privatised call handling centres run by Serco and Sitel. To add to the complexity there are three new levels of staff. Levels 2 and 3 are employed by Serco and Sitel. Level 3 are contact tracers / call handlers, and level 2 determine who is a contact and what action is required. Level 1 are health protection experts in regional Public Health England (PHE) teams, recruited through NHS Professionals.¹⁸ The reported £108m contracts for Serco have not been published, and neither have the performance measures.¹⁹ It is not clear how the separate parts of the system interface and work.

The test and trace statistics do not provide separate data on the cases and contacts transferred, identified, and reached by the public health teams and the privatised contact tracing teams. There is no minimum dataset for contact tracing. Specifically, there are no data published on the performance of the public health teams and the centralised system.²⁰

The key measures to inform effectiveness of contact tracing should be

- i) *Number of suspected cases*
Not known. From early March 2020 a media campaign directed people who thought they may have had the virus to NHS 111 for assessment by telephone consultation, which would lead to notification of local public health teams.²¹ On 12 March the advice changed: those with mild symptoms were instructed not to call 111, meaning that possible cases were not notified to public health and no testing took place.²² As a result, there are no good data on suspected or confirmed cases in the community, which severely limits effective outbreak control and monitoring.
- ii) *Weekly numbers of people test positive and confirmed cases -*
Not known - partial data. Only pillar 1 NHS data are available. Pillar 2 only gives the number of tests, not the number of people tested. Pillar 2 tests outnumber pillar 1 by two to one.
- iii) *Weekly numbers of people (a) testing positive and referred to contact tracing service **YES** and (b) numbers of cases reached and asked for contacts; **YES** - see test and trace data*

¹⁷ Department of Health & Social Care. Guidance, NHS Test and Trace statistics (England): methodology. Updated 16 July 2020. <https://www.gov.uk/government/publications/nhs-test-and-trace-statistics-england-methodology/nhs-test-and-trace-statistics-england-methodology>

¹⁸ Vize R. Too slow and fundamentally flawed: why test and trace is a weak and inequitable defence against covid-19. BMJ 2020;369:m2246. <https://www.bmj.com/content/369/bmj.m2246>

¹⁹ Mueller B, Bradley J. England's 'world beating' system to track the virus is anything but, The New York Times, 17 June 2020. <https://www.nytimes.com/2020/06/17/world/europe/uk-contact-tracing-coronavirus.html?auth=login-email&login=email>

²⁰ Department of Health & Social Care. Weekly NHS Test and Trace bulletin, England: 11 to 17 June 2020. 25 June 2020. <https://www.gov.uk/government/publications/nhs-test-and-trace-statistics-england-11-june-to-17-june-2020/weekly-nhs-test-and-trace-bulletin-england-11-to-17-june-2020>

²¹ BBC News. Coronavirus: UK advice, symptoms, tests and treatment- in 5 graphics. 02 March 2020. <https://www.bbc.co.uk/news/uk-51674696>

²² Department of Health & Social Care. COVID-19: government announces moving out of contain phase and into delay. Press release. 12 March 2020. <https://www.gov.uk/government/news/covid-19-government-announces-moving-out-of-contain-phase-and-into-delay>

- iv) *What proportion of contacts were (a) reached and asked to self-isolate, YES and (b) how many agreed to quarantine?*

Not known

- v) *What proportion of cases self-isolate for seven days and what are their outcomes?*

Not known

- vi) *What proportion of contacts quarantine for 14 days, and go on to develop symptoms?*

Not known. We do not know whether there is any follow up of index cases or contacts. In other settings and countries, both are called at regular time points during isolation to check on their health and to motivate them to maintain quarantine.

- **Are enough contacts being identified and asked to isolate within 24-48 hours?**

No.

Contact tracing is not yet effective as there is considerable attrition in finding and reaching of cases, and subsequently in identifying and reaching contacts. There are also issues of efficiency. According to Sitel there are 25,000 level 3 call handlers employed: each call handler had a workload of no more than five contacts over the three-week period from 28 May to 17 June . Each contact takes around a 20 minute questionnaire by phone.

The work loads of levels 1 and 2 workers and public health are not provided. It is essential to understand the mechanics and workings of the different parts of the system, and data and a weekly breakdown of cases and contacts for each level and for PHE teams should be provided.

- **Are people complying with the isolation advice?**

Not known. No data are published on whether those cases and contacts being reached and advised to self-isolate or quarantine do so and what percentage of contacts develop symptoms and become cases.

- **Will the test and trace strategy in place be adequate to avoid a second wave on the scale of the first?**

We are not out of the first wave of the epidemic in England. Moreover, come the autumn influenza and other upper respiratory tract infections will reappear and so it is not practical, let alone good policy, to have a vertical covid service.

7. In your view, how important is the development of a contact tracing app for controlling the pandemic in the UK?

There is no accepted definition of the content or functionality of a “contact tracing app” so it is not possible to answer this question without knowing what an app would be designed to do. An app could be used in this context to do any or all of the following:

- i provide advice, eg, on where to go for testing, contacts, information on isolation or quarantine, welfare, and sickness forms
- ii input contact details
- iii inform individuals that they are a contact
- iv provide geolocation and proximity indicators, ie, Bluetooth indicators of having been for 15 minutes in close proximity of someone with a positive test result

Switzerland, Germany, and Austria will work on agreed protocols, so that if someone downloaded the app for the country they live in, it will work when they travel to the other countries. In Switzerland, information about contacts of less than two metres for 15 minutes or more is recorded on the phone. The information on contacts I have been told is deleted after 14 days. The app checks regularly to see if any of those encountered (for long enough) have tested positive. If an alert is received to show that the user has had a close contact with another user who has tested positive, a 'Covidcode' is received. By entering this number, the phone number of a hotline is retrieved, which putting the user in touch with contact tracing services.

Proximity tracing is needed as an adjunct to manual contact tracing to speed up identification of contacts. Since infected people can transmit before they develop symptoms it takes too long to wait for symptoms, then get tested, then wait for result, then start contact tracing, and finally send contacts into quarantine. Proximity tracing allows instant alert of a potential contact with someone infected, so could reduce the time before going into quarantine.

- **Does the Government's decision to delay the launch of the app until later in the year undermine the contact tracing strategy, or can manual contact tracing be effective on its own?**

Manual contact tracing has been shown to be effective on its own. Is what is meant by app a proximity indicator app? There is no evidence that this has had any impact on transmission to date - but modelling suggests it could. However, it relies on uptake and adherence, both unknown. An app is a support, and it may speed up contact tracing and alerts. However, the inequalities aspect must not be ignored, eg, the digital divide is not just about older people, but also the poor, vulnerable homeless groups, non-English speakers, etc.²³

- **Testing of the app so far has been during a period when the public's movements have been restricted, and so their contacts are reduced. Will an app become more important when people return to daily activities, and are more likely to come into contact with people they do not know?**

It is contact tracing that becomes more important - the app is a support and its purpose must be clearly defined

8. How does the UK's approach to test and trace compare with strategies in other countries during this pandemic?

Contact tracing is a local activity in all countries. Local authorities know their community, and tracing requires feet on the ground. England differs from Germany, which has a sixth of the death rate of England, in six key respects.

- I The official notification system was slow to kick in (01 February in Germany, compared with 22 February in Scotland, 29 February in Northern Ireland, 05 March in England, and 06 March in Wales). Yet the secretary of state for health & social care had declared a "serious and imminent threat to public health" on 10 February and then the system for notifying suspected cases was bypassed. The reason for the delay is not known.

²³ Parker MJ, Fraser F, Abeler-Dörner L, Bonsall D. Ethics of instantaneous contact tracing using mobile phone apps in the control of the COVID-19 pandemic. *Journal of Medical Ethics* 2020;46(7)427-431. <https://jme.bmj.com/content/early/2020/05/05/medethics-2020-106314>

- 2 Contact tracing stopped on 12 March, when only 3,500 contacts had been traced, of whom 115 were subsequently found to be positive cases. There has been no formal explanation for not following WHO advice.²⁴
- 3 The 11-day lag before lock down on 23 March meant that there was no active case finding or contact tracing. Valuable time was lost. Lockdown had the effect of putting most people into quarantine, and so contact tracing should have continued, especially for clusters of cases occurring in high risk settings such as nursing homes, prisons, and hospitals, for high risk groups, and in some areas where case numbers were low.²⁵
- 4 Confirmed cases in England are only sent to PHE, not local authorities, unlike in Germany. In England, local public health did not receive detailed data, for example postcodes, or occupation on suspected or confirmed cases, to monitor the epidemic, for modelling, for outbreak control and contact tracing, and for identifying clusters. Instead, what data were sent were aggregated.
- 5 England has adopted a centralised approach, not locally-based as in Germany. Germany built up its 400 public health departments (serving 83 million people in 16 states). The tracing programme announced by the secretary of state on 23 April 2020 is a new, parallel, centralised, and highly fragmented privatised service based on call centres operated by Serco and other companies, with thousands of newly recruited call handlers and contact tracers. Contact tracing and testing has been decoupled from primary care and clinical care and there is no responsibility for monitoring. The contact tracing programme may not be fully operational until 25 September.
- 6 The English system has no clear chain of command and responsibilities and accountabilities between PHE, NHS England, local authorities, commissioning bodies, the Department for Health & Social Care and NSHX, NHS Improvement, and NHS Business Services Authority, and commercial providers.²⁶
 - **Are there factors that meant the UK needed to adopt a different approach?**

The weakened system here, compared to Germany, meant that the choice was between rebuilding it or using private companies. In Germany the government chose the former to reinvest in its 400 public health departments. In the UK the government in England chose use private companies. That was a choice, not a need.²⁷

- **In hindsight, should the UK have continued to contact trace throughout the course of the pandemic?**

Yes of course - but it's not really in hindsight as many of us were saying this back in March once the decision was made to stop.

²⁴ Pollock AM. Covid-19: why is the UK government ignoring WHO's advice? BMJ 2020;368:m1284. <https://www.bmj.com/content/368/bmj.m1284>

²⁵ Pollock AM, Roderick P. To tackle this virus, local public health teams need to take back control. The Observer. 26 April 2020. <https://www.theguardian.com/world/2020/apr/26/to-tackle-this-virus-local-public-health-teams-need-to-take-back-control>

²⁶ Association of Directors of Public Health et al. Public health leadership, multi-agency capability: guiding principles for effective management of COVID-19 at a local level. June 2020. <https://www.adph.org.uk/wp-content/uploads/2020/06/Guiding-Principles-for-Making-Outbreak-Management-Work-Final.pdf>

²⁷ Reintjes R. Lessons in contact tracing from Germany. BMJ 2020;369:m2522. <https://www.bmj.com/content/369/bmj.m2522>

- **Could, or should, there be a role for more local test and trace strategies, given differences in outbreaks around the country?**

Yes we advocate central coordination and resourcing of local integrated contact tracing services.²⁸

- i Immediate steps should be taken to ensure that registered medical practitioners within NHS 111, the covid-19 assessment service, and general practice notify local authorities of suspected cases. Official advice to those with covid-19 symptoms should be amended to direct them to contact a GP or NHS 111. All test results must sent back to primary care. Covid-19 services should be reintegrated into primary care. Data should flow locally on suspected cases and cases.
- ii Outbreak management plans should put local directors of public health in control of contact tracing, coordinated rather than led by PHE. The capacity of the NHS 111 covid-19 call centres and the assessment service should be immediately reintegrated into primary care and practices resourced to resume care.
- iii Local authorities, NHS trust and PHE laboratories should be sufficiently resourced to take the lead on contact tracing and testing, and general practices resourced to support patients, under central coordination. Parliament has given the secretary of state the powers to enable this to happen, and we urge him to exercise them.
- iv Commercial contracts should be published and scrutinised and terminated.
- v In the longer term, the abysmal response of the government to the epidemic has served to underline the need for legislation to rebuild and reintegrate a strong local communicable disease control system.

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²⁸ Roderick P, Macfarlane A, Pollock AM. Getting back on track: control of covid-19 outbreaks in the community. BMJ 2020;369:m2484. <https://www.bmj.com/content/369/bmj.m2484>