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From Rt Hon Greg Clark MP, Chair

Rt Hon Boris Johnson MP
Prime Minister
(By e-mail)

18 May 2020

Dear Prime Minister,

COVID-19 pandemic: some lessons learned so far

I am writing to you on behalf of the House of Commons Science and Technology Committee. We are delighted to see you back after your recovery from Coronavirus and send our warm congratulations to you and Carrie on the birth of your son.

My Committee has been taking evidence relating to the COVID-19 pandemic as part of our inquiry, *UK Science, Research and Technology Capability and Influence in Global Disease Outbreaks*.[1] It is important for us to ask questions during the pandemic both:

(i) to ensure that contemporary evidence is captured on decisions and assessments so that not all evidence relies on recollections and hindsight; and
(ii) so that any lessons learned which are relevant to the ongoing management of the pandemic can be uncovered and applied.

With the second purpose in mind, we wanted to share with you, your Ministers and advisers some findings that we have identified through our first six public evidence sessions that have implications for the ongoing response to the pandemic.

It is important to say from the outset that any live response to this new and deadly virus—which was unknown to most of the world at the beginning of this year, and which has spread explosively to almost every country on Earth, and whose medical and scientific characteristics are being revealed and analysed day-by-day—to entail decisions, made in good faith and with the best information then available—which turn out to be wrong as well as right. Judgements, necessarily made within a fog of uncertainty, will be revealed by subsequent experience some to have been correct, and some incorrect. Scientific hypotheses that were advanced on good grounds when tested by the

[1] https://committees.parliament.uk/work/91/uk-science-research-and-technology-capability-and-influence-in-global-disease-outbreaks/

emerging evidence will be found in some cases to gain in force, and in others to need to be revised or retired.

We seek to be purposeful: in the true spirit of science to confront theory and early practice with the evidence that experience makes available, and so to be able to learn and apply the lessons at the earliest possible opportunity.

A policy and practice that is open to learning from experience and making necessary adjustments is more deserving of public confidence than one which is impervious to criticism or resistant to alteration.

On this basis, we offer ten findings and recommendations so far.

(i) SCIENTIFIC ADVICE TO GOVERNMENT

Finding 1: The Government has sought to obtain and act on good scientific advice

The United Kingdom benefits from one of the strongest bases of scientific expertise in the world—in terms of both individuals and institutions.

The conception and structure of the Scientific Advisory Group for Emergencies (SAGE) and its sub-groups is designed to capitalise on this strength—drawing on a range of specialists whose expertise is most relevant to the nature of the emergency in question.

It is clear from all of our evidence sessions that SAGE and its subsidiary groups have been extensively consulted and highly influential in Government decisions throughout the pandemic.

The leading scientists in SAGE, the Government Chief Scientific Adviser (GCSA), Sir Patrick Vallance, and the Chief Medical Officer for England (CMO), Professor Chris Whitty, are substantial figures with independent reputations. SAGE has met frequently throughout the crisis and, according to its website, met 26 times from late January to mid-April.[2]

Several witnesses who have participated in SAGE meetings described how the Group has made a serious attempt to distil the range of scientific views into advice to Government.

[2]https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/883086/sage-meeting-papers.csv

Professor Neil Ferguson, for example, told us:

> The Government have, I believe, been informed by the scientific evidence and have balanced that against other considerations—economic, health and all the things one might expect them to do.[3]

Professor Chris Whitty explained the different groups feeding into SAGE:

> You have to remember that underneath the SAGE structure sit multiple other professional scientific advisory groups, and underneath that is a whole body of fantastic academic work.[4]

Witnesses told the Committee that the distinction between distilling up-to-date scientific knowledge—including areas of differing opinion—relevant to policy decisions and directing those decisions was well understood by those who have participated in SAGE meetings.

Sir Patrick Vallance, for example, told us that he thought:

> the Government have listened to the advice of SAGE very carefully and followed it. Clearly, there are decisions that need to be made by politicians on how they want to implement that advice, and those areas are, rightly, political decisions and not scientific ones.[5]

Further when we asked Sir Patrick in March if there had been any "significant disagreement between the Government and their scientific advisers on anything material", he was unambiguous in his response, simply replying "no".[6]

Professor Chris Whitty told us how SAGE sought to distil the scientific evidence and its associated uncertainties—which may lead to a difference of opinion among those who have participated in SAGE meetings—in a helpful way for the Government to aid decision making:

> It is not very useful to Ministers or other decision makers to say, "There are 16 opinions. Here are all 16. Make up your mind." Part of the process is to say in a unified way, "Here is the central view", and then, if there are either dissenting views or a range of uncertainty quantitatively around that, to convey it in a way that is comprehensible to the people who are listening so that they understand the certainty with which the advice is

[3] Q9 (all question numbers in footnotes refer to oral evidence taken before the Committee—transcripts are published on the Committee website: https://committees.parliament.uk/committee/135/science-and-technology-committee-commons/publications/oral-evidence)
[4] Q247
[5] Q80
[6] Q841

> being proffered. If they do not, it is clearly going to lead to bad decision making.[7]

The Government Chief Scientific Adviser (GCSA) similarly explained:

> I think what SAGE has to do is to try to take complex science and bring it to a position where we say, "This is the consensus view of where we are now, but we are clear about the function and purposes of argument." What I think is not helpful is to say, "Here are several different views," and ask somebody who is less knowledgeable to bring these together and come to a single view. In SAGE, we try to come up with a consensus view, but we are always clear and open about how we arrive at that.[8]

While there is, and must continue to be, a clear distinction between the role of scientists as advisers, and Ministers as decision-takers, it is clear that the Government has been serious in taking scientific advice, and that British scientists on SAGE have sought to give that advice in a way designed to help decision making.

Recommendation 1: The Government should continue to draw on extensive scientific advice through the further stages of the pandemic.

Finding 2: The transparency around scientific advice has not always been as clear as it should have been.

The strength of British science and the prominent role that scientific advice has played during the pandemic can be an important source of public confidence. The regular appearances of the GCSA and CMO at Downing Street press conferences have been a public demonstration that scientific advice has been influential in Government decisions.

Yet there have been a number of concerns over the transparency of the scientific advice given and its relationship to Government decisions.

First, **transparency over the membership of SAGE** and the groups feeding into it was not initially addressed.

There are a number of reasons why transparency over who attends SAGE is beneficial.

It is likely to a be a source of strength to demonstrate the breadth and depth of scientific advice that is being drawn on by Ministers and officials; and it also allows scrutiny of whether SAGE contains the appropriate range of disciplines necessary to give rounded advice.

[7] Q249
[8] Q78

Following evidence sessions held by the Committee, Sir Patrick Vallance made a commitment to publish the membership of SAGE. The Committee is grateful for that response to its concerns and strongly welcomes the decision.

All but two of the names of people who have attended SAGE were published on 4 May. However, the published list conflates those who are part of a core membership that has guided policy throughout the pandemic while others—as Professor Sir David Spiegelhalter told us—had been present for a single meeting.

A second concern is over the **timely publication of the scientific papers** on which SAGE has drawn for its advice. A website was established within gov.uk ("Scientific advice supporting the government response to COVID-19") containing relevant papers.[9] A commitment was given to the Committee in a letter of 4 April from Sir Patrick Vallance "to regularly publish evidence documents and studies on gov.uk which have formed the basis of SAGE's discussions and advice".[10]

However, after March no further papers were uploaded to the website until—after the Committee raised the matter with the CMO at our hearing on 24 April—a further set of papers was eventually published on 5 May.

While it is welcome that some papers used to inform SAGE meetings have been published on this website, to date the majority of papers (92 out of 120) have not been published according to the full list of meeting papers published on gov.uk, meaning much of the evidence informing SAGE is still not in the public domain.[11]

The CMO explained in evidence on 24 April that in certain emergencies, questions of protecting intelligence and national security arise:

> The last time there was a SAGE thing was the Novichok poisonings in Salisbury; at that point I was interim chief Government scientific adviser and I chaired it. There was absolutely no way we were going to put those documents into the public domain, nor will we. I have also been involved previously in SAGE meetings where some of the information was at a classified level and some was not. There will be a mixture.[12]

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[9] https://www.gov.uk/government/groups/scientific-advisory-group-for-emergencies-sage-coronavirus-covid-19-response#contents

[10] https://publications.parliament.uk/pa/cm5801/cmselect/cmsctech/correspondence/Patrick-Vallance-to-Greg-Clark-re-SAGE-composition.pdf

[11] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/883086/sage-meeting-papers.csv

[12] Q259

That is completely understood and accepted by the Committee. However the CMO acknowledged that the current circumstances are different:

> SAGE on this occasion is dealing with something that is a straight science-to-policy question […] wherever possible, we absolutely should be putting out the data and trying to give the underlying workings.[13]

Our third observation concerns **the transparency of SAGE's advice** itself. The Government has drawn attention to basing its decisions on scientific advice, while accepting that policy decisions are made by Ministers rather than scientific advisers. Individuals who have participated in SAGE meetings during the current pandemic have confirmed that. For example, Professor Neil Ferguson said: "To be clear, SAGE does not recommend policy".[14]

It is clearly important that this distinction is respected. However, there is no transparency over what the advice of SAGE is—whether in the form of its actual advice to Ministers, minutes of its meetings, or even a summary, suitable for publication, of its advice.

Without visibility of the scientific advice it will be difficult to corroborate the Government's assertion that it always follows the scientific advice.

In particular, there will be a margin of ambiguity about what was the scientific advice and what was a matter of policy. To avoid the risk of elision between the scientific advice and policy decisions, it would be good practice to ensure these are always distinguishable.

Recommendation 2: **To increase transparency in the provision of scientific advice the Government should:**

- **(i) update regularly the now public list of members of SAGE and state how many meetings the named people attended;**
- **(ii) disclose the disciplines of SAGE participants who are not publicly named;**
- **(iii) publish promptly the papers on which SAGE draws for its advice after each relevant meeting; and**
- **(iv) publish now and regularly a summary of the scientific advice which has informed Government decisions.**

(ii) CO-ORDINATION IN SCIENTIFIC ADVICE BETWEEN THE UK NATIONS

Finding 3: The provision of scientific advice has been well co-ordinated between all four nations of the United Kingdom.

[13] Q259
[14] Q9

The Chief Medical Officers for the four nations of the United Kingdom all told us of the strong co-operation and regular liaison between the public health organisations of the UK.

Dr Gregor Smith, interim Chief Medical Officer for Scotland, for example, told us that there has "been regular discussions between the four UK CMOs", with them speaking to:

> one another at a minimum three times a week, but we take various opportunities to ensure that we link with one another through senior clinician groups or through more ad hoc meetings because things have arisen that we need to speak about with more urgency.[15]

Further, Dr Smith explained the joint approach that the four nations had been taking: "In any of the discussions across the four nations between the CMOs, there has been a remarkable sense of agreement on the approaches we need to take from the scientific base".[16]

The CMO for England made similar points to the Committee:

> The interaction among the CMOs has been excellent throughout, and we often communicate several times a day if things are urgent. We also all interact with our own chief scientific advisers to Government. I operate incredibly closely with Sir Patrick Vallance and talk to him or communicate with him at least once a day, often more frequently, as things go along.[17]

Dr Smith told the Committee that although there could be circumstances in which the appropriate measures for managing COVID-19 could be different in some parts of the UK, there was value to consistent messaging for ensuring public understanding and compliance.[18]

Two potential future reasons for divergent measures advanced were that:

i. there could be in future different local stages of development in the epidemic; and
ii. different operational capabilities of the NHS and public health authorities in different parts of the United Kingdom.[19]

Professor Whitty explained that the recent peak in infections was an "artificial" peak brought about through social distancing measures, and that because

[15] Q231
[16] Q236
[17] Q232
[18] Q252
[19] See for example Qq252–253.

those measures were introduced across the UK at "almost exactly the same time" the peak was "occurring at broadly the same time around the country". Consequently, Professor Whitty advised that "the argument for strong regional variation in what we do is not terribly convincing".[20] All four Chief Medical Officers of the UK indicated their support for this position.[21]

Recommendation 3: All four UK Chief Medical Officers should continue to work closely together on their responses to COVID-19.

(iii) TESTING, TRACING AND ISOLATION

Finding 4: Testing capacity has been inadequate for most of the pandemic so far. Capacity was not increased early enough or boldly enough. Capacity drove strategy, rather than strategy driving capacity.

One of the most significant problems of the handling of the pandemic to date in the United Kingdom has been the lack of capacity to test people to determine whether they have COVID-19. Very low numbers of people were being tested well into March, with the number of tests actually falling at a critical time to 1,215 on 10 March.[22]

The Committee has found a consensus embracing a broad range of experts from within the UK and overseas—including among the Government's scientific advisers—that testing capacity has been too low.

Sir Patrick Vallance told the Committee on 25 March that he wished the UK had "more tests available today", and that "it would be great to have got ahead of this more than we have been able to".[23]

Professor Chris Whitty stated on 24 April that SAGE had consistently said that "one of the things we need is a greater capacity to test [for COVID-19] across the whole of the UK.[24]

As far back as February, the WHO-China Joint Report said that countries should "immediately expand surveillance to detect COVID-19 transmission chains by […] adding testing for the COVID-19 virus to existing surveillance systems".[25]

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[20] Q280
[21] Q281
[22] As of 9am 11 March 2020, a total of 27,476 people had been tested, up from 26,261 (as of 9am on 10 March). See https://twitter.com/DHSCgovuk/status/1237740175582801921 and https://twitter.com/DHSCgovuk/status/1237382759812861952.
[23] Q85
[24] Q257
[25] Report of the WHO-China Joint Mission on Coronavirus Disease 2019 (COVID-19)

The Committee heard from witnesses from the Republic of Korea, Hong Kong and Germany who all emphasised the foundational nature of establishing mass testing capacity from an early stage.
It was therefore identifiable from the beginning of the pandemic that testing capacity would be crucial.

The evidence from Professor Sharon Peacock of Public Health England (PHE) to the Committee on 25 March was that PHE had chosen to follow a different approach to countries like the Republic of Korea which had engaged in mass testing from an early stage. Professor Peacock undertook to share "in the next few days" with the Committee the evidence and analysis on which the decision to reject the South Korean approach was taken.[26]

Despite several requests by letter, email and telephone since the 25 March, PHE has not produced to the Committee the basis for the pivotal decision to choose an initially centralised, smaller scale approach to testing over other leading international approaches.

In a letter of 1 May (for which the Chief Executive of PHE has subsequently apologised[27]) PHE sought to discharge their obligation to share the evidence on which their decision was based at the time by pointing to a completely different study only now being carried out by the Royal Society on how testing is carried out by other countries.[28]

The Committee, through the Chair, questioned the Secretary of State in the Chamber of the House of Commons on 26 February[29] and 11 March[30] on what steps were being taken to expand capacity, and in correspondence of 30 March and 14 April.[31] Answers reiterated that a gradually expanding, centralised approach was being taken, within PHE laboratories.

In evidence to the Committee, Sir Paul Nurse, Director of the Crick Institute, said that he had offered his laboratories and staff to the testing effort but he did "not think that [he] got a reply" until weeks later, once the Crick Institute had publicly announced its provision of testing for healthcare workers.[32]

The decision to pursue an approach of initially concentrating testing in a limited number of laboratories and to expand them gradually, rather than an approach

[26] Qq121–124
[27] Letter from PHE on 7 May
[28] Letter from PHE on 1 May
[29] https://hansard.parliament.uk/Commons/2020-02-26/debates/B0FE8C31-77D5-40AA-97AF-BBA8FB620A95/Coronavirus#contribution-20659EA2-7415-4DC9-BB45-3D59E18D1D01
[30] https://hansard.parliament.uk/Commons/2020-03-11/debates/E9C77FF3-6EB8-4A29-8877-33359AB8C414/Coronavirus#contribution-964EA313-B93C-409E-9D6B-B15BB7223C9E
[31] Correspondence between Rt Hon Greg Clark to Professor Sharon Peacock, Kathy Hall and Professor John Newton
[32] Q119

of surging capacity through a large number of available public sector, research institute, university and private sector labs is one of the most consequential made during this crisis. From it followed the decision on 12 March to cease testing in the community and retreat to testing principally within hospitals.

Amongst other consequences, it meant that residents in care homes—even those displaying COVID-19 symptoms—and care home workers could not be tested at a time when the spread of the virus was at its most rampant.

The failure of PHE to publish the evidence on which its testing policy was based is unacceptable for a decision that may have had such significant consequences. The absence of disclosure may indicate that—notwithstanding the oral evidence given to the Committee—no rigorous assessment was in fact made by PHE of other countries' approach to testing. That would be of profound concern since the necessity to consider the approaches taken by others with experience of pandemics is obvious.

It is vital that the formal assessment made at the time is published without further delay, or, if it does not exist, PHE is open about this and explains why.

Several witnesses who have participated in SAGE meetings told us that the capacity to test was an operational matter under the control of PHE, rather than one that they could determine. For example, Professor Neil Ferguson told us that testing had "always been discussed significantly" at SAGE, but that "the reason it was not included in initial modelling was about the projections by PHE of how quickly this country could ramp up testing capacity".[33]

On 2 April the Secretary of State for Health and Social Care, Matt Hancock MP, announced a target of 100,000 tests a day to be carried out by the end of that month. However, Professor Whitty made clear to the Committee that "SAGE did not give that specific target".[34] Even public officials emphasised that the 100,000 target was the Secretary of State's choice, with Professor John Newton explaining:

> I think specifically, no, it is not a SAGE target; it is the Secretary of State's target. I think he has taken advice from the programme and from colleagues […] I am afraid you would have to ask the Secretary of State himself exactly where he got his advice from.[35]

While there was some public debate at the time about whether the target was met by 30 April, it is clear that it drove a major expansion of testing to a level, in

[33] Q20
[34] Q257
[35] Qq138–139

capacity at least, comparable with what Germany had enjoyed for several weeks.

For such an important determinant of a wide range of policy responses, it is surprising that a target designed to galvanise a tenfold increase in testing capacity appears not to be on the advice of PHE, NHS England or SAGE but was more of a personal initiative by the Secretary of State. Had the public bodies responsible in this space themselves taken the initiative at the beginning of February, or even the beginning of March, rather than waiting until the Secretary of State imposed a target on 2 April, knowledge of the spread of the pandemic and decisions about the response to it may have made more options available to decision makers at earlier stages.

Recommendation 4: The Government should publish the assessment of other countries' testing models on which the decision to follow a centralised, sequential approach was based.

Finding 5: It is not clear that the lessons of the delays to testing have been learned.

Although multiple witnesses told the Committee that it would have been desirable had much greater testing capacity been available from an earlier stage in the pandemic, no one gave an account that the lessons had been understood and would be applied to other decisions during the future course of the pandemic which were relevant.

Apart from the clinical purpose of identifying for isolation and medical attention of those infected with COVID-19, the retreat to testing only hospital patients for the virus drastically curtailed the ability to gather data that could have identified the spread of the virus among different groups and with different symptomatic severity.

The Office for National Statistics is now conducting a very important sampling exercise in which data on the prevalence of COVID-19 in the UK population will be gathered and reported twice-weekly. It is of great importance in providing data on the spread of diseases, its impact on the different demographic groups and geographies, the incidence of asymptomatic transmission and even the Reproduction or 'R' number which the Government has made key to easing some social distancing restrictions. In evidence to the Committee, the National Statistician, Sir Ian Diamond, gave an impressive account of the speed in which his team had been able to organise and implement a significant testing programme.

Sir Ian said:

> The fact that we came into it on a Thursday and, with the University of Oxford, put together the design and protocol […] and put it to medical ethics the following Monday and data ethics on Tuesday, with letters out to potential participants on the Wednesday, seems to me to be one of the most rapid surveys I have ever in my life seen go into the field.[36]

However, Sir Ian also told the Committee that the request to put together such a testing programme was made only on 17 April.

It is not clear why such a study could not have been instigated by the Government at a much earlier stage. Indeed, had this study been in operation even a month earlier, many of the decisions that will be made on social distancing during the days and weeks ahead may have been made earlier, based on much more detailed data. With early estimates of the impact on the economy of the lockdown running at over £17 billion a week,[37] there seems to be insufficient recognition that an avoidable delay in being able to take decisions because of the lack of data has an impact that is vastly greater the cost of the data collection exercise. In particular, the intended use by the Government of current estimates of the Reproduction number ('R') depends, as well as on modelling assumptions that should be open to be examined, on the depth and breadth of the data available to estimate it.

Being able to operate at scale at, or in advance of, the point of need is a key lesson from the testing experience and will have a particular relevance to vaccination, which we discuss in finding 9 below.

Recommendation 5: The Government should learn and apply the lessons from the slowness of the provision of testing capacity and take every opportunity to build capacity in advance of need to surge capacity explosively rather than follow a more gradual "ramping up" approach.

Finding 6: Strategies to deal with carriers of COVID-19 who were asymptomatic have not been clear.

One of the consequences of the small capacity for testing has been that the test has until recently been largely reserved for people suffering from suspected symptoms of COVID-19.

Yet evidence presented to the Committee has raised the prospect that a high proportion of people with COVID-19—and therefore capable of transmitting it to others—are free of all symptoms.

[36] Q389

[37] Centre for Economics and Business Research, 'Estimates of daily economic impact of the UK's lockdown by sector', published 6 April 2020

Professor Xihong Lin of Harvard University said

> In our paper, we analysed that about 60% to 80% of daily new cases were asymptomatic. This was very interesting. A New England Journal of Medicine article was published earlier this week. In that study, they tested pregnant women in New York City. Among 215 pregnant women who tested positive, 85% were asymptomatic. Yesterday in the news there was a report on Boston homeless shelters: among a couple of hundred people who were tested, all those who tested positive were asymptomatic.[38]

The possibility of significant levels of asymptomatic transmission have a profound consequence for the management of the pandemic.

If people have no means of knowing they are infected, then they risk transmitting the infection to large numbers of people if they are not rigorously socially distanced. This is a particular concern for NHS workers and care workers who may be asymptomatically infected and transmitting the disease to vulnerable people with whom they are in close contact.

A significant degree of asymptomatic infection may require regular testing in particular settings—like hospitals and care homes—of all workers who come into contact with vulnerable groups, whether or not they display symptoms themselves.

Recommendation 6: The Government should explicitly set out its approach to managing the risk of asymptomatic transmission of the disease.

Finding 7: In combination with other measures, contact tracing can help to reduce the spread of disease. The UK's limited capacity for contact tracing was an important factor in the decision to stop full contact tracing on 12 March.

Rigorous contact tracing has been used in several countries that have reported low death rates from COVID-19, such as the Republic of Korea, Singapore and Hong Kong. Professor Chris Whitty told the Committee that contact tracing was a "very powerful tool of public health", but that it was "unbelievably labour intensive" if done manually.[39] Although Professor John Newton gave the Committee his opinion that contact tracing would have been stopped once there was widespread transmission in the UK regardless of capacity,[40] many of our expert witnesses acknowledged that limited testing and tracing capacity was a

[38] Q229
[39] Q283
[40] Q173

factor in the decision to stop contact tracing. For example, Professor Neil Ferguson said on 25 March:

> If we have to transit from the suppression strategy and the lockdown strategy to something this country can maintain long term, undoubtedly much more widespread testing, contact tracing and other methods will have to be deployed. If we are talking about back in January/February/ early March, it was very clear from messages from Public Health England that we would have nowhere near enough testing capacity to adopt that strategy.[41]

With respect to easing lockdown restrictions, Professor Jonathan Edmunds, of the London School of Hygiene and Tropical Medicine, explained that contact tracing would "play a role" in managing the epidemic, but would require some social distancing measures to remain in place.[42] He made clear that the point at which effective contact tracing would become feasible was an "operational decision" and would depend on the capacity for tracing and isolation in relation to the numbers of cases.[43]

We also heard that multiple approaches may be required towards managing the manual burden of contact tracing, including the use of new technologies. Professor Christophe Fraser told us that the use of digital contact tracing applications would be necessary to manage the spread of COVID-19 as manual efforts would be "unlikely to be quick enough" to inform those who might be infected.[44] Nevertheless it is clear from the experiences of other countries, such as Singapore,[45] that we cannot rely on the use of a contact tracing application to fulfil our needs. Indeed, Matthew Gould, the Chief Executive Officer of NHSX—which is developing the app—indicated to us that achieving the levels of uptake required for this approach to be optimal would be "tough".[46] Therefore it is critical that the capacity for contact tracing is advanced for future stages of managing the epidemic.

Recommendation 7: The Government must urgently build up contact tracing capacity in order to facilitate further easing of social distancing measures as soon as possible, while minimising the risk of a second peak in infections.

Finding 8: The role of isolation in combination with testing and tracing has been important in countries which have, so far, tackled the pandemic effectively.

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[41] Q20
[42] Q417
[43] Qq416 and 418
[44] Q335
[45] Q336
[46] Q339

The Committee has taken substantial evidence on how other countries have managed the pandemic, including leading experts from around the world.

The consistent message from all of these witnesses was that not only is testing and contact tracing foundational to effective management but so is an extensive programme of isolating and managing infected persons.

Professor Gabriel Leung of Hong Kong University emphasised the importance of quarantine and isolation in testing, tracking and tracing the virus in Hong Kong:

> every single infected individual who is confirmed by testing goes into a hospital bed. In fact, up until very recently, almost all of them would go into a negative pressure single room. All their close contacts who are identified by contact tracing are then quarantined in an isolated facility that is separately and specially prepared for such a purpose. There is no home quarantining for close contacts of confirmed cases.[47]

Dr Erica Lee of the Korea Centers for Disease Control and Prevention confirmed that the Republic of Korea had been using "isolation and quarantine measures".[48] Dr Lee also explained how Korea changed its approach to respond to rising cases so that there were categories of quarantine:

> If they have severe symptoms and they need the treatment, we transport them to either the negative pressure rooms or the tertiary hospitals designated by the Government. If the symptoms are mild, we have designated living and treatment facilities, so they can stay there in isolation and if they become severe, we transport them to the hospitals right away. If they have light symptoms or they are asymptomatic cases, we sometimes recommended that they stay home in isolation.[49]

Professor Xihong Lin of the Harvard T.H. Chan School of Public Health emphasised the important role of quarantine and isolation:

> social distancing, testing and contact tracing greatly help in reducing the transmission but they are not enough, based on analysis of the Wuhan data and other countries. Smart isolation and quarantine, such as the centralised quarantine and isolation used in Wuhan, is needed to bend the curve in a timely fashion.[50]

Without developed, extensive and operational testing and tracing capacities targeted isolation of infected individuals is difficult to achieve. However, when

[47] Q112
[48] Q110
[49] Q114
[50] Q210

testing and tracing has reached a dependable level and cases have fallen to a low enough level, other countries have found that dedicated facilities to isolate and treat infected people has been important in keeping cases very low. These include designated hospitals and non-clinical facilities such as requisitioned hotel accommodation.

While intrusive, and incurring cost, providing dedicated facilities may be worthwhile when set against the more hidden but vastly greater cost of maintaining tighter restrictions on the rest of the population for longer if infected individuals are less rigorously isolated from society.

Recommendation 8: The Government should set out the role of isolation and quarantine as part of its test, track and trace strategy, ensuring that it draws on the experiences of other countries.

(iv) DEVELOPMENT OF VACCINES

Finding 9: The development and deployment of vaccines could be critical to halting the COVID-19 pandemic. It is encouraging news that the first human trials of potential vaccines are now underway in the UK.

The Secretary of State for Health and Social Care announced on 21 April that human trials of a potential vaccine for COVID-19 would start on 23 April.[51] This is testament to the UK's expertise in this area and the hard work of the researchers involved and those supporting them. Professor Sarah Gilbert, who is part of the Oxford team developing a vaccine, has said that she is "very optimistic" of a successful vaccine, which is a particularly encouraging assessment.[52]

We took evidence from Professor Andrew Pollard, of the University of Oxford, and Dr Melanie Saville, Director of Vaccine Research and Development at the Coalition for Epidemic Preparedness Innovations (CEPI), both of whom made clear the need to start the manufacture of potential vaccines before their effectiveness is proven in order for any successful vaccine to be available at scale as soon as possible.

Dr Saville stressed the importance of investing in manufacturing capacity at an early stage and explained the work that CEPI was undertaking in this regard:

> to reach a 12 to 18-month timeframe many activities need to be done in parallel and at risk. With manufacturing, you do not usually scale up your process until you have clinical data. One of the approaches that CEPI is

[51] https://www.gov.uk/government/speeches/health-and-social-care-secretarys-statement-on-coronavirus-covid-19-21-april-2020
[52] See for example: https://www.bbc.co.uk/news/health-52394485

> taking in terms of funding is to accelerate the scale-up of manufacturing so that it is done even at pre-clinical phases.[53]

Professor Pollard explained that if investment at risk in manufacture of a COVID-19 vaccine did not take place until all trials were completed then the UK would be "years and years away" from having a vaccine that could be ready for mass use.[54]

Clearly no vaccine may be used (other than in trials) before its effectiveness and safety is assured. However, to wait until all trials are completed in order to build up the capacity to manufacture and distribute vaccines could lose valuable time. Therefore, even at the risk of redundancy, it is imperative to ensure that the UK has built up sufficient manufacturing and distribution capacity to roll-out a vaccine as soon as its effectiveness is proven.

Recommendation 9: The Government should build capacity for vaccine manufacture and deployment now in advance of need and so that their mass use can start as soon as their safety is proven.

(V) RECORDING ETHNICITY

Finding 10: There are significant unexplained differences in the death rates in the UK of Black, Asian and minority ethnic groups compared to the population as a whole.

NHS England publishes a breakdown of COVID-19 deaths by ethnicity,[55] which is dependent upon such information being recorded in emergency department, in-patient or out-patient datasets, and is unavailable for almost 10% of such cases. Further, it does not cover those who die outside of an NHS setting, for example in care homes.

Professor Chris Whitty, told us that there was "pretty clear evidence that there is over-representation, at least in certain areas, of people from BAME backgrounds in the number of people who get into severe difficulties" with COVID-19, but that the reason for this was not clear.[56] Further, an analysis from the Institute for Fiscal Studies identified that "data published by NHS England on registered hospital deaths by ethnic group have confirmed stark inequalities between ethnic groups". It explained that:

> among the black Caribbean and 'other' (which includes the Arab population) groups, per-capita hospital deaths are close to three times

[53] Q50
[54] Q53
[55] 'COVID-19 Daily Deaths', NHS England
[56] Q284

> those of the white British majority, and the 'other black' group has also recorded a disproportionate number of hospital deaths.[57]

Analysis published by the Office for National Statistics (ONS) on 7 May made similar findings: "After adjusting for age […], men and women from all ethnic minority groups (except females with Chinese ethnicity) are at greater risk of dying from COVID-19 compared with those of White ethnicity".[58]

Professor Whitty made clear to us on 24 April that the cause for BAME over-representation in those people "who get into severe difficulties with this disease" was not known.[59] The ONS analysis identified some of the reasons for the difference in outcomes, and found "that the difference between ethnic groups in COVID-19 mortality is partly a result of socio-economic disadvantage and other circumstances, but a remaining part of the difference has not yet been explained".[60]

Professor Whitty explained that he had requested Public Health England and academic input to try and establish why there was this over-representation:

> I have asked Public Health England to look seriously at any datasets, because it is a major concern. In the National Institute for Health Research, we have put out a call for our academic colleagues also to look at it.[61]

It was also highlighted to us that data on the ethnicity of those dying from COVID-19 was not systematically collected. Professor Whitty argued that ethnicity and gender should be recorded "much more systematically"[62] in a wide variety of data sources to facilitate monitoring and research into health impacts related to such characteristics. Dr Frank Atherton, Chief Medical Officer for Wales, similarly agreed that "more data is needed".[63]

Recommendation 10: The Government should consider how ethnicity data on those dying as a result of COVID-19 could be systematically recorded.

The Science and Technology Committee hopes that these initial findings and recommendations will be useful as a constructive contribution to the important

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[57] https://www.ifs.org.uk/inequality/chapter/are-some-ethnic-groups-more-vulnerable-to-covid-19-than-others/

[58] https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/articles/coronavirusrelateddeathsbyethnicgroupenglandandwales/2march2020to10april2020

[59] Q284

[60] https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/articles/coronavirusrelateddeathsbyethnicgroupenglandandwales/2march2020to10april2020

[61] Q284

[62] Q286

[63] Q288

and difficult decisions you and your colleagues in Government have to make during the weeks ahead.

As we continue to take evidence during the remaining course of this pandemic the Committee will, in the same spirit, write to you with further observations based on what we learn.

I am copying this letter to the Secretary of State for Health and Social Care, the Chief Medical Officer for England and the Government Chief Scientific Adviser. I will be placing this letter in the public domain.

With best wishes,

Rt Hon Greg Clark MP
Chair