

9. Playing the opening and middle games against Covid-19

There is no doubt that the Prime Minister [Johnson] made some very bad misjudgements and got some very serious things wrong. It is also the case that there is no doubt that he was extremely badly let down by the whole system. It was a system failure.

Dominic Cummings, chief adviser to PM Boris Johnson (July 2019 to mid-November 2020), giving evidence to a House of Commons committee on 26 May 2021.¹

Ingmar Bergman's classic film *The Seventh Seal* was set during the worst global pandemic in human history, the Black Death. It centres on the story of a Swedish knight, who, on his return home from the Crusades, plays a chess match for his life against Death. Inevitably he loses. Chess offers an analogy for the 'game' against Covid-19: the opening game took place in 2020, before effective vaccines had been developed. The middle game occurred after these vaccines were available. And the end game has unfolded in countries after mass vaccinations, where Covid-19 has become like regular flu. Both in chess and in battling a pandemic, having an effective strategy is absolutely vital in the 'opening game', because mistakes in the initial moves have fatal consequences. The first section of this chapter charts the UK government's chaotic start at the onset of Covid-19 in 2020, when the government played the initial moves against Covid-19 like a beginner at chess, who knows how the pieces move but blunders in the absence of a strategy. The following sections consider later changes in UK policymaking, when the PM and ministers switched strategy, reluctantly (and slowly) accepting the need for repeated lockdowns of the economy – to keep the Covid-19 burdens on the National Health Service within the bounds that the NHS could cope with. The last section of this chapter considers the 'middle game', beginning in 2021, when the UK government performed superbly in speedily procuring, licensing and deploying anti-Covid vaccines.

How to cite this book chapter:

Bevan, Gwyn (2023) *How Did Britain Come to This? A century of systemic failures of governance*, London: LSE Press, pp. 221–261.
<https://doi.org/10.31389/lsepress.hdb.i> License: CC BY-NC

9.1 The opening game

On 12 December 2019, Boris Johnson led the Conservative Party to a landslide victory in the UK general election with the promise ‘to get Brexit done’. On 24 January 2020, his government recognised the threat Covid-19 posed to the UK by convening the first meeting of its committee for responding to emergencies in the Cabinet Office Briefing Room A (COBRA). However, the prime minister himself did not attend.² On 29 January, the first recorded cases of Covid-19 were confirmed in Britain.³ On 30 January, the director-general of the World Health Organization (WHO) declared that the Covid-19 outbreak constituted a public health emergency of international concern.⁴ The same day the Italian government proclaimed a national health emergency for six months, and suspended flights to and from China.⁵

For Boris Johnson, however, 31 January was: ‘the moment when the dawn breaks and the curtain goes up on a new act in our great national drama ... potentially a moment of real national renewal and change’: that was the day that the UK formally left the EU.⁶ And four days later he made clear that, for his government, the real threat from Covid-19 was overreaction:

When barriers are going up, and when there is a risk that new diseases such as coronavirus will trigger a panic and a desire for market segregation that go beyond what is medically rational to the point of doing real and unnecessary economic damage, then at that moment humanity needs some government somewhere that is willing at least to make the case powerfully for freedom of exchange, some country ready to take off its Clark Kent spectacles and leap into the phone booth and emerge with its cloak flowing as the supercharged champion, of the right of the populations of the earth to buy and sell freely among each other. And here in Greenwich in the first week of February 2020, I can tell you in all humility that the UK is ready for that role.⁷

A month later, on 2 March 2020, Boris Johnson finally attended a COBRA meeting on the pandemic for the first time (its sixth).⁸ David Caleb’s letter to *The Guardian* on 11 January 2022 pointedly asked: ‘Is it my imagination that during the pandemic Boris Johnson has attended more unlawful gatherings [i.e. parties in 10 Downing Street that broke lockdown regulations] than he has Cobra meetings?’⁹ The chaotic way that decisions were made by the Johnson government in 2020 is described by Jonathan Calvert and George Arbuthnott, investigative journalists for the *Sunday Times*, in their book *Failures of State*,¹⁰ and by Dominic Cummings, in his oral evidence to a joint meeting of the Science and Technology Committee and the Health and Social Care Committee of the House of Commons, on 26 May 2021 (Figure 9.5).¹¹ All three criticised the Johnson government for its deadly delayed decision on the

first lockdown, made only on 23 March, and are righteously indignant about that delay later being repeated for the second and third times in November 2020 and January 2021.

One interpretation of these delays is that Johnson's role model was the mayor of Amity in Stephen Spielberg's film *Jaws*, who gives priority to the town's prosperity, in ordering the beach to remain open, despite overwhelming evidence of the presence of its massive man-eating shark.¹² *Jaws* was an updated exploration of that theme in Henrik Ibsen's play, of 1882, in which a Norwegian town's medical officer, Dr Stockman, proposed closing its new municipal baths after he discovered its water supply was toxic and posed 'the gravest possible danger to the public health'. The town mayor won public support for keeping the baths open and Stockman became Ibsen's *Enemy of the People*.¹³ Johnson was determined to avoid that fate.¹⁴ Dominic Cummings reported that, after April 2020, Johnson's view was that the first 'Lockdown was all a terrible mistake. I should have been the mayor in "Jaws". We should never have done lockdown 1'.¹⁵

For many British people, every step we take by the 500-metre-long Covid Memorial Wall in London (Figure 9.1) makes us wish that, back in February 2020, we had had a prime minister with a different view. Yet at least Johnson

Figure 9.1: The National Covid-19 Memorial Wall in London



Source: Kelly Foster. Available under a Creative Commons Attribution-Share Alike licence (CC BY-SA 4.0).¹⁶

was not Donald J. Trump, the 45th president of the US. On 27 February 2020 he made clear that his view of Covid-19 was that ‘one day, it’s like a miracle, it will disappear.’¹⁷ That was the first of 38 such predictions. On 24 April 2020, he proposed, on a live nationwide broadcast, ‘interesting’ treatments that official scientists might test (in randomised controlled trials?):

So, supposing we hit the body with a tremendous – whether it’s ultraviolet or just very powerful light ... supposing you brought the light inside of the body, which you can do either through the skin or in some other way ... And then I see the disinfectant where it knocks it out in a minute. One minute. And is there a way we can do something like that, by injection inside or almost a cleaning?¹⁸

Imagine what it would feel like if you were there as Deborah Birx, the coronavirus response coordinator in the White House, who sat in silence. Later, in March 2021, she said that she thought every day about what she ought to have done.¹⁹

9.2 ‘Following the science’

A strategic response in the opening game against Covid-19 required a model because of our incapability in making sense of its complex interactions of feedback and delay:

- between a new case being infected and infecting others (with Covid-19 whilst asymptomatic) and experiencing symptoms, being diagnosed, possibly requiring admission to hospital or an intensive care unit (ICU), and (eventually) death or recovery;
- in the reporting of data on observable outcomes (infections, admissions to hospitals and ICUs, and deaths);
- in the effects of actions taken to stop the spread of the disease on observable outcomes.

We learn quickly when feedback is instant, but not when it is delayed, as in using a shower for the first time. Peter Senge illustrates our failure in ‘learning by doing’ within a system with multiple components that give delayed feedback using a famous example – the MIT ‘beer game.’²⁰ There are three players: a retailer, a wholesaler and a microbrewery. The wholesaler responds with a lag to a change in the order from the retailer, and the microbrewery responds to the wholesaler also with a lag. In the game, the retailer knows customer demand, the wholesaler knows demand from the retailer, and the microbrewery demand from the wholesaler. The game begins with a stable weekly demand on the retailer for four cases a week. When that is increased to a new

stable weekly demand of eight cases a week, the retailer is initially under-supplied and so keeps on increasing his weekly demand until it is met. By this time the microbrewery is on a schedule of ramping up its production to meet ever-increasing demands. Chaos ensues. Senge's book *The Fifth Discipline* is about the need to develop models to designed for such systems to understand what is going on and how to intervene.

For a government to formulate a strategy for a pandemic it needs a model of that complex system. But the initial moves against Covid-19 had to be made with neither good understanding of nor good data on the progress of the disease. That created what John Kay and Mervyn King describe as radical uncertainty.²¹ The mantra of the UK government in its initial moves of the opening game against Covid-19 was that it was 'following the science'. But the 'science' it chose to follow proved to be inadequate for the radical uncertainty that undermined our capability to model how the disease would spread. The 'science' government needed was what Michael Lewis describes as 'red-neck epidemiology': developing a simple model that could use the limited data that were available; and not starting with a complex model and waiting for the data that it required to become available. In *January 2020*, Carter Melcher (one of Lewis's 'redneck epidemiologists') used the available data from Wuhan and estimated that the range of expected deaths from taking no government action in the US could range from 900,000 to 1.8 million.²² In April 2023, the total number of deaths attributed to Covid-19 in the US was over 1.1 million.²³ For the UK, the comparable range would have been from 180,000 to 360,000, and actual Covid-19 deaths were over 210,000. In March 2020, however, 'a senior health official said the UK would do well if it managed to keep the coronavirus death toll below 20,000 people'²⁴ – that number was exceeded by 19 April 2020.²⁵

The players in the beer game were unable to make sense of a step change in demand. Pandemics are frightening when the rate of infections increase, not in step changes but exponentially. That means the larger the number, the greater is the rate of increase. 'Exponential growth bias' describes the common belief that the future will always increase at a steady rate. (It is well known in the world of finance, where people typically underestimate the benefit of compounding interest in savings.) The nature of exponential growth is the subject of the fairy tale about Sissa ibn Dahir, an impoverished mathematician, who invented the game of chess in mediaeval India. When his king, Shihram, insisted on offering him a reward, Sissa asked for one grain of rice for the first square of the board and the number to be doubled on each successive square (from 2 to 4 to 8 to 16 and so on). The king was disabused of his belief that such a reward was quite inadequate when he learnt that, before the 30th square was reached, his whole kingdom's supply of rice was exhausted. (The pay-off from the 64th square has been estimated to be enough rice to cover the entire country of India with a layer a metre high.²⁶)

What determined whether the increase in the number of cases with Covid-19 was exponential was the rightly famous R number: the average number of people infected by one infected individual. The number of cases increases exponentially if R is greater than one, stays at a constant rate if R equals one, and decreases if R is less than one. When the R number in England was greater than one, ministers seemed as bewildered as King Shihram. They would say things like: ‘No one could imagine that two weeks ago this is where we would be today.’ Prior to the UK’s first lockdown, on 23 March 2020, cases were doubling every three days and peaked, on 10 April, at 70 cases per million. If that exponential growth had continued unchecked, then 45 days later everyone in England would have been infected and ‘herd immunity’ would have been achieved – with devastating consequences in deaths and illness.

The beer game is played for low stakes without the players being exposed to media coverage as they blunder along. The Covid-19 ‘game’ was played for the highest of stakes, and its key players were subjected to intense unrelenting pressure from all kinds of media. They faced the systemic combination of feedback and delay, radical uncertainty and exponential growth. That meant that waiting until there was strong evidence that Covid-19 posed a serious threat would be acting too late.²⁷ Given the high drama of a president and prime minister in denial about the pandemic’s arrival and seriousness, the US and the UK each needed a public health organisation with the expertise, authority and independence ‘to speak truth to power’, like Germany’s Robert Koch Institute (RKI).

In 2005, the German government developed its first National Pandemic Plan and, in 2008, it decided to develop the RKI into a modern public health institute for the control of infectious diseases.²⁸ The RKI employed 700 scientists and was headed by experts in microbiology and infectious disease epidemiology.²⁹ It had been founded, in 1891, as the Royal Prussian Institute for Infectious Diseases, and later led by Robert Koch (who won the Nobel Prize in Medicine in 1905 for his discovery of the tuberculosis pathogen). The RKI revised Germany’s National Pandemic Plan based on experience of the 2009 outbreak of swine flu.³⁰ That meant that the country was ‘meticulously prepared for a pandemic.’³¹ The RKI recognised the urgency and importance of scaling up testing and tracing for Covid-19:

Once it became clear that the spread of the virus was serious, a reporting system involving the RKI and all public health offices came into play. Plus, a detailed ‘epidemic strategy’ lying in the drawer for years outlined payment structures for laboratories for diagnostic tests. There were no questions, nor any disputes, about costs and accounting.³²

In response to the 2020 emergence of Covid-19, the RKI published risk assessments, strategy documents, response plans, daily surveillance reports on the disease, and technical guidelines, and worked with national and international public health authorities as channels for distributing communication.³³ The RKI followed ‘the South Korean model of widespread testing and isolation

that helped flatten the curve of new infections in Germany.³⁴ South Korea had learnt from following the SARS and MERS epidemics of 2002/03 and 2015³⁵ and it had a lower number of deaths than would be expected until October 2020.³⁶

In January 2020, one of the first diagnostic tests for Covid-19 was developed in Charité University Hospital in Berlin (where Robert Koch had worked).³⁷ The RKI then developed a highly effective system of testing, tracking and tracing.³⁸ The institute:

- urgently scaled up testing, tracking and tracing (its testing capacity was 50,000 people per day by mid-March 2020);
- developed a smartwatch app by 7 April that ensured privacy with a decentralised, anonymous approach to contact warning, which asked individuals to report their positive test status via the app, and Bluetooth connections between phones would trigger alerts to people who had come into contact with someone who tested positive;
- hired and trained ‘containment scouts’ to support understaffed local authorities; and
- from April 2020 implemented gathering data by monitoring its spread in local communities and nationally through representative screening.

The RKI’s National Pandemic Plan enabled the German federal government to take timely action to restrict the spread of the Covid-19 infections.³⁹

- from 28 February, all travellers entering country from high-risk areas (for example, China or Italy) were required to provide information on previous exposure and contact details;
- from 10 March, mass meetings of over 1,000 people were prohibited;
- from 18 March all non-EU citizens were barred from entering the European Union for 30 days; and
- from 10 April all travellers to Germany were required to quarantine for 14 days.⁴⁰
- The RKI’s national guidelines required hospital patient cases discharged to care homes to have tested negative or undergone quarantine at an isolation area for 14 days.

9.3 Making astrology look good

The concern over delays in the global response to Ebola in 2014:

prompted calls for measurement and transparent reporting of countries’ public health capacities [and] a need to better understand and measure—on a transparent, global, and recurring basis—the state of international capability for preventing, detecting, and rapidly responding to epidemic and pandemic threats.⁴¹

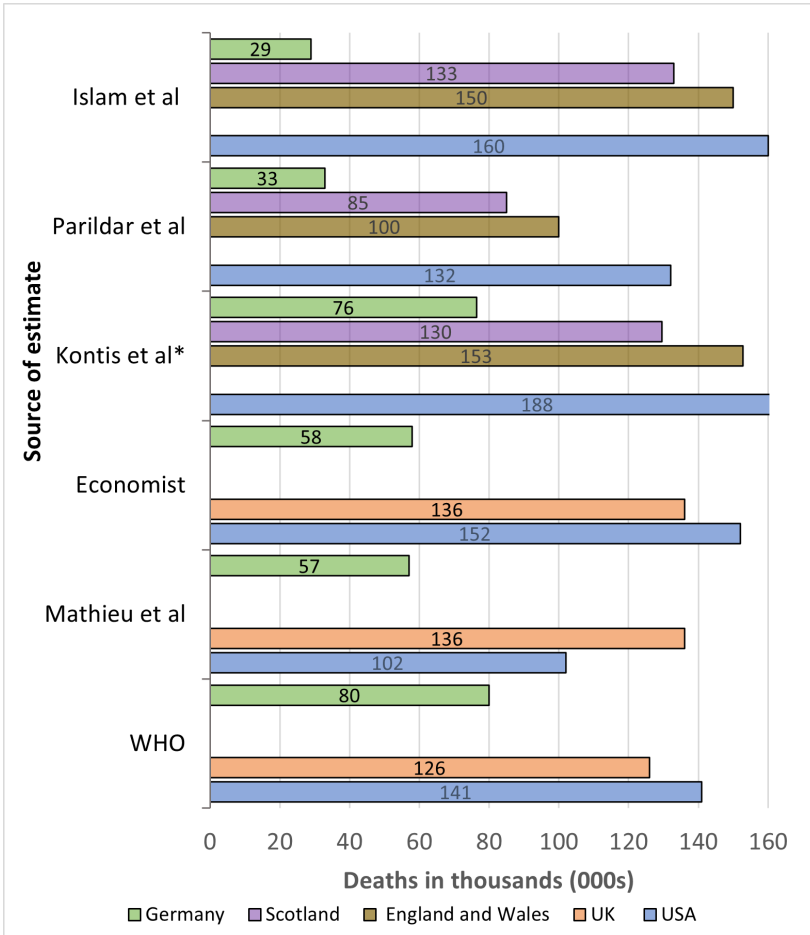
To meet that concern, experts produced a ranking of 195 countries, in October 2019, of how well each was prepared for the next global pandemic. The Global Health Security (GHS) Index categorised countries into three divisions. The governments in the US and the UK were sitting pretty as winner and runner up in the first division, hence they could relax. Germany languished in the second division and was ranked 14th. When compared with countries' subsequent performance, these pre-Covid judgements of health systems' preparedness made astrology look good (like economic forecasting – see Chapter 3).

So how did the UK and the US compare with Germany? The reliability of data on cases diagnosed with, or confirmed deaths from, Covid-19 can vary over time and location. Figure 9.2 gives estimates of confirmed deaths from Covid-19 per 100,000 in 2020 from Mathieu et al for the US, Germany and the UK.⁴² Figure 9.2 also gives five sets of estimated rates of excess deaths (over what would be expected from past data for normal periods) for the US, Germany, and either the UK as a whole or separately for England and Wales or Scotland, by the WHO, *The Economist*, Islam et al, Parildar et al and Kontis et al.⁴³ These estimates aim to avoid variations in the reliability of diagnosing Covid-19.⁴⁴ Figure 9.2 shows that the WHO estimate for Germany, which was published on 5 May 2022, was an upper outlier, and it was later found to be wrong.⁴⁵ This error was acknowledged by the WHO in 2023.⁴⁶ The WHO rate for 2020 is higher than the estimate by Kontis et al, which was from mid-February 2020 to mid-February 2021.⁴⁷ The other three studies give estimates for 2020.⁴⁸ Their lowest estimate of the number who would have survived in the UK, or England and Wales, with Germany's mortality rate from Covid-19, was 40,000. That is equivalent to two jumbo jets crashing each week from March to December in 2020. (Tragically, even though we have reached the end game against Covid-19 in the UK, systemic failings in access to the NHS mean that scale of loss continued into 2022. Analysis by *The Times* found that that there were 50,000 excess deaths in 2022, the highest number since 1951, except for 2020.⁴⁹)

9.4 Hindsight bias and fighting the last war

In 2020, Boris Johnson framed his government's policy choice on Covid-19 like the town mayors in Amity and Norway: acting to either 'save lives' or protect the economy. The German government correctly framed the decision as one between either acting expeditiously or with a delay – which would result in greater loss of lives and suffering, longer more draconian lockdowns, and consequent damage to the economy. Germany had a 5 per cent loss in GDP in 2020 compared with 2019, which was about half that of the UK.⁵⁰ But the governments that acted expeditiously in the face of radical uncertainty could have been proved wrong, and been judged later with the bias of hindsight, as described by Daniel Kahneman:

Figure 9.2: Estimated excess deaths and confirmed deaths from Covid-19 in 2020



Sources: Islam et al (2021); Parildar et al (2021); Kontis et al (2021); Economist (2021); WHO (2023); Mathieu et al (2020).⁵¹

Notes: Excess deaths are estimated by comparing the actual with expected numbers from past data for normal periods. For Kontis et al (2021), the period covered is February 2020 to February 2021.

Hindsight is especially unkind to decision-makers who act as agents for others – physicians, financial advisers, third-base coaches, CEOs, social workers, diplomats, politicians. We are prone to blame decision makers for good decisions that worked out badly and to give them too little credit for successful outcomes that appear obvious only after the fact. ... When the outcomes are bad, the clients often blame their agents for not seeing the handwriting on the wall

– forgetting that it was written in invisible ink that became logical only afterward. Actions that were deemed prudent in foresight can look irresponsibly negligent in hindsight.⁵²

Hindsight brings an unforgiving glare when the counterfactual – that is, what would have happened otherwise – is obvious. Decisions over lockdowns are still contested. The delays over their imposition in England did not seem to ‘cut through’ with the public at large. (What did were the 14 parties held during lockdowns in 10 Downing Street investigated by Sue Gray.⁵³) The counterfactual would have been obvious if the government had imposed a lockdown and, as Trump predicted, like a miracle Covid-19 had disappeared. So, what happened to lead institutions of public health that recommended preventive actions against swine flu epidemics that failed to materialise, in 1976 in the US, and in 2009 in the UK and Germany?

During a local outbreak of swine flu at an army base (Fort Dix in New Jersey), in 1976, Dr David Sencer, the director of the US’s Centers for Disease Control (CDC), convinced the federal government to implement a policy of mass vaccination. Some people were paralysed and died from side effects of the vaccine. Mark Moore featured that as a case study of how *not* to create public value. His list of its downsides included: setting a precedent for exposing the government to damage claims, weakening trust in immunisation, damaging the credibility of the CDC, and tarnishing the reputations of Sencer and President Ford.⁵⁴ Mark Moore argued that, in 1976, Sencer ought to have recommended stockpiling vaccines, so that the country would have been prepared for rapid mass vaccination against swine flu, if that were to prove necessary.⁵⁵

Michael Lewis explains that one consequence of the swine flu mistake was that federal governments undermined the independence of the director of the CDC, who ceased to be a tenured civil servant chosen from within the agency itself. Instead, he or she became a presidential appointee who (much later on) could be sacked in a tweet by Donald J. Trump in 2020.⁵⁶ In 2020 the CDC began its pandemic policies with restricted testing for patients who had been in China and were already in intensive care. There was hence a lack of evidence of its domestic transmission within the US, and the CDC downplayed the threat of the virus.⁵⁷ Lewis argues that:

The American institutions built to manage risk and respond to a virus had been engaged in a weird simulation of a crisis response that did not involve actually trying to stop the virus.⁵⁸

He concludes that CDC was ‘stuck in an infinite loop of first realizing it was in need of courage, and then remembering that courage didn’t pay.’⁵⁹ Charity Dean, the heroine of Michael Lewis’s book, was the youngest person ever to be appointed as chief health officer of a county in California (Santa Barbara).⁶⁰ She demonstrated the professional courage needed to recommend the timely preventive actions, which was so lacking in the leadership of CDC

and in public health at the state level in California. She despaired at what she saw as CDC's aim, which had been to convince the world that containment was not possible.⁶¹ In June 2020, she was driven to resign, wondering: '*Why doesn't the United States have the institutions it needs to save itself?*' [emphasis in original].⁶²

On 10 June 2009, WHO raised its alert level about swine flu becoming a global pandemic to the highest and warned countries to prepare for a second wave of cases. The director-general, Dr Margaret Chan, declared that 'The world is moving into the early days of its first influenza pandemic in the 21st century ... The virus is now unstoppable.'⁶³ The UK's response in 2009 was led by Liam Donaldson, the chief medical officer for England. The government implemented his recommendation to stockpile vaccines in case they were needed. Because of uncertainty over how this pandemic would develop, projections indicated the most likely outcome, and the best- and worst-case scenarios. The last features in the media that are in 'the bad news business'. That dominated the front-page news of the *Daily Mail* of Friday, 9 July 2009. Its banner headline was:

Swine flu: it's getting serious

The subheading was:

Medical Chief: 65,000 could die, one in three could be infected, and retired GPs are being recruited to fight pandemic

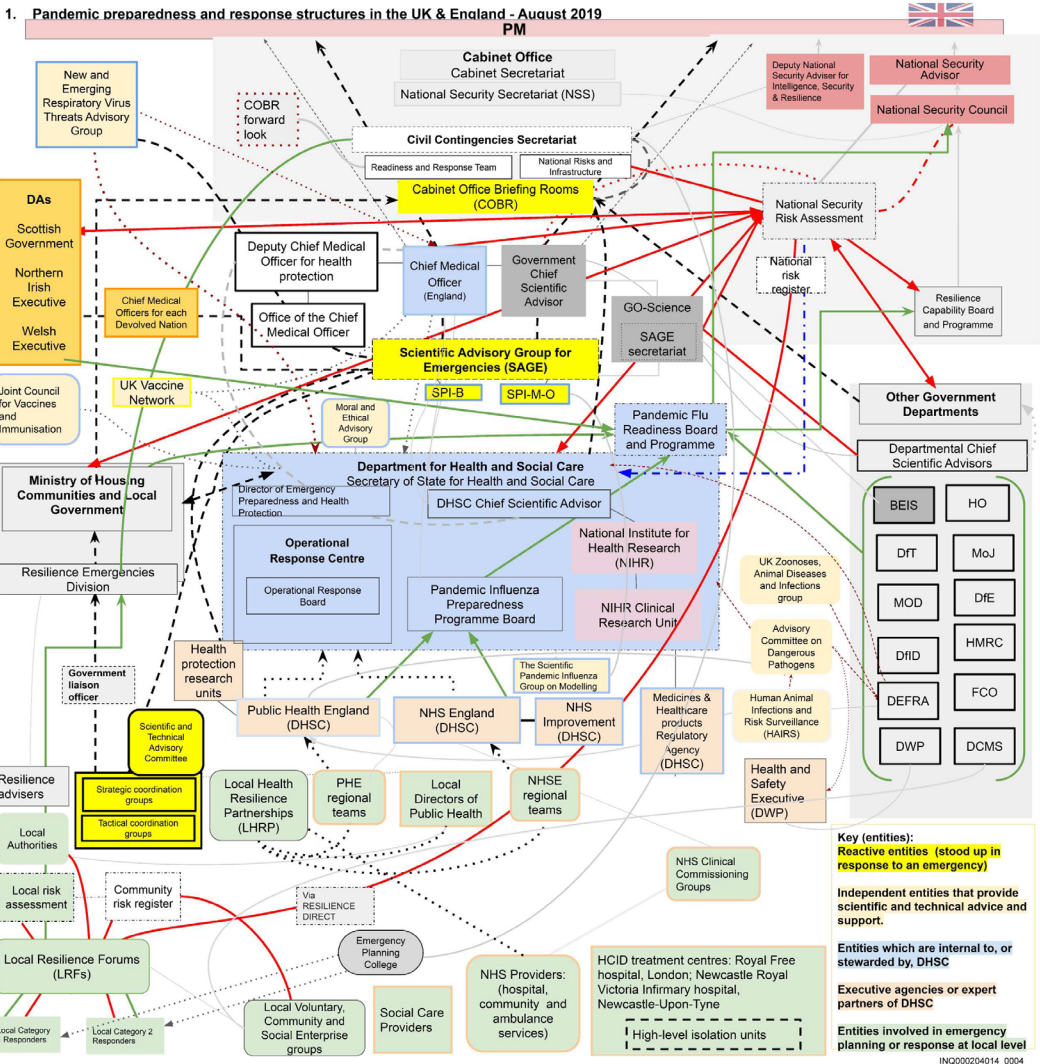
Six months later, however, after the worst case did not materialise, a January 2010 headline in the *Daily Mail* ran: 'After this awful fiasco over swine flu, we should never believe the State scare machine again.' The article went on to say:

So the Government, as the *Daily Mail* has revealed, is trying to get rid of £1 billion-worth of unwanted swine flu vaccine – because the deadly epidemic they were promising us all last year never materialised.⁶⁴

(By comparison, the estimated costs of Covid-19 in 2020 were £250 billion to the UK economy and £370 billion to the public purse.⁶⁵) In June 2010, the Conservative–Liberal Democrat coalition government published the White Paper for the NHS in England that laid out the third failed design to try to make competition work in the NHS ('Dr Lansley's monster' – see Chapter 8).⁶⁶ It also removed the regional and local infrastructure for public health in the NHS and so undermined England's institutional capability to respond to a pandemic.

In 2009 the federal government in Germany also stockpiled vaccines against swine flu on the advice of the RKI. There too a key newspaper, *Der Spiegel*, asked: 'When the next pandemic arrives, who will believe their assessments?'⁶⁷

Figure 9.3: Organogram of pandemic preparedness and response structures in the UK and England – August 2019, UK Covid-19 Inquiry



Source: UK Covid-19 Inquiry, 2023, Crown Copyright, published under the Open Government Licence.⁶⁸

Yet the German government apparatus understood that pandemics are like a game of Russian roulette. Just because you have the good luck to survive one shot does not mean you will continue to be lucky on the next. The RKI remained intact and revised its pandemic plan.

'Dr Lansley's monster' established Public Health England (PHE) as a new national agency in England, at arm's length from, and subservient to, the Department of Health and Social Care.⁶⁹ PHE's chief executive was an experienced official from the Department of Health and Social Care, who joked on his appointment that his public health credentials could be fitted 'on a postage stamp'.⁷⁰ The chief medical officer, who remained in the department, played a central role in developing policies for Covid-19. The transfer of directors of public health and their teams from the NHS to local authorities often resulted in the function being stripped of resources and postholders experiencing a loss of power and influence.⁷¹ Local directors of public health were accountable not to PHE but to their elected councillors, who were forced to make draconian cuts to staff and services under the government's austerity programme. They had to reduce their budgets by nearly 30 per cent for 2019–20 (from the 2010–11 funding levels).⁷² England abandoned a hierarchy for public health but lacked Germany's integrated system of close federal–*Laender* (regional state) cooperation. Figure 9.3 is an organogram of the 'Pandemic preparedness and response structures in the UK and England – August 2019', which was painstakingly developed by legal counsel for the UK's Covid Inquiry.⁷³ In its bewildering complexity it is hard to understand the relationships between PHE, the chief medical officer and local directors of public health. Evidence to the Covid Inquiry, as reported in *The Guardian*, was that, for directors of public health, 'Communication from central government was so poor during parts of the Covid pandemic that [they] relied on TV and newspapers to find out about key decisions'.⁷⁴

Although Scotland's mortality rates have consistently been 20 per cent higher than England,⁷⁵ Scotland's excess mortality in 2020 was at least 10 per cent lower than England and Wales (in each estimate of Figure 9.2). Britain's devolved governments were spared the Lansley reorganisation of public health. So, did devolution save lives in Scotland from Covid-19?

9.5 Herd immunity by default in England

In January 2020, like their colleagues in Germany, UK scientists developed one of the first diagnostic tests for Covid-19.⁷⁶ In October 2021, the joint report from the Health and Social Care and the Science and Technology Committees was published. It was heavily critical that the UK's leading position in diagnostics was squandered (unlike in Germany). The consequence was that the UK moved into a state of permanent crisis.⁷⁷ The report criticised PHE for not learning from South Korea: quickly expanding testing capacity, developing effective systems to track and trace those with the disease, and imposing travel restrictions and social distancing.⁷⁸

In 2016, PHE had organised a simulation exercise about how to handle the onset of a pandemic. Called Project Cygnus, it showed that the UK was alarmingly vulnerable *after* a pandemic had become rampant. In 2017 it resulted in a long slate of recommended steps to reduce the vulnerability of England and the UK. The subsequent lack of action was in part because the government was preoccupied by the real and present danger from a no-deal Brexit.⁷⁹ And Brexit continued to dominate the agenda for ministers and officials, as Camilla Cavendish lamented in 2019.⁸⁰ Project Cygnus was *not* designed to test the capability of the UK to prevent a pandemic becoming rampant.⁸¹

PHE was restructured (again) in the midst of the pandemic. In 2020, commenting on its demise, Gabriel Scally pointed out that the agency ‘was never intended to be a mass provider of microbiological testing services to the population.’⁸² On 21 February 2020, PHE’s chief executive posted a blog claiming that, because of its robust systems of infection control, diagnosis and testing, there had been no positive cases that week in the UK. In fact, it has been estimated that there were then about 1,600 cases, and Covid-19 was already spiralling out of control.⁸³ As the pandemic spread across England, PHE rapidly found that it was unable to control the spread of infections and ran out of testing capacity. These shortfalls meant that:

- On 12 March PHE was forced to abandon all community testing and contact tracing, a major reason why ‘herd immunity’ became the UK government’s policy by default.⁸⁴
- The subsequent black-out on Covid-19’s spread then contributed to ‘the delay in the critical decision to instigate a nationwide lockdown.’⁸⁵
- PHE mounted only inadequate testing of people arriving in Britain from abroad, which resulted in an underestimate of the number of cases being imported.⁸⁶

In later public statements, the government denied that it was following ‘herd immunity’ policies: that letting things rip early on was the best way to generate quickly natural protections from reinfection.⁸⁷ ‘Herd immunity’ had three main political attractions.⁸⁸ First, a lockdown was the last thing that Prime Minister Boris Johnson wanted to do. Second, ‘herd immunity’ was initially favoured by some advisers and civil servants in Whitehall because it would also bring the peak of Covid-19 infections forward to the spring/summer of 2020, and so it would not occur during the regular winter crisis in the NHS, which lasts from December to February.⁸⁹ Third, Conservative ministers and some advisers believed that ‘behavioural fatigue’ would set in and that the British public would not accept a lockdown for a significant period. That belief had no basis in behavioural science and was later proved to have been wrong, except for those in 10 Downing Street.⁹⁰

The meaning of the government’s endlessly repeated mantra that it was ‘following the science’ was explained on 11 March 2020 in a ‘fireside chat’. It took

Figure 9.4: The fireside chat between PM Boris Johnson and Dr Jenny Harries



3:23 PM · Mar 11, 2020

Source: Boris Johnson/UK Government.⁹¹

place in the study of 10 Downing Street, between Boris Johnson and Dr Jenny Harries (then deputy chief medical officer), and it was broadcast on Twitter (Figure 9.4).⁹²

Johnson: Tell us the value of wearing face masks, you see face masks all around the place. Is there any point to that?

Harries: If a health professional has not advised you to wear a face mask, it's usually quite a bad idea. People tend to

leave them on, they contaminate the face mask and then wipe it over something. So, really it's not a good idea and doesn't help...

Johnson: And it's noticeable that there are some countries where they have banned big sporting events and they've stopped mass gatherings of one kind or another. Tell us why, so far, the medical advice in this country is not to do that.

Harries: In this country we have expert modellers looking at what we think will happen with the virus. We've looked at what sorts of interventions might help manage this as we go forward and push the peak of the epidemic forward. And in general, those sorts of events and big gatherings are not seen to be something which is going to have a big effect. So, we don't want to disrupt people's lives unduly.

Johnson: Right, there's obviously people under a lot of pressure, politicians and governments, so they may do things that are not necessarily dictated by the science.

Harries: So, as a professional, I am absolutely delighted that we are following the science and the evidence. There are other things we can do in this country and the timing of that is really important...

Johnson: And the timing is very important isn't it?

Harries: Critical. Absolutely critical. If we put it in too early we will just pop up with another epidemic peak later on. If we leave it too late we will have missed the boat. Because we have such brilliant modellers we are pretty confident we will know the right point. We have got very clear advice about when we should intervene and that's exactly what I think we should do, which is what we're advising you as a government.

The Johnson government used its Scientific Advisory Group for Emergencies (SAGE) as a key part of its claim to be 'following the science'. SAGE's terms of reference were 'coordinating and peer reviewing, as far as possible, scientific and technical advice to inform decision-making'.⁹³ As the Institute for Government pointed out, 'in the initial months, ministers put too much weight on SAGE, relying on it to fill the gap in government strategy and decision making that it was not its role to fill'.⁹⁴ In early 2020 the experts on SAGE lacked the data they required to develop models that would give a sound basis to challenge the policy of 'herd immunity', which was favoured by a prime minister whose hero was the mayor of Amity.⁹⁵ The *unanimous* view at the meeting of SAGE on 13 March was that 'measures seeking to completely suppress the spread of Covid-19 will cause a second peak'.⁹⁶ The Institute for Government observed that: 'At times the prime minister and ministers waited until the scientific evidence was overwhelming rather than using it alongside other inputs to make their own judgements'.⁹⁷

9.6 Lockdowns – a later part of the opening game

For Dominic Cummings, Tim Gowers made the vital contribution of ‘red-neck epidemiology’. Gowers is a brilliant professor of mathematics at Cambridge – winner of the Fields Medal (the mathematics equivalent of a Nobel Prize). His analysis showed that ‘we can’t infect 60 per cent of the population in a matter of months without overwhelming the hospitals and having to let a very large number of people die untreated.’⁹⁸ According to the *Financial Times*, in three days Dominic Cummings drove SAGE to reverse its recommendation for ‘herd immunity’. And that volte-face was still opposed by some scientists because they feared this would lead to a second peak.⁹⁹ Michael Lewis describes the frustration of Charity Dean in her lowly position within the state of California. The implication is that, with better access to the governor, things might have played out differently there.¹⁰⁰ Jeremy Hunt rightly described Dominic Cummings (in March 2020) as ‘the most powerful person in Downing Street after the Prime Minister’¹⁰¹ and asked why, given Cummings’s doubts about the policy of ‘herd immunity’, he did not advise Boris Johnson ‘to cancel the Cheltenham Gold Cup (held on 10 March, that attracted 250,000), or the Champions League [European football] matches, or to lock down the borders—the things that could have prevented a lockdown’.¹⁰² Cummings explained what it felt like then to challenge ‘the science’ of ‘herd immunity’ and the courage this required as a lone individual:

I was incredibly frightened – I guess is the word – about the consequences of me kind of pulling a massive emergency string and saying, ‘The official plan is wrong, and it is going to kill everyone, and you’ve got to change path’, because what if I’m wrong? What if I persuade him [the PM] to change tack and that is a disaster? Everyone is telling me that if we go down this alternative path, it is going to be five times worse in the winter, and what if that is the consequence?¹⁰³

The issues that consumed the bandwidth of the prime minister’s office on 12 March 2020 were vividly captured by Cummings’ testimony:

[It] started off, with us thinking, ‘Okay, today is going to be all about covid and whether or not we are going to announce the household quarantine’ ... Suddenly the national security people came in and said, ‘Trump wants us to join a bombing campaign in the middle east tonight and we need to start having meetings about that through the day with Cobra as well.’ ... Then, to add to that day – it sounds so surreal it couldn’t possibly be true – *The Times* had run a huge story about the Prime Minister and his girlfriend and their dog, and the Prime minister’s girlfriend was going completely crackers about this story and demanding that the press office dealt with that.¹⁰⁴

Figure 9.5: Dominic Cummings (Boris Johnson’s former chief of staff) giving evidence to the joint session of Health and Social Care Committee and Science and Technology Committee on 26 May 2021



Source: Parliament Live, available under the Open Parliament Licence.¹⁰⁵

In the week starting 16 March, an expert team from Imperial College led by Neil Ferguson (a key member of SAGE) had produced a compelling report warning that the NHS would soon be overwhelmed by demand for intensive care beds.¹⁰⁶ The disease was then spreading exponentially, which meant that every week counted. Ferguson told the Science and Technology Committee that if the national lockdown had been instituted even a week earlier ‘we would have reduced the final death toll by at least a half’.¹⁰⁷ The joint report of the two select committees observes:

It seems astonishing looking back that—despite the documented experiences of other countries; despite the then Secretary of State [of Health] referring to data with a Reasonable Worst Case Scenario of 820,000 deaths; despite the raw mathematics of a virus which, if it affected two-thirds of the adult population and if one percent of people contracting it died would lead to 400,000 deaths—it was not until 16 March that SAGE advised the Government to embark on a full lockdown ... and not until 23 March that the Government announced it.¹⁰⁸

In early 2020 the blunders made by the UK government, compared with Germany, included:

- *Excess deaths in care homes.* The UK government, having delayed lockdown for fear that NHS hospitals would be overwhelmed, issued

guidance on 19 March 2020 that they must discharge patients who did not satisfy a specific set of requirements. On 2 April 2020 the shortage of testing resulted in the Department of Health clarification that ‘negative [coronavirus] tests are not required prior to transfers/admissions into the care home.’¹⁰⁹ Discharges of patients to care homes with Covid-19 imperilled both other residents and the staff who worked there, and clearly caused many premature deaths. In the first Covid-19 wave, excess deaths in care homes were 16,600 in the UK and 3,500 in Germany (which has 40 per cent more people aged over 65 than the UK).¹¹⁰

- *The failure of the NHS app for contact tracing.* On 10 April 2020, Google and Apple announced that they were going to develop decentralised apps, where the matching between infected people and their list of contacts happened between their phones (as in Germany). Two days later, Matt Hancock, then secretary of state for health and social care, announced the development of an NHS app, which was designed to use a central database, owned by a health authority, to do the matching and storing the sensitive data. It was abandoned in June 2020 and so became yet another yet another government IT disaster.¹¹¹ (In that highly competitive field, Anthony King and Ivor Crewe awarded the Titanic Prize to another failed NHS system: the NHS National Programme for IT, which was estimated to have cost over £30 billion in the 2000s.¹¹²)
- *No border controls.* In May 2020 a global map showed the UK to be the only country without controls on international arrivals.¹¹³ Dominic Cummings later explained that this was based on advice to Johnson that before April 2020 it would have no effect, and afterwards because it would destroy the travel industry.¹¹⁴

The judgement of the joint select committees was that ‘it is clear the first lockdown was called too late, it is not however possible to make such a clear-cut judgement about the second lockdown’ (on 31 October 2020).¹¹⁵ This is because it was only in December 2020 that it was definitely known that the alpha variant of the virus was significantly more transmissible than the initial strain of Covid-19. But Dominic Cummings was frustrated over the delay of the second lockdown:

I think the same thing happened in the autumn as happened in January: it was bad policy and bad decisions. ... the Prime Minister made some terrible decisions and got things wrong, and then constantly U-turned on everything.¹¹⁶

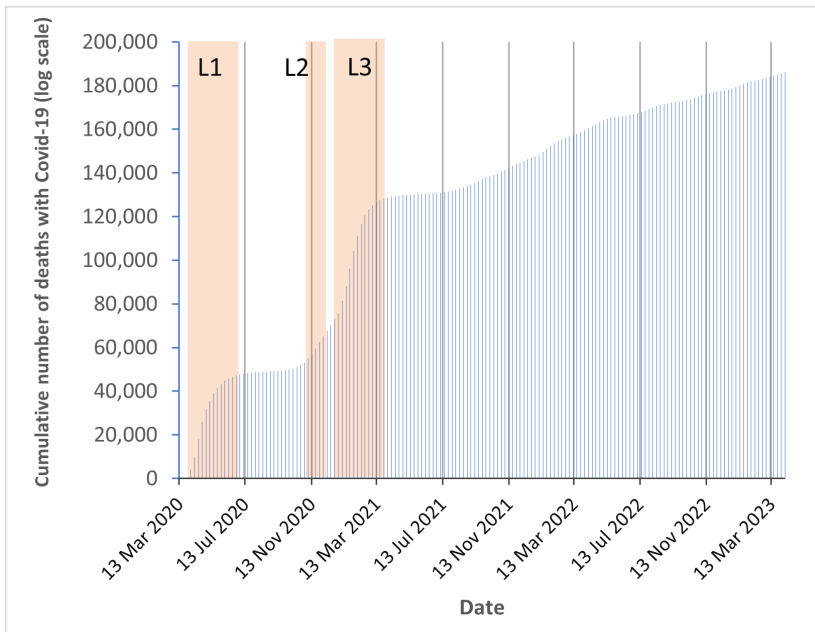
Calvert and Arbuthnott point out: ‘By allowing the virus to proliferate for over a year, the government had significantly increased the risk it would mutate into something more dangerous.’¹¹⁷ They are heavily critical of delays in the second lockdown¹¹⁸ and of the shambolic handling of the third lockdown,

which was introduced in a rush on 4 January 2021 after a brief non-lockdown period over Christmas sparked a surge of cases from festive get-togethers.¹¹⁹

Figure 9.6 gives the cumulative number of deaths from Covid-19 from March 2020 to March 2023 and the periods of the three lockdowns. Without taking account of the systemic lags in data reporting for cases and deaths reporting, Figure 9.6 might be taken as suggesting that the lockdowns in the UK and England *caused* the numbers of cases to peak. The explanation is that lockdowns were delayed until it was clear surges were occurring and that failing to act would overwhelm the NHS and result in large numbers of deaths.

Figure 9.7 compares the numbers of cases and deaths for the UK and Germany in the opening and middle games against Covid-19. It shows that in January 2021 the number of cases of Covid-19 in the UK peaked (at 880 cases per million people), exactly during the normal ‘winter crisis’ of the NHS. It also shows that in Germany the number of cases fell so much more quickly after the lower initial peak in March 2020, and that in the UK the high case fatality rate in the first wave explains why there were so many more deaths.

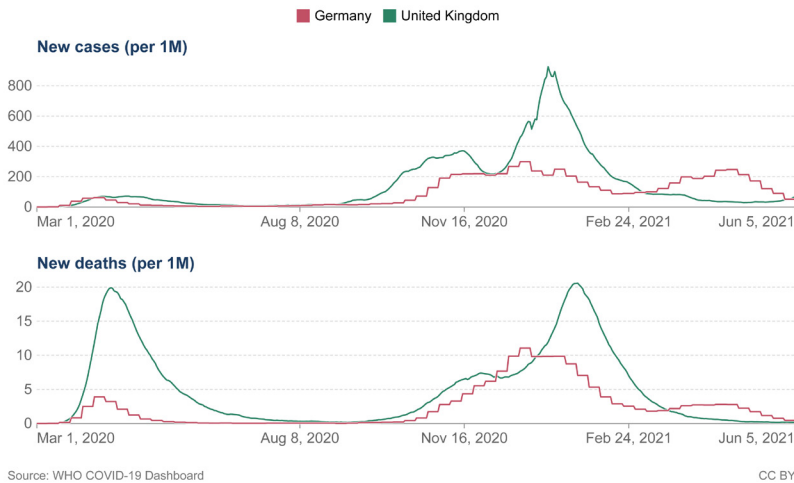
Figure 9.6: The cumulative numbers of people in England who died with Covid-19 from March 2020 to April 2023



Source: UK Health Security Agency (for deaths numbers) and Institute for Government (for lockdown dates).¹²⁰

Notes: The approximate periods for the three lockdowns (L1, L2 and L3) are shown shaded orange.

Figure 9.7: Daily new Covid-19 cases and deaths per million population in the UK and Germany, March 2020 to June 2021



Source: Our World in Data Dashboard, published under a CC-BY license.¹²¹

Notes: Seven-day rolling average.

9.7 Failures of outsourcing

In 2009, the government stockpiled personal protective equipment (PPE) to respond to that year's swine flu threat. In 2016, Project Cygnus (see Section 9.5) had highlighted the importance of PPE for any time when a pandemic became rampant. Lackadaisical handling of the PPE stockpile, and the export of 279,000 items to China in February 2020, meant that, when the UK urgently needed PPE, it was in global competition for just-in-time contracts with existing suppliers.¹²² So the Department of Health and Social Care looked to procure from potential suppliers who had never produced PPE before. Chapter 6 described the inadequacy of England's institutional arrangements for outsourcing. In November 2020 the National Audit Office report was heavily critical of the department for its many inadequacies in procuring PPE: much equipment arrived too late to help or proved to be unusable or unsuitable.¹²³ Dominic Cummings described the department as a 'smoking ruin'.¹²⁴ Members of Parliament and the public expressed concerns to the NAO about the quality of the PPE delivered through contracts awarded to suppliers through the VIP lane (or 'high-priority lane'), which were suggested by government officials, ministers' offices, Conservative Members of Parliament, senior NHS staff and other health professionals. In March 2022, the National Audit Office reported that 46 of the 115 contracts awarded before May 2020 to VIP lane suppliers did not go through the eight-stage due-diligence process.¹²⁵ And

‘53 per cent of VIP lane suppliers provided some PPE items that are classified as not currently suitable for front-line services.’¹²⁶ Scandals around this episode have rumbled on, with the Department of Health and Social Care taking legal action for breach of a government deal awarded in June 2020.¹²⁷

For Nick Macpherson, permanent secretary to the Treasury from 2005 to 2016, however, NHS Test and Trace ‘wins the prize for the most wasteful and inept public spending programme of all time.’¹²⁸ On 20 May 2020, after the

Figure 9.8: The high transaction costs of outsourcing Test and Trace

Question	High transaction costs in using a market
1. Could a complete contract have been specified?	No. The task was highly complex and the future was radically uncertain. For the first three months call handlers (e.g. students or staff previously at travel centres) were on fixed contracts. ¹²⁹ In June and August 2020 they were idle for 99 per cent of their time. ¹³⁰ In September 2020 it had far too many call handlers supposed to arrange tests or track carriers with nothing to do, ¹³¹ yet at the same time it faced an acute shortage of lab testing capacity (with long turnaround times and potential users told to go to test sites hundreds of miles away from where they were ¹³²).
2. Was the buyer able to assess the adequacy of the quality and costs of what was supplied?	No. And it would have been costly to try to find out if the supplier were overcharging for the volume and quality of services supplied.
3. Was there supply-side flexibility?	No. There was the ‘fundamental transformation’ to one supplier after the contract had been let.
4. Were there many buyers?	No. The supplier had to invest in equipment and staff that were specific to the buyer.
5. Was a transactional relationship between buyer and supplier adequate to cover all aspects?	No. The buyer had to trust the supplier.
6. Was there scope for suppliers to behave with opportunism?	Yes. The buyer was vulnerable to being overcharged for an excessive or inadequate volume of services of poor quality.
7. Was the buyer a skilled purchaser?	No. The contract was one-off. The service was complex and uncertain. The MIT beer game (Section 9.2) illustrates that you do not learn how to handle complex systems of feedback and delay by ‘learning by doing’. The select committees pointed out that Test and Trace lacked the modelling capability it needed. ¹³³

intense phase of the first lockdown, Boris Johnson told the nation that ‘we have growing confidence that we will have a test, track and trace operation that will be world-beating and, yes, it will be in place by June 1st.’¹³⁴ The government decided to boldly go where no other government had gone before: to outsource what was misleadingly called ‘NHS Test and Trace’.¹³⁵ That brand-new and extemporised organisation aimed to develop a centralised national system from scratch both for administering tests, and for tracing people exposed to contact with Covid-19 carriers.¹³⁶

Test and Trace did not involve the public health departments in local authorities. It was outsourced to key firms of management consultants; some were paid more than £6,000 a day to bring in ‘skills’ lacking in government.¹³⁷ They designed and recruited staff for call handling. Private labs and some university labs delivered the testing components. Chapter 6 developed a framework based on Oliver Williamson’s analysis of where high transaction costs make contracting problematic. Figure 9.8 applies that framework to outsourcing Test and Trace. The answers to each of the seven questions entail high transaction costs, and explain why Test and Trace failed extravagantly, at a cost of £13.5 billion in 2020–21.¹³⁸ And the assessment of the joint report by two select committees was: ‘Were it not for the success of the Vaccine Taskforce and the NHS vaccination programme, it is likely that further lockdown restrictions would have been needed in Summer 2021.’¹³⁹

9.8 Vaccines – the middle game against Covid-19

Blunders in the opening game of chess would be expected to offer dismal prospects for even making it to the middle game. But the ‘middle game’ against Covid-19 offered a fresh start in which the UK/England was an exemplar of inspired decisive leadership. A quite different set of strategies needed to be developed and implemented around an anti-Covid-19 vaccine for its procurement, regulation and roll-out. In contrast, the slower-moving EU decisions (which included Germany) blundered on all three aspects. Figure 9.7 also shows that the number of Covid-19 cases in the UK fell below those in Germany in February 2021. That is because in the middle game against Covid-19 the UK did so much better than Germany.

Unlike lockdowns, successes in these elements of the strategy for the middle game appealed to Boris Johnson because they promised a quicker route back to economic recovery. In May 2020, Kate Bingham, a life sciences venture capitalist, was asked to lead the UK’s Vaccine Task Force (VTF). She initially refused because she knew that a successful Covid-19 vaccine was ‘the longest of long shots.’¹⁴⁰ Thankfully she changed her mind. She later made clear that Sir Patrick Vallance, the government’s overall chief scientific officer (located in the Department of Business and Industry), was a key figure in developing the institutional arrangements that enabled England’s successes

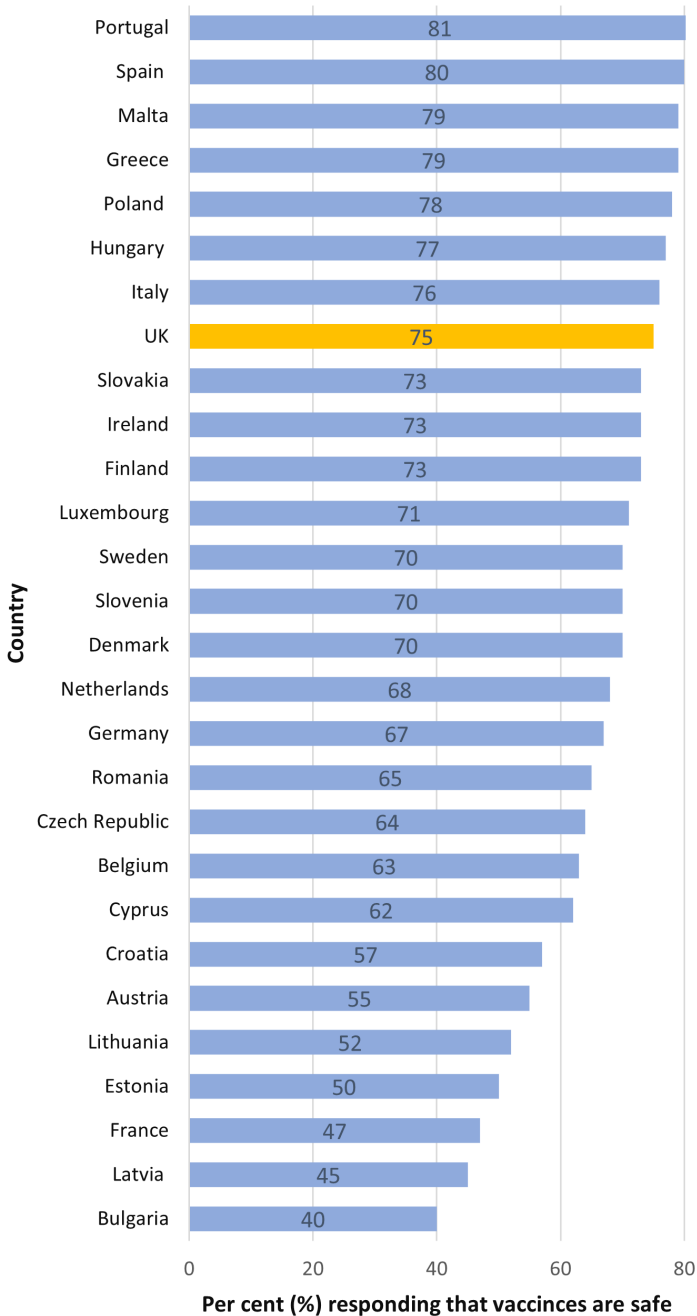
in procurement by the VTF, and rapid approval of the vaccine for use on patients by the Medicines and Healthcare Products Regulatory Agency (MHRA). Bingham oversaw delivery of the VTF's overriding objective, as set in May 2020, which was to secure the quantity of vaccines needed 'to vaccinate the appropriate UK population against Covid-19 *as soon as possible*'.¹⁴¹ Her experience gave her direct access to vaccine companies and she was empowered to have direct access to the key senior ministers with the authority to make decisions quickly. She brought inspired leadership to an extraordinary team of talented and dedicated staff who were stunningly successful. By March 2021, the UK had secured early access to 457 million doses of eight of the world's most promising vaccines.¹⁴²

We expect decisions on procurement of vaccines to be informed by their estimated costs and benefits.¹⁴³ Kate Bingham could make a strong case in two short sentences.¹⁴⁴ If a vaccine were to bring an end to further lockdowns (without an increase in the number of infections), that would save weekly costs of about £5 billion to the UK economy and £7 billion to the public purse.¹⁴⁵ Hence, given high confidence in vaccine safety in the UK, it was worth paying a high price to procure an ample supply of vaccines. But the VTF was required to produce a 100-page justification of the strategic economic, commercial, financial and management cases (but not the scientific case); give monetary estimates of the impact of vaccines on British economy; and reconcile differences in the value of life as assessed by the Department of Transport (£2 million) and Department of Health and Social Care (£0.5 million).¹⁴⁶ Bingham was later obstructed in trying to promote to the public the merits of being vaccinated and subjected to hostile briefing against her, much of which she discovered came from advisers inside 10 Downing Street.¹⁴⁷ As her husband, Jesse Norman MP, rightly pointed out, 'she has earned nothing, and does not expect to earn anything from her work as chair of the Vaccine Task Force'.¹⁴⁸

Brexit helped the UK in the middle game compared with Germany, because Germany's procurement and regulation of vaccines were done at the EU level, which aimed to ensure fairness across its member states.¹⁴⁹ Coordination across governments made the process of procurement cumbersome. There was an intrinsic conflict between procuring quickly and agreeing with the manufacturers the degree of liability that they would accept if anything went wrong.¹⁵⁰ The benefits of vaccines to the different governments also depended on what percentages of their citizens thought that vaccines were generally safe. Figure 9.9 shows that just before Covid-19 arrived this proportion ranged from a high 80 per cent in Portugal to a low 40 per cent in Bulgaria.

By procuring jointly at scale across multiple countries, the EU did succeed in agreeing lower prices with vaccine suppliers than had the UK and the US for most vaccines. The costs per dose for each vaccine for Pfizer/BioNTech were £12 in the EU, £15 in the UK and £16 in the US. For AstraZeneca, the costs per

Figure 9.9: The percentage of opinion poll respondents in 2018 who said that the vaccines in use were safe across European Union countries



Source: Wellcome Global Monitor (2018).¹⁵¹

shot were £1.56 for the EU, £2.17 in the UK and £2.89 in the US.¹⁵² But Chris Bickerton, writing in the *New York Times* in May 2021, observed that:

When vaccine producers hit problems, Europe quickly found itself at the back of the line — while Israel, the United States and Britain, which had spent much more per capita on vaccines, enjoyed successful rollouts.¹⁵³

The approval of a vaccine by regulators entails difficult judgements over when there is sufficient evidence from randomised controlled trials (RCTs) to justify its approval, while trading off the risks to patients from Covid-19 and from the vaccine's side effects, especially for subgroups of the population. Kate Bingham gave high praise to Dr June Raine, chief executive of the UK's MHRA, for recognising the urgency of approval. Raine pioneered a close partnership with the producers of the vaccines by organising rolling reviews and encouraging the sharing of data from the trials immediately they were generated.¹⁵⁴ The UK was the first country in world to authorise with due rigour both the Pfizer/BioNTech and AstraZeneca (AZ) vaccines for all people aged over 18, on 2 and 30 December 2020.¹⁵⁵ The European Medicines Agency (EMA) had to be much more conscious of public anxieties over vaccine safety and authorised Pfizer/BioNTech and AZ vaccines for people aged over 18 on 21 December 2020 (19 days later) and 29 January 2021 (30 days later). The EU Commission president, Ursula von der Leyen, observed, 'We were late in granting authorisation.'¹⁵⁶

Kate Bingham singled out AstraZeneca for high praise. By the end of 2021, it had supplied two billion doses of its cheap vaccine, sold on a non-profit basis to 178 countries around the world. It is likely to have saved more lives than any other vaccine.¹⁵⁷ But, in early 2021, regulators and government committees faced two difficulties with the AZ vaccine.

First, although there was compelling evidence that the risk of dying from Covid-19 increased dramatically in the older age groups, early evidence showed the vaccine to be of proven effectiveness only in people aged under 55.¹⁵⁸ (At that stage, people aged 65–74 and 75–84 were eight and 20 times greater to die from Covid-19, respectively, than those aged 40–49.¹⁵⁹) President Macron of France publicly suggested that the AZ vaccine would not work in the elderly.¹⁶⁰

Second, when the AZ vaccine was rolled out, rigorous monitoring for possible side effects showed a low but troubling rate of blood clots, some of which were serious and resulted in deaths. Chancellor Merkel of Germany was reported to have decided not to take it.¹⁶¹ Both the MHRA and EMA emphasised, however, that the risks from blood clots from the AZ vaccine had to be compared with the higher risks of not being vaccinated.¹⁶² The EMA concluded that:

the benefits of the AstraZeneca COVID vaccine, with the latest data suggesting an 85 per cent reduction in hospitalisation and death from COVID disease, far outweigh any possible risks of the vaccine.¹⁶³

What is perplexing is why the governments in Germany and other European countries wrongly framed key decisions, in early 2021, as who ought to receive the AZ vaccine. Germany began by restricting the AZ vaccine to those under 65,¹⁶⁴ then paused its use altogether,¹⁶⁵ and then later restricted its use only to those over 60.¹⁶⁶ The UK's Joint Committee on Vaccination and Immunisation (JCVI) broadly followed the recommendations of the MRHA. The AZ vaccine was prescribed and indeed targeted and prioritised for those aged 65 and over from the start. Later, when evidence of risks of blood clots became available, the JCVI recommended vaccination by Pfizer/BioNTech instead if that were available, but still recognised that the risk from the AZ vaccine was less than from Covid-19.

The national roll-out of England's vaccination programme by PHE, the NHS and general practitioners was a triumph. It was directed at those at high risk without the tergiversations over the AZ vaccine that occurred in Germany. The first persons in the world received the Pfizer/BioNTech on 8 December and the AZ vaccine on 4 January. The UK hit its target of offering a vaccine to everyone in its top four priority groups by mid-February 2021, with more than 20 million people having had their first jab.¹⁶⁷

Conclusions

There were multiple systemic failings by the UK government in the 'opening game' against Covid-19. Careful leadership and courage were conspicuously lacking, albeit with one noble exception. Dominic Cummings could see that 'herd immunity' would lead to a catastrophe, and had the courage to act as a lone voice to challenge its acceptance. Money was wasted scandalously on unusable PPE and the extravagant calamity of the outsourced 'NHS' Test and Trace. By contrast, in the 'middle game', the VTF led by Kate Bingham showed how an expert dedicated team could deliver in 'the longest of long shots'. And, in their rapid and rigorous approval of vaccines, the MHRA led by June Raine showed the urgency that was so lacking by PHE in early 2020. The UK was the first in the successful roll-out of vaccines, which was accomplished smoothly through PHE, the NHS and primary care. But those successes also prompt troubling thoughts. Thankfully, Patrick Vallance, the chief scientific officer, recognised how inadequate the existing machinery of government would have been in procuring vaccines. Bingham identified the biggest threat to the success of the VTF to have been 'Large parts of Whitehall' and felt at times like Alice in Wonderland acting scenes out of *Monty Python*.¹⁶⁸ She did not demur from Dominic Cummings's description of the Department of Health and Social Care as a 'smoking ruin'.¹⁶⁹

In August 2020, between the first and second lockdown, the government announced that a new UK Health Security Agency (UKHSA) would be established. This is responsible for the health protection functions of former PHE, 'NHS' Test and Trace, and the Joint Biosecurity Centre. It took more than a year for UKHSA to become fully (?) operational (in October 2021). Dr Jenny

Harries (the official who explained how the UK was ‘following the science’ in March 2020 in a fireside chat with PM Johnson) is its first chief executive. This was a surprising appointment because, as the report of the Public Accounts Committee of June 2023 points out: ‘despite her expertise in the science of public health (she) did not have experience in the other elements of running a complex organisation.’¹⁷⁰ She faced four challenges: first, ‘creating a FTSE 50 sized company through a merger of three entities, with different systems and cultures, in six months’; second, ‘decreasing its workforce from 18,000 to 6,700 full-time equivalents’; third, its creation was so rushed that it lacked appropriate arrangements for governance; and, fourth, the Department of Health and Social Care supported the UKHSA in ‘a very light-touch way’; that is, the department’s ‘Audit and Risk Committee had discussions on two occasions about the risks facing UKHSA in its establishment’. The systems of governance of UKHSA are so inadequate that the Comptroller and Auditor General:

was unable to give an opinion on whether the accounts were ‘true and fair’ or on whether the transactions recorded in the accounts were applied to the purposes intended by Parliament.¹⁷¹

We can see why Boris Johnson was keen to ensure the public inquiry into Covid-19 would not report until after the next general election. In June 2023, the UK Covid-19 Inquiry began its investigation into the first of its four modules, resilience and preparedness.¹⁷² Chapter 1 of this book cited the Report of the Public Inquiry (the Kennedy Report) into the scandal at the Bristol Royal Infirmary (BRI), which diagnosed the systemic failings in the NHS that allowed that scandal to continue in the 1980s and 1990s.¹⁷³ It described my recurrent thought experiment, when I was working for the Commission for Health Improvement, in 2001: If we had reviewed the BRI’s systems for clinical governance, would we have discovered the failings there in paediatric cardiac surgery? The Kennedy Report published in 2002 did not consider that question. The inquiry into Covid-19 must quickly make recommendations for better institutional arrangements than those displayed in Figure 9.3, which look to be even worse with the rushed creation of the UKHSA. Since 2000, there have been outbreaks of SARS-CoV in 2002, swine flu in 2009, MERS-CoV in 2012, Ebola in 2014 and 2018, and Covid-19 in 2020.¹⁷⁴ The government needs to act decisively to transform the UK’s resilience and preparedness for the next pandemic.

I end this chapter with two striking contrasts that powerfully make the case of a country that has lost its way.

In June 2023, the Public Accounts Committee reported that:

Three years after the start of the COVID-19 pandemic, the Department of Health and Social Care (the Department) has spent £14.9 billion of public money overpaying and over ordering significant

volumes of Personal Protective Equipment (PPE), COVID-19 medicines and vaccines. The Department will never use a significant proportion of the PPE purchased, which will end up being burnt at a significant cost to the taxpayer.¹⁷⁵

In June 2021, to enable schools to help their pupils make up for lost learning from school closures during lockdowns, the education recovery tsar, Sir Kevan Collins, was reported to have proposed that they be allocated £15 billion. Only £1.4 billion was allocated by ministers – about £50 extra per pupil per year.¹⁷⁶

In June 2022, Lord Agnew, the minister responsible for Whitehall efficiency and responsible for efforts to counter fraud, resigned in the House of Lords ‘given the lamentable track record that we have demonstrated since I took up this post nearly two years ago.’¹⁷⁷ In contrast, the Post Office was able, between 2000 and 2014, on evidence from a faulty Post Office IT system, to prosecute ‘736 subpostmasters and postmistresses ... for theft, fraud and false accounting in their branches.’¹⁷⁸ That miscarriage of justice is the subject of another ongoing public inquiry.¹⁷⁹

What follows is a short Afterword that argues that we need a new political settlement.

Endnotes

- ¹ House of Commons, Health and Social Care Committee and Science and Technology Committee (2021) *Oral evidence: Coronavirus: Lessons learnt*. HC 95, Wednesday 26 May. Q. 1054.
<https://committees.parliament.uk/event/4435/formal-meeting-oral-evidence-session/>
- ² Calvert, Jonathan and Arbuthnott, George (2021) *Failures of state: The inside story of Britain's battle with coronavirus*, UK: HarperCollins, p.55.
- ³ Calvert, Jonathan and Arbuthnott, George, *Failures of state*, p.84.
- ⁴ World Health Organization (2020) *COVID-19 public health emergency of international concern (PHEIC) Global Research and Innovation Forum*, World Health Organization, 12 February.
[https://www.who.int/publications/m/item/covid-19-public-health-emergency-of-international-concern-\(pheic\)-global-research-and-innovation-forum](https://www.who.int/publications/m/item/covid-19-public-health-emergency-of-international-concern-(pheic)-global-research-and-innovation-forum)
- ⁵ Anonymous (2020) ‘Timeline of the COVID-19 pandemic in Italy’, *Wikipedia*. <https://perma.cc/26FK-66K4>
- ⁶ Johnson, Boris (2020) *PM address to the nation: 31 January 2020*. Crown Copyright.
<https://www.gov.uk/government/speeches/pm-address-to-the-nation-31-january-2020>

- ⁷ Johnson, Boris (2020) 'PM speech in Greenwich: 3 February 2020'. Prime Minister's Office, 10 Downing Street.
<https://www.gov.uk/government/speeches/pm-speech-in-greenwich-3-february-2020>
- ⁸ Calvert, Jonathan and Arbuthnott, George, *Failures of State*, p.76.
- ⁹ Caleb, David (2022) 'Letters: The party's over. Now Boris Johnson's career should be too', *The Guardian*, 11 January. <https://perma.cc/Z5LK-XW2S>
- ¹⁰ Calvert, Jonathan and Arbuthnott, George, *Failures of State*.
- ¹¹ House of Commons, *Oral evidence: Coronavirus: Lessons learnt*.
- ¹² Heritage, Stuart (2020) 'Boris Johnson's hero is the mayor who kept the beaches open in Jaws. That's fine by me'. *The Guardian*, 13 March.
<https://perma.cc/NX6F-7RUD>; *Oral evidence: Coronavirus: Lessons learnt*, Q. 1091.
- ¹³ Ibsen, Henrik (1882) *Enemy of the People*.
<https://www.fulltextarchive.com/pdfs/An-Enemy-of-the-People.pdf>
- ¹⁴ House of Commons, *Oral evidence: Coronavirus: Lessons learnt*, Q. 1091.
- ¹⁵ House of Commons, *Oral evidence: Coronavirus: Lessons learnt*, Q. 1091.
- ¹⁶ Foster, Kelly (2021) *The National Covid Memorial Wall, London*, 16 April 2021, published under a Creative Commons (CC BY-SA 4.0) licence.
https://commons.wikimedia.org/wiki/File:The_National_Covid_Memorial_Wall,_London,_2021-04-16_04.jpg
- ¹⁷ Dale, Daniel and Wolfe, Daniel (2020) "It's going to disappear": A timeline of Trump's claims that Covid-19 will vanish', *CNN*, 31 October.
<https://perma.cc/4UQA-ZEFS>
- ¹⁸ *The Telegraph* (2020) 'President Trump claims injecting people with disinfectant could treat coronavirus' [Video]. YouTube, 24 April.
<https://www.youtube.com/watch?v=33QdTOyXz3w>
- ¹⁹ Gittleson, Ben (2021) 'Birn on Trump's disinfectant "injection" moment: "I still think about it every day"' [Video]. *abcNews*, 15 March.
<https://abcnews.go.com/Politics/birn-trumps-disinfectant-injection-moment-day/story?id=76474960>
- ²⁰ Senge, Peter (2006) *The fifth discipline: The art and practice of the learning organization*, UK: Currency.
- ²¹ Kay, John and King, Mervyn (2020) *Radical uncertainty. Decision-making beyond the numbers*, UK: Bridge Street Press.
- ²² Lewis, Michael (2022) *The premonition*, UK: Penguin, p.176.
- ²³ Mathieu, Edouard; Ritchie, Hannah; Rodés-Guirao, Lucas; Appel, Cameron; Gavrillov, Daniel; Giattino, Charlie; Hasell, Joe; Macdonald,

- Bobbie et al (2023) *Coronavirus (COVID-19) deaths*, *Our World in Data*. <https://ourworldindata.org/covid-deaths>
- ²⁴ Taylor, Matthew (2022) ‘The NHS was left ill-prepared for Covid’, *Financial Times*, 8 January. <https://perma.cc/H58F-YQTT>
- ²⁵ Mathieu, Edouard; Ritchie, Hannah; Rodés-Guirao, Lucas; Appel, Cameron; Gavrillov, Daniel; Giattino, Charlie; Hasell, Joe et al (2023) *Cumulative confirmed COVID-19 deaths*. *Coronavirus Pandemic (COVID-19)*, *Our World in Data*. <https://ourworldindata.org/covid-deaths#citation>
- ²⁶ David (2022) ‘Rice on a chessboard – exponential numbers.’ *Owlcation*, 24 June. <https://perma.cc/5CXN-U4FN>
- ²⁷ Lewis, Michael, *The premonition*, p.41.
- ²⁸ Robert Koch-Institut (2023) ‘Informative film about the Robert Koch Institute.’ [Video]. YouTube. <https://www.youtube.com/watch?v=INGLOp-oFYg>
- ²⁹ Robert Koch Institut (2023) *What we do – Departments and units at the Robert Koch Institute*. <https://perma.cc/WGV8-Y4P9>
- ³⁰ Robert Koch Institut (2020) *Ergänzung zum Nationalen Pandemieplan – COVID-19 – neuartige Coronaviruserkrankung* [Supplement to the National Pandemic Plan – COVID-19 – Novel Coronavirus Disease]. Germany: Robert Koch Institute. https://www.rki.de/DE/Content/InfAZ/N/Neuartiges_Coronavirus/Ergaenzung_Pandemieplan_Covid.html
- ³¹ Eckner, Constantin (2020) ‘How Germany has managed to perform so many Covid-19 tests.’ *The Spectator*, 6 April. <https://perma.cc/BZH9-WFS3>
- ³² Eckner, Constantin, ‘How Germany has managed to perform so many Covid-19 tests.’
- ³³ Wieler, Lothar; Rexroth, Ute; and Gottschalk, René (2020) *Emerging COVID-19 success story: Germany’s strong enabling environment*, *Our World in Data*. <https://ourworldindata.org/covid-exemplar-germany-2020>
- ³⁴ Eckner, Constantin, ‘How Germany has managed to perform so many Covid-19 tests.’
- ³⁵ House of Commons, Health and Social Care Committee and Science and Technology Committee (2021) *Coronavirus: lessons learned to date*. HC 92, p.61. <https://committees.parliament.uk/work/657/coronavirus-lessons-learnt/>
- ³⁶ Mathieu, Edouard; Ritchie, Hannah; Rodés-Guirao, Lucas; Appel, Cameron; Gavrillov, Daniel; Giattino, Charlie; Hasell, Joe et al (2020) *Estimated cumulative excess deaths per 100,000 people during COVID-19’*. *Coronavirus Pandemic (COVID-19)*, *Our World in Data*.

<https://ourworldindata.org/explorers/coronavirus-data-explorer?zoomToSelection=true&time=2020-03-01..2020-10-29&country=PRK~KOR&pickerSort=asc&pickerMetric=location&Metric=Excess+mortality+%28estimates%29&Interval=Cumulative&Relative+to+Population=true&Color+by+test+positivity=false>

- ³⁷ Charité and the DZIF (2020) ‘Researchers develop first diagnostic test for novel coronavirus in China.’ Press release, *Charité – Universitätsmedizin*, 16 January. <https://perma.cc/KAZ7-LKTC>
- ³⁸ Wieler, Lothar et al, ‘Emerging COVID-19 success story’.
- ³⁹ Wieler, Lothar et al, ‘Emerging COVID-19 success story’.
- ⁴⁰ Imanuel, Marcus (2020) ‘Chronology 2020: Germany and the Corona Pandemic’, *Berlin Spectator*. 20 December, <https://perma.cc/RQT4-BYWJ>; Wieler, Lothar et al, *Emerging COVID-19 success story*
- ⁴¹ Cameron, Elizabeth; Nuzzo, Jennifer; and Bell, Jessica (2019) *Global Health Security Index*, p.7. <https://perma.cc/3GXW-K5KF>
- ⁴² Mathieu, Edouard et al (n.d.) *Coronavirus (COVID-19) Deaths: Cumulative confirmed deaths per million people. Coronavirus Pandemic (COVID-19)*, *Our World in Data*. <https://ourworldindata.org/covid-deaths>
- ⁴³ World Health Organization (WHO) (2022) *Global excess deaths associated with COVID-19* (modelled estimates). <https://www.who.int/data/sets/global-excess-deaths-associated-with-covid-19-modelled-estimates> and <https://ourworldindata.org/excess-mortality-covid#citation>; *The Economist* and Solstad, Sondre. (2021) ‘The pandemic’s true death toll’, *The Economist*. <https://www.economist.com/graphic-detail/coronavirus-excess-deaths-estimates> and <https://ourworldindata.org/excess-mortality-covid#citation>; Islam, Nazrul; Shkolnikov, Vladimir; Acosta, Rolando; Klimkin, Ilya; Kawachi, Ichiro; Irizarry, Rafael; Alicandro, Gianfranco et al (2021) ‘Excess deaths associated with covid-19 pandemic in 2020: age and sex disaggregated time series analysis in 29 high income countries’, *BMJ*, vol. 373, n1137. <https://doi.org/10.1136/bmj.n1137>; Parildar, Ufuk; Perara, Rafael; and Ok, Jason (2021) *Excess mortality across countries in 2020*. <https://www.cebm.net/covid-19/excess-mortality-across-countries-in-2020/>; Kontis, Vasilis; Bennett, James; Parks, Robbie; Rashid, Theo; Pearson-Stuttard, Jonathan; Asaria, Perviz; Zhou, Bin et al (2022) ‘Lessons learned and lessons missed: Impact of the coronavirus disease 2019 (Covid-19) pandemic on all-cause mortality in 40 industrialised countries and US states prior to mass vaccination’, *Wellcome Open Res*, vol. 6, p.279. <https://doi.org/10.12688/wellcomeopenres.17253.2>
- ⁴⁴ Mathieu, Edouard et al (n.d.) *What is ‘excess mortality’? Coronavirus pandemic (COVID-19)*, *Our World in Data*. <https://ourworldindata.org/excess-mortality-covid>

- ⁴⁵ Van Noorden, Richard (2022) 'COVID death tolls: Scientists acknowledge errors in WHO estimates', *Nature*, vol. 606, no. 7913, pp.242–44. <https://www.nature.com/articles/d41586-022-01526-0>
- ⁴⁶ WHO, *Global excess deaths associated with COVID-19*; Karlinsky, Ariel; Knutson, Victoria; Aleshin-Guendel, Serge; Chatterji, Somnath; and Wakefield, Jon (2023) 'The WHO estimates of excess mortality associated with the COVID-19 pandemic', *Nature*, vol. 613, no. 7942, pp.130–37. <https://doi.org/10.1038/s41586-022-05522-2>.
- ⁴⁷ Kontis, Vasilis et al, 'Lessons learned and lessons missed'.
- ⁴⁸ *The Economist* and Solstad, 'The pandemic's true death toll'; Islam, Nazrul et al, 'Excess deaths associated with Covid-19 pandemic in 2020'; Parildar, Ufuk et al, *Excess mortality across countries in 2020*.
- ⁴⁹ Smyth, Chris; Saunders, Thomas; and Lay, Kat (2022) '1,000 excess deaths each week as the NHS buckles', *The Times*, 10 January. <https://perma.cc/TK47-XB3D>
- ⁵⁰ Partington, Richard (2021) 'German economy shrank by just 5% in 2020 amid Covid-19', *The Guardian*, 14 January. <https://perma.cc/7645-6QHT>; *BBC News* (2021) 'UK economy suffered record annual slump in 2020', 12 February 2021. <https://perma.cc/B2VK-6Z6D>
- ⁵¹ Islam, Nazrul et al, 'Excess deaths associated with Covid-19 pandemic in 2020'; Parildar, Ufuk et al, *Excess mortality across countries in 2020*; Kontis, Vasilis et al, 'Lessons learned and lessons missed'; *The Economist* and Solstad, 'The pandemic's true death toll'; World Health Organization, 'Global excess deaths associated with COVID-19'; Mathieu, Edouard et al, 'Cumulative confirmed COVID-19 deaths'.
- ⁵² Kahneman, Daniel (2011) *Thinking, fast and slow*, US: Farrar, Straus and Giroux, p.203.
- ⁵³ Gray, Sue (2022) *Findings of second permanent secretary's investigation into alleged gatherings on government premises during Covid restrictions*, UK: Cabinet Office. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1078404/2022-05-25_FINAL_FINDINGS_OF_SECOND_PERMANENT_SECRETARY_INTO_ALLEGED_GATHERINGS.pdf
- ⁵⁴ Moore, Mark (1995) *Creating public value: Strategic management in government*, US: Harvard University Press, p.145.
- ⁵⁵ Moore, Mark, *Creating public value*, p.147.
- ⁵⁶ Lewis, Michael, *The premonition*, p.290.
- ⁵⁷ Lewis, Michael, *The premonition*, p.210.
- ⁵⁸ Lewis, Michael, *The premonition*, p.274.

- ⁵⁹ Lewis, Michael, *The premonition*, p.226.
- ⁶⁰ Lewis, Michael, *The premonition*, p.224.
- ⁶¹ Lewis, Michael, *The premonition*, p.274.
- ⁶² Lewis, Michael, *The premonition*, p.280.
- ⁶³ Meikle, James and Carrell, Severin (2009) 'WHO declares swine flu pandemic', *The Guardian*, 11 June. <https://perma.cc/5X2J-T3CH>
- ⁶⁴ Booker, Christopher (2010) 'After this awful fiasco over swine flu, we should never believe State scare machine again', *Daily Mail*, 12 January <https://perma.cc/T9AR-WB33>
- ⁶⁵ Elliott, Larry (2021) 'A year of Covid lockdowns has cost the UK economy £251bn, study says', *The Guardian*, 22 March. <https://perma.cc/R3WC-39RF>; Lilly, Alice; Tetlow, Gemma; Davies, Oliver; and Pope, Thomas (2020) *The cost of Covid-19. The impact of coronavirus on the UK's public finances*, UK: Institute for Government. <https://perma.cc/V3VG-4UDR>
- ⁶⁶ Secretary of State for Health (2010) *Equity and excellence: Liberating the NHS*. Cm 7881, UK: The Stationery Office. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/213823/dh_117794.pdf
- ⁶⁷ Spiegel staff (2010) 'The Swine Flu Panic of 2009', *Spiegel International*, 10 March. <https://perma.cc/CF55-QSJ4>
- ⁶⁸ UK Covid-19 Inquiry (2023) *Organogram of pandemic preparedness and response structures in the UK and England – August 2019*. https://covid19.public-inquiry.uk/documents/inq000204014_0004-pandemic-preparedness-organograms-covering-2009-2020-2
- ⁶⁹ Scally, Gabriel (2020) 'The demise of Public Health England', *BMJ*, vol. 370: m3263, p.1. <http://dx.doi.org/10.1136/bmj.m3263>
- ⁷⁰ Calvert, Jonathan and Arbuthnott, George, *Failures of state*, p.131.
- ⁷¹ Scally, Gabriel, 'The demise of Public Health England', p.1.
- ⁷² National Audit Office (NAO) (2020) *Initial learning from the government's response to the COVID-19 pandemic*. <https://www.nao.org.uk/wp-content/uploads/2021/05/Initial-learning-from-the-governments-response-to-the-COVID-19-pandemic.pdf>
- ⁷³ UK Covid-19 Inquiry (2023) 'INQ000204014_0004 – Extract of Pandemic Preparedness Organograms covering 2009-2020, Evidence, 21 June'. https://covid19.public-inquiry.uk/documents/inq000204014_0004-pandemic-preparedness-organograms-covering-2009-2020-2/

- ⁷⁴ Booth, Robert (2023) 'UK Covid inquiry: public health bosses relied on media for information', *The Guardian*, 5 July, <https://perma.cc/EEN7-WNQ5>
- ⁷⁵ Bevan, Gwyn; Karanikolos, Marina; Exley, Josephine; Nolte, Ellen; Connolly, Sheelah; and Mays, Nicholas (2014) *The four health systems of the United Kingdom: How do they compare?* UK: The Health Foundation and Nuffield Trust, pp.83–84. <https://www.health.org.uk/publications/the-four-health-systems-of-the-united-kingdom-how-do-they-compare>
- ⁷⁶ House of Commons, *Coronavirus: Lessons learned to date*, p.61.
- ⁷⁷ House of Commons, *Coronavirus: Lessons learned to date*, pp.61, 62.
- ⁷⁸ House of Commons, *Coronavirus: Lessons learned to date*, p.61; Graham-Harrison, Emma (2020) 'Experience of SARS a key factor in countries' response to coronavirus', *The Guardian*, 15 March. <https://perma.cc/TP23-4PFE>
- ⁷⁹ Calvert, Jonathan and Arbutnott, George, *Failures of State*, pp.88–90.
- ⁸⁰ Cavendish, Camilla (2019) 'Brexit is absorbing the oxygen needed to solve other problems', *Financial Times*, 5 April. <https://perma.cc/W5Y7-FRGV>
- ⁸¹ House of Commons, *Oral evidence: Coronavirus: Lessons learnt*, p.18.
- ⁸² Scally, Gabriel, 'The demise of Public Health England', p.1.
- ⁸³ Calvert, Jonathan and Arbutnott, George, *Failures of state*, p.131.
- ⁸⁴ House of Commons, *Coronavirus: Lessons learned to date*, pp.62, 63.
- ⁸⁵ House of Commons, *Coronavirus: Lessons learned to date*, p.64.
- ⁸⁶ House of Commons, *Coronavirus: Lessons learned to date*, p.63.
- ⁸⁷ House of Commons, *Oral evidence: Coronavirus: Lessons learnt*, Q. 992 and Q. 993.
- ⁸⁸ House of Commons, *Coronavirus: Lessons learned to date*, pp.33–34.
- ⁸⁹ House of Commons, *Coronavirus: Lessons learned to date*, p.63.
- ⁹⁰ Parker, George; Cookson, Clive; Neville, Sarah; Payne, Sebastian; Hodgson, Camilla; Gross, Anna; and Hughes, Laura (2020) 'Inside Westminster's coronavirus blame game', *Financial Times*, 16 July. <https://perma.cc/E8CS-3KVZ>
- ⁹¹ Johnson, Boris [@BorisJohnson] (2020) 'Dr Jenny Harries, Deputy Chief Medical Officer, came into Downing Street to answer some of the most commonly asked questions on coronavirus', Twitter, 11 March. <https://twitter.com/BorisJohnson/status/1237760976482598913>. Archived at

<https://web.archive.org/web/20200312035546/https://twitter.com/BorisJohnson/status/1237760976482598913>

- ⁹² Johnson, Boris [@BorisJohnson] (2020, 11March) ‘Dr Jenny Harris’.
- ⁹³ Cabinet Office and Scientific Advisory Group for Emergencies (2012) ‘Scientific Advisory Group for Emergencies (SAGE): A strategic framework’. <https://www.gov.uk/government/publications/scientific-advisory-group-for-emergencies-sage>
- ⁹⁴ Sasse, Tom; Haddon, Catherine; and Nice, Alex (2020) *Science advice in a crisis*. London: Institute for Government, p.5. <https://perma.cc/62Q3-ZB2H>
- ⁹⁵ House of Commons, *Coronavirus: Lessons learned to date*, pp.40, 63.
- ⁹⁶ Health and Social Care Committee and Science and Technology Committee, *Coronavirus: Lessons learned to date*, p.34.
- ⁹⁷ Sasse, Tom et al, *Science advice in a crisis*, p.5.
- ⁹⁸ Quinn, Ben (2021) ‘A look at Prof Gowers’ herd immunity document sent to Dominic Cummings’, *The Guardian*, 28 May. <https://perma.cc/S748-S8M8>
- ⁹⁹ Parker, George et al, ‘Inside Westminster’s coronavirus blame game’.
- ¹⁰⁰ Lewis, Michael, *The premonition*, p.231.
- ¹⁰¹ House of Commons, *Oral evidence: Coronavirus: Lessons learnt*, Q. 1008.
- ¹⁰² House of Commons, *Oral evidence: Coronavirus: Lessons learnt*, Q. 1008.
- ¹⁰³ House of Commons, *Oral evidence: Coronavirus: Lessons learnt*, Q. 1008.
- ¹⁰⁴ House of Commons, *Oral evidence: Coronavirus: Lessons learnt*, Q. 1003.
- ¹⁰⁵ House of Commons, Science and Technology Committee and Health and Social Care Committee (2021) *Subject: Coronavirus: lessons learnt*, p.30. <https://www.parliamentlive.tv/Event/Index/d919fbc9-72ca-42de-9b44-c0bf53a7360b>
- ¹⁰⁶ Parker, George et al, ‘Inside Westminster’s coronavirus blame game’.
- ¹⁰⁷ House of Commons, *Coronavirus: lessons learned to date*, p.32.
- ¹⁰⁸ House of Commons, *Coronavirus: lessons learned to date*, p.39.
- ¹⁰⁹ HM Government (2020) *COVID-19 hospital discharge service requirements*, pp.30, 10; Reality Check Team (2023) ‘Covid: What happened to care homes early in the pandemic?’, *BBC News*, <https://perma.cc/5KMS-367C>
- ¹¹⁰ Ioannidis, John; Axfors, Cathrine; and Contopoulos-Ioannidis, Despina (2021) ‘Second versus first wave of COVID-19 deaths: Shifts in age distribution and in nursing home fatalities’, *Environmental Research*, vol. 195, 110856. <https://doi.org/10.1016/j.envres.2021.110856>

- ¹¹¹ Cellan-Jones, Rory (2020) 'Coronavirus: What went wrong with the UK's contact tracing app?' *BBC News*, 20 June. <https://perma.cc/MP7D-SMKN>
- ¹¹² King, Anthony and Crewe, Ivor (2013) 'IT – technology and pathology', Chapter 13 in *The blunders of our governments*, UK: Oneworld.
- ¹¹³ Brown, Faye (2020) 'UK only country in world not doing airport health checks or closing border', *Metro*, 7 May. <https://metro.co.uk/2020/05/07/uk-country-world-not-airport-health-checks-closing-border-12669125/>
- ¹¹⁴ House of Commons, *Oral evidence: Coronavirus: Lessons learnt*, Q. 1091.
- ¹¹⁵ House of Commons, *Coronavirus: Lessons learned to date*, p.52.
- ¹¹⁶ House of Commons, *Oral evidence: Coronavirus: Lessons learnt*, Q. 1110.
- ¹¹⁷ Calvert, Jonathan and Arbuthnott, George, *Failures of state*, p.390.
- ¹¹⁸ Calvert, Jonathan and Arbuthnott, George, *Failures of state*, pp.352–80.
- ¹¹⁹ Calvert, Jonathan and Arbuthnott, George, *Failures of state*, pp.383–405.
- ¹²⁰ UK Health Security Agency (2023) *Daily deaths with COVID-19 on the death certificate by date of death*, updated 20 April. <https://coronavirus.data.gov.uk/details/deaths?areaType=nation&areaName=England;>
 Institute for Government (2022) *Timeline of UK government coronavirus lockdowns and restrictions*. <https://www.instituteforgovernment.org.uk/data-visualisation/timeline-coronavirus-lockdowns>
- ¹²¹ Our World in Data (2023) *Daily new confirmed COVID-19 cases & deaths per million people*. <https://ourworldindata.org/explorers/coronavirus-data-explorer?zoomToSelection=true&time=2020-03-01..2021-06-05&uniformYAxis=0&country=GBR~DEU&pickerSort=asc&pickerMetric=location&Metric=Cases+and+deaths&Interval=7-day+rolling+average&Relative+to+Population=true&Color+by+test+positivity=false>
- ¹²² Calvert, Jonathan and Arbuthnott, George, 'Sleepwalk', Chapter 4 in *Failures of state*, pp.81–106.
- ¹²³ National Audit Office (2020) *The supply of personal protective equipment (PPE) during the COVID-19 pandemic*. <https://www.nao.org.uk/wp-content/uploads/2020/11/The-supply-of-personal-protective-equipment-PPE-during-the-COVID-19-pandemic.pdf>, p.9.
- ¹²⁴ Health and Social Care Committee and Science and Technology Committee, *Oral evidence: Coronavirus: Lessons learnt*, Q. 1015.
- ¹²⁵ National Audit Office (2022) *Investigation into the management of PPE contracts*, p.8.

<https://www.nao.org.uk/reports/investigation-into-the-management-of-ppe-contracts/>

- ¹²⁶ National Audit Office, *Investigation into the management of PPE contracts*, p.10.
- ¹²⁷ Cameron-Chileshe, Jasmine; Gross, Anna; and Croft, Jane (2022) ‘UK government to sue PPE supplier over pandemic contracts linked to Tory peer’, *Financial Times*, 19 December. <https://perma.cc/N9SA-KQTU>
- ¹²⁸ Macpherson, Nick [@nickmacpherson2] (2021) ‘The wins the prize for the most wasteful and inept public spending programme of all time. The extraordinary thing is that nobody in the government seems surprised or shocked. No matter: the BoE will just print more money. #soundmoney’ [Tweet]. *Twitter*, 10 March. <https://twitter.com/nickmacpherson2/status/1369554007472082944>
- ¹²⁹ NAO, *The government’s approach to Test and Trace in England – interim report*, p.13.
- ¹³⁰ NAO, *The government’s approach to Test and Trace in England – interim report*, p.69.
- ¹³¹ NAO, *The government’s approach to Test and Trace in England – interim report*, p.69.
- ¹³² NAO, *The government’s approach to Test and Trace in England – interim report*, p.10.
- ¹³³ House of Commons, *Coronavirus: lessons learned to date*, p.70.
- ¹³⁴ Marsh, Sarah (2020) ‘England Test and Trace: What senior ministers promised and when’, *The Guardian*, 4 June. <https://perma.cc/G2S8-7S7G>
- ¹³⁵ National Audit Office (NAO) (2020) *The government’s approach to Test and Trace in England – interim report*, p.8. <https://www.nao.org.uk/report/the-governments-approach-to-test-and-trace-in-england-interim-report/>
- ¹³⁶ NAO, *The government’s approach to Test and Trace in England – interim report*, pp.7–8.
- ¹³⁷ Andersson, Jasmine (2020) ‘Test and Trace: NHS contact tracing consultants paid up to £7,000 a day’, *i News*, 15 October. <https://inews.co.uk/news/uk/test-and-trace-nhs-contract-tracing-consultants-uk-paid-721126>
- ¹³⁸ National Audit Office (2021) *Test and Trace in England – progress update*, p.5. <https://www.nao.org.uk/report/test-and-trace-in-england-progress-update/>
- ¹³⁹ House of Commons, *Coronavirus: Lessons learned to date*, p.81.

- ¹⁴⁰ Bingham, Kate and Hames, Tim (2022) *The long shot: The inside story of the race to vaccinate Britain*, UK: Oneworld, p.6.
- ¹⁴¹ May Dean's Dialogue (2021) Professor Velasco in conversation with Kate Bingham to discuss *Inside the Race to Develop a COVID-19 Vaccine*. LSE, 25 May.
- ¹⁴² Update on the Vaccine Taskforce: 1 March 2021. <https://www.gov.uk/government/news/update-on-the-vaccine-taskforce-1-march-2021>
- ¹⁴³ Appleby, John (2020) 'Will Covid-19 vaccines be cost effective—and does it matter?' *BMJ*, vol. 371, m4491. <https://doi.org/10.1136/bmj.m4491>
- ¹⁴⁴ Bingham, Kate and Hames, Tim, *The long shot*, p.117.
- ¹⁴⁵ Elliott, Larry (2021) 'A year of Covid lockdowns'; Lilly, Alice et al, *The cost of Covid-19*.
- ¹⁴⁶ Bingham, Kate and Hames, Tim, *The long shot*, pp.112–13.
- ¹⁴⁷ Bingham, Kate and Hames, Tim, *The long shot*, pp.309–27.
- ¹⁴⁸ Bingham, Kate and Hames, Tim, *The long shot*, p.127.
- ¹⁴⁹ Fleming, Sam and Peel, Michael (2021) 'Ursula von der Leyen acknowledges errors in EU's Covid vaccines strategy', *Financial Times*, 10 February. <https://perma.cc/XEL9-HC5A>
- ¹⁵⁰ Kaufman, Sylvie (2021) 'Europe's vaccine rollout has descended into chaos', *The New York Times*, 4 February. <https://perma.cc/6QXL-5WEW>
- ¹⁵¹ Wellcome (2018) *Wellcome Global Monitor 2018, Appendix C: Country-level data*. <https://wellcome.org/reports/wellcome-global-monitor/2018/appendix-country-level-data>
- ¹⁵² The Week staff (2021) 'What Covid vaccines cost – and the countries paying over the odds', *The Week*, 30 March. <https://perma.cc/UB6L-VAJT>; Birnbaum, Michael; Rowland, Christopher; and Ariès, Quentin (2020) 'Europe is paying less than U.S. for many coronavirus vaccines', *Washington Post*, 18 December. <https://perma.cc/2UC8-6Y7J>
- ¹⁵³ Bickerton, Chris (2021) 'Europe failed miserably with vaccines. Of course it did', *New York Times*, 17 May. <https://perma.cc/SMJ4-TPFQ>
- ¹⁵⁴ Neville, Sarah and Kuchler, Hannah (2023) "'No 3am moments": MHRA chief June Raine on race for Covid vaccine', *Financial Times*, 2 April. <https://perma.cc/N5JS-8VAJ>
- ¹⁵⁵ <https://www.gov.uk/government/news/oxford-universityastrazeneca-covid-19-vaccine-approved>

- ¹⁵⁶ Hyde, Rob (2021) 'von der Leyen admits to COVID-19 vaccine failures', *Lancet*, vol. 397, no. 10275, p.655.
[https://doi.org/10.1016/S0140-6736\(21\)00428-1](https://doi.org/10.1016/S0140-6736(21)00428-1)
- ¹⁵⁷ Bingham, Kate and Hames, Tim, *The long shot*, p.289.
- ¹⁵⁸ European Medicines Agency (EMA) (2021) 'EMA recommends COVID-19 Vaccine AstraZeneca for authorisation in the EU'
<https://perma.cc/RUZ5-FEUM>
- ¹⁵⁹ National Center for Immunization and Respiratory Diseases (NCIRD), Division of Viral Diseases (2023) *Risk for COVID-19 infection, hospitalization, and death by age group*, Centers for Disease Control and Prevention. <https://perma.cc/3M53-T93R>
- ¹⁶⁰ Bingham, Kate and Hames, Tim, *The long shot*, p.160.
- ¹⁶¹ Bingham, Kate and Hames, Tim, *The long shot*, p.160.
- ¹⁶² EMA (2021) *COVID-19 Vaccine AstraZeneca: benefits still outweigh the risks despite possible link to rare blood clots with low blood platelets*, EMA, 18 March. <https://perma.cc/Y5RF-B9AX>; MHRA (2021) *MHRA issues new advice, concluding a possible link between COVID-19 Vaccine AstraZeneca and extremely rare, unlikely to occur blood clots*, 7 April. <https://www.gov.uk/government/news/mhra-issues-new-advice-concluding-a-possible-link-between-covid-19-vaccine-astrazeneca-and-extremely-rare-unlikely-to-occur-blood-clots>
- ¹⁶³ EMA (2021) *Signal assessment report on embolic and thrombotic events (SMQ) with COVID-19 vaccine*. EMA, <https://perma.cc/92LW-NRD3>
- ¹⁶⁴ Hall, Ben; Peel, Michael; and Chazan, Guy (2021) 'EU vaccine woes shift from supply squeeze to rollout', *The Financial Times*, 25 February. <https://perma.cc/98U6-X5ZK>
- ¹⁶⁵ Khan, Mehreen; Peel, Michael; and Hindley, David (2021) 'EU countries halt vaccine drives as AstraZeneca angst deepens', *Financial Times*, 16 March. <https://perma.cc/KG8L-NLSL>
- ¹⁶⁶ Dombey, Daniel and Mancini, Donato (2021) 'Spain and Italy to restrict AstraZeneca's Covid jab to over-60s', *Financial Times* 8 April. <https://perma.cc/BMB9-98HU>
- ¹⁶⁷ Update on the Vaccine Taskforce: 1 March 2021. <https://www.gov.uk/government/news/update-on-the-vaccine-taskforce-1-march-2021>
- ¹⁶⁸ Bingham, Kate and Hames, Tim, *The long shot*, pp.125, 118.
- ¹⁶⁹ Bingham, Kate and Hames, Tim, *The long shot*, p.6.
- ¹⁷⁰ PAC, *Department of Health and Social Care annual report and accounts 2021–22*, p.11.

- ¹⁷¹ PAC, *Department of Health and Social Care annual report and accounts 2021–22*, p.263.
- ¹⁷² UK Covid-19 Inquiry (2023) *Update: UK Covid–19 Inquiry to begin hearing evidence in June for its first investigation*.
<https://covid19.public-inquiry.uk/news/update-uk-covid-19-inquiry-to-begin-hearing-evidence-in-june-for-its-first-investigation/>
- ¹⁷³ Secretary of State for Health (2001) *Learning from Bristol – Report of the public inquiry into children’s heart surgery at the Bristol Royal Infirmary* (The Kennedy Report). CM 5207(1), UK: The Stationery Office.
- ¹⁷⁴ <https://www.cfr.org/timeline/major-epidemics-modern-era>
- ¹⁷⁵ Public Accounts Committee (PAC) (2023) *Department of Health and Social Care annual report and accounts 2021–22*, Sixty-Second Report of Session 2022–23. HC 997 UK: HMSO, p.3.
<https://committees.parliament.uk/publications/40738/documents/198470/default>
- ¹⁷⁶ Coughlan, Sean (2021) ‘Boris Johnson promises more school catch-up cash in “damp squib” row’, *BBC News*, 2 June.
<https://perma.cc/GLA6-KPPU>
- ¹⁷⁷ Payne, Sebastian and Thomas, Daniel (2022) ‘UK anti-fraud minister quits over “lamentable” Covid loan oversight’, *Financial Times*, 24 January. <https://perma.cc/VZ4N-LLWW>
- ¹⁷⁸ Hyde, Marina (2023) ‘Hundreds of lives ruined. Not a single person held to account. And still: silence on the Post Office scandal’, *The Guardian*, 2 May. <https://perma.cc/KA7M-8JWU>
- ¹⁷⁹ Post Office Horizon IT Inquiry. For more, see:
<https://www.postofficehorizoninquiry.org.uk>