who had also been involved in the early WHO response, had been quick off the mark in calculating the true size of the outbreak: by 16 January he had deduced, based on exported cases, that Wuhan was harbouring 1,000-plus cases by 6 January, more than ten times the official figure. A group of Mandarin-speaking PhD students at Imperial was scraping information from national and provincial government websites in China, and from preprint papers.

On Friday 24 January, Neil, who guessed that some infected travellers were slipping through the net, emailed me, Patrick and Chris to say that 'NHS preparedness should be kicked up a gear.' We had also had that very important conference call on 27 January, launching UK research into vaccines and therapies into the so-called Wuhan coronavirus.

Patrick took our worries seriously because he knows my background in emerging infections. He knew I would not overplay something that was not worth worrying about. There was no human immunity to this new pathogen; this was a respiratory disease spreading, in some cases asymptomatically, in a big urban centre in winter; Chinese New Year was fast approaching and there were no diagnostic tests, treatments or vaccines. There were no vaccines for any member of the coronavirus family of viruses.

I've known Chris for years too: he also trained in infectious diseases and did a period of study in Vietnam. The global health and infectious disease community can sometimes adopt a slightly weary attitude of 'We've seen it all before and these things are never as bad as you think.' And that was Chris, initially: he wanted to be much more cautious, to wait and weigh everything before taking action. The lesson from every epidemic is that if you wait until you know everything, then you are too late. If you fall behind an epidemic curve, it is extraordinarily hard to get back in front of it.

The UK, meanwhile, was clocking up its first known cases in January 2020: a woman who returned from Hubei province on 23 January subsequently developed fever, sore throat and dry cough. A household contact later developed symptoms, suggesting person-to-person transmission. Both were hospitalised in Newcastle, in north-east England, on 31 January as a precaution and discharged after a mild illness.

That friction, between waiting and wading in, led to a palpable tension between Patrick and Chris in the early weeks of 2020, particularly given the apparent absence of political leadership in that period. Boris Johnson, the prime minister, did not attend the first five COBR meetings on coronavirus in January and February 2020.

Chris, though, had more experience than Patrick of operating in political circles: he was in government in 2009, during the H1N1 swine flu pandemic. It was projected to lead to 65,000 deaths; in the event, there were fewer than 300. Dame Sally Davies, then England's chief medical officer, was unfairly criticised for overreacting. The UK stockpiled oseltamivir (sold as Tamiflu) and other measures at great expense.

That backlash possibly made Chris wary of the same happening this time round. He talked about the outbreak as a marathon not a sprint. In a sense, outbreaks *are* marathons, but there are times in every long-distance race when you need to go fast. That go-slow outlook pervaded much of the thinking in January and February 2020 in the UK, even though all the information that had accumulated by the end of January should have set off the loudest of sirens.

SAGE collects and analyses scientific evidence to inform, not set, government policy. The group draws, in turn, from the

So, faced with a capacity of five cases a week, where would that testing bring the most benefit? It had to be in hospital. That renders the tip of the iceberg visible. But it meant dropping community testing (Cummings claims it was dropped as part of the herd immunity plan).

Embarrassingly, around the time of that decision on 12 March, the WHO was urging countries to 'test, test, test'. I remember Jenny Harries, England's deputy chief medical officer, saying publicly that the UK did not need to follow the WHO's advice because it did not apply to high-income countries. It was a dreadful thing to say. There was no public acknowledgement that abandoning community testing was a decision based not on public health or science considerations but on a lack of testing capacity. It meant we were flying blind when it came to transmission outside of hospitals, in the community and in care homes.

The idosyncratic British approach baffled observers at the WHO, including Maria Van Kerkhove, in the Health Emergencies Programme and a key figure in the agency's Covid-19 response. Maria recalls: 'The attitude was, "Don't worry, that's China, that's not here. That's Lombardy, that's not here. We've got this." I heard many people on UK media in the beginning say, "No, that won't happen here, we have a very strong health system that will deal with it, nothing to see here." Many other countries did the same thing. It was hubris.'

The fact that the UK did not have eyes on the virus had serious consequences: the UK could not see the epidemic as it truly was, making it harder to calculate how it was developing. As John Edmunds says: 'The data was terrible and we had poor situational awareness.' Second, a crisis cries out for clear lines of command and control. We were navigating a very fragmented set of decision-making

really important question for me is, why didn't we just look at South East Asia, at China, at South Korea and the other countries who were leaping into action? It was clear what they were doing was having an impact. The huge mistake was thinking that, because there are important cultural and political differences, nothing could be learnt from countries or groups of people. That is a kind of racism. It meant we failed to make the most of the time we had, and we paid the price.'

I do not buy into the idea that Cummings was a herd immunity enthusiast. Neither does Timothy Gowers: 'The narrative that [Cummings] was callous about human life is wrong. My reading of the situation is he was trying to follow what he thought was the best scientific advice at the time.'

Cummings, who caught Covid-19, is still upset at being framed as its architect: '[Those accusations were] made by a combination of people inside the system who hated me or wanted rid of me, who were briefing, "Cummings has come up with this." Then you had the insane Remainer social media networks going, "Oh my god, the evil Cummings is now going to try and kill everyone!"'

Cummings' belief that the government was being advised by SAGE to chase herd immunity was underscored, he says, by the conversations in Number 10 comparing the strategy to chicken pox parties. On 12 March 2020, Ben Warner asked Number 10 officials to stop using the analogy, pointing out that chicken pox was not going to kill half a million people. That remark, Cummings recalls, stunned those present: 'There was a clear division between the older, more senior people thinking, "Hang on, I thought this was the plan and there was no alternative," and the younger people thinking, "If the plan is chicken pox parties, we're fucked."'

This analogy would never have come from SAGE.

was doing 500,000 a week, some in drive-through centres. Countries further afield, such as Singapore and South Korea, were also mounting impressive epidemic containment operations.

In April, it became obvious the virus was spreading in hospitals. But we were hamstrung; without firing up testing capacity it was impossible to gauge what was going on in hospitals and care homes. And the levers were still not budging. No matter how much SAGE advised that such testing was central to any strategy, advisers had no operational power or oversight to make it happen.

With high rates of nosocomial (hospital/care home) transmission, the obvious thing to do would have been to test all staff, including cleaners and ambulance drivers, so they could isolate if infected. But testing also presented a Faustian bargain: do we test everyone working in hospitals, plus patients and staff, knowing that maybe 25 per cent of the workforce would have to isolate and the NHS would collapse? Or do we essentially turn a blind eye?

That blindness lit the touchpaper for the devastating epidemic in hospitals and care homes. Patients with the virus were discharged, untested, from hospital back into sometimes barely regulated institutional settings, where poorly paid carers work across multiple care homes. Often, hospitals had little choice but to send patients back to care homes; they had been instructed to clear beds for the coming storm.

The minutes of the SAGE meeting of 5 May 2020 painted a disturbing picture of 'three separate but interacting epidemics: in the community; in hospitals; and in care homes'. Hospitals and care homes became the biggest block to loosening restrictions, even though six weeks of lockdown had pushed the reproduction number down, as