Editorial Note

Progress in Microbes and Molecular Biology

HH PUBLISHER

PMMB COVID-19 Bulletin: United Kingdom (22nd April 2020)

Loh Teng-Hern Tan[1*], Vengadesh Letchumanan[1], Hooi-Leng Ser[1], Jodi Woan-Fei Law[1], Nurul-Syakima Ab Mutalib[2], Learn-Han Lee[1*]

[1]Novel Bacteria and Drug Discovery (NBDD) Research Group, Microbiome and Bioresource Research Strength (MBRS), Jeffrey Cheah School of Medicine and Health Sciences, Monash University Malaysia, 47500 Bandar Sunway, Selangor Darul Ehsan, Malaysia

[2]UKM Medical Molecular Biology Institute (UMBI), UKM Medical Centre, University Kebangsaan Malaysia, Kuala Lumpur, Malaysia

Abstract: COVID-19 has greatly impacted the world and posed an enormous public health threat. The United Kingdom is hit harder by the COVID-19 crisis than any other European countries, besides Italy, Spain and France. The UK government has come under heavy criticism for its response to COVID-19, with lack of preparedness, shortages of personal protective equipment and COVID-19 testing. Despite the lockdown is in place to slow the spread of COVID-19, UK death toll continues to surge. As of 21st April 2020, more than 120,000 confirmed COVID-19 cases and 16,000 deaths had been recorded in UK.

Keywords: Novel coronavirus; SAR-CoV-2; COVID-19; United Kingdom; PMMB.

***Correspondence:** Loh Teng-Hern Tan, Novel Bacteria and Drug Discovery (NBDD) Research Group, Microbiome and Bioresource Research Strength (MBRS), Jeffrey Cheah School of Medicine and Health Sciences, Monash University Malaysia, 47500 Bandar Sunway, Selangor Darul Ehsan, Malaysia; loh.teng.hern@monash.edu. Learn-Han Lee, Novel Bacteria and Drug Discovery (NBDD) Research Group, Microbiome and Bioresource Research Strength (MBRS), Jeffrey Cheah School of Medicine and Health Sciences, Monash University Malaysia, 47500 Bandar Sunway, Selangor Darul Ehsan, Malaysia; lee.learn.han@monash.edu.

Received: 23rd April 2020
Accepted: 24th April 2020
Published Online: 26th April 2020

***Citation*:** Tan LTH, Letchumanan V, Ser HL, *et al*. PMMB COVID-19 Bulletin: United Kingdom (22nd April 2020). Prog Microbes Mol Biol 2020; 3(1): a0000078. https://doi.org/10.3687/pmmb.a0000078

Main text

On the late December 2019, the novel coronavirus SAR-CoV-2, identified as the cause of an outbreak of severe pneumonia in China, has quickly spread to all corners of the world. By 21st April, the number of reported confirmed cases of COVID-19 has exceeded 2.3 million globally[1,2]. COVID-19 has greatly impacted the world and posed an enormous public health threat which has not been seen in a respiratory virus ever since the 1918 H1N1 influenza pandemic[3]. After the assessment of the alarming levels of spread and severity by WHO, COVID-19 is characterized as a pandemic with more than 118,000 cases in 114 countries, and 4291 deaths recorded on 11th March 2020. SAR-CoV-2 becomes the first coronavirus which causes a pandemic. On 13th March, Europe became the epicentre of the pandemic[4] with more reported cases and deaths than the rest of the world combined, excluding China, reported by Dr. Tedros Adhanom Ghebreyesus (Director-General of WHO).

Since the beginning of the outbreak at the end of January, the world has been alarmed by the clear message from China and the scientific modelling study[5] that the COVID-19 was on the trajectory to become a global epidemic. However, within the month of February, the absence of isolation, quarantine and control tracing had further exacerbated the situation in United Kingdom (UK) leading to the upsurge of COVID-19 confirmed cases and number of critically ill patients overwhelm the healthcare system of the country. The SARS-COV-2 virus does not discriminate between social classes, nationalities, ethnicities or ideologies, as shown by the rapid domino effect of infections in UK government officials, even the Prime Minister, Boris Johnson succumbed to COVID-19 and was admitted to intensive care on 6th April 2020[6]. As of 21st April 2020, more than 120,000 confirmed COVID-19 cases and 16,000 deaths had been recorded in UK[1].

The first case of COVID-19 in UK was confirmed on 31st January 2020 (Figure 1), consisted of two members of a family of Chinese nationals staying in a hotel in York. They were identified in the community and

transferred to the regional Infectious Disease Unit at Hull University Teaching Hospitals directly from their hotel[7]. The index case (A), who is a 50-year-old healthy female, entered UK on 23rd January 2020 without any symptoms. However, she developed symptoms of fever, sore throat, dry cough and malaise on the third day of arrival. Meanwhile, a previously healthy 23-year-old male (case B) returned to UK from Hubei province on 6th January 2020, who had a close contact with case A on 28th January 2020, developed myalgia and dry cough. Promptly, case B sought advice from the National Health Service (NHS) and followed by admission to hospital due to being possibly at risk of COVID-19[8]. Although the first cases in UK was identified without any clear case definitions, the decision to test was performed purely because of high clinical suspicion and information about the distribution of infection. However, this show that case definitions should evolve rapidly with any newly emerging infection[7]

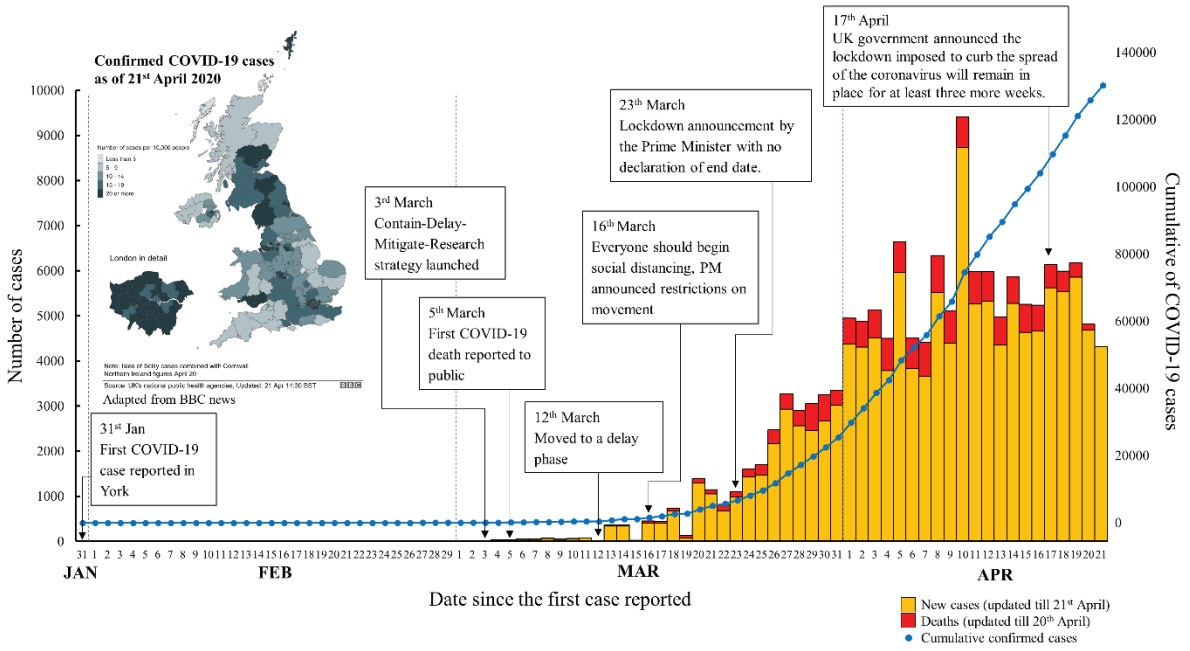

Figure 1. Illustrations of confirmed COVID-19 cases and deaths and the brief response plan taken by the UK government. The stacked bar graph shows the daily confirmed cases and deaths since the first case reported in UK while the line graph shows the cumulative confirmed cases. A heat map shows the distribution of confirmed cases across UK as of 21st April 2020.

As the COVID-19 pandemic progresses, the global community started implementing a broad range of measures depending on their own capacity in the respect of healthcare system, financial status, socio-political networks and self-sufficiency[9]. Countries like Singapore and South Korea have achieved relative control over the virus because of widespread testing, contact tracing and social distancing measures. The WHO-China Joint Mission on Coronavirus Disease also successfully demonstrated that immediate and decisive public health responses are critical to hinder or delay hundreds of thousands of cases in China[10]. Meanwhile, the UK government faces mounting criticism and rigorous scrutiny of its actions in preparations for and response to COVID-19. For instance, "When this is all over, the NHS England board should resign in their entirety," quoted by the Editor-in-Chief Richard Horton of *The Lancet*, expressing his disappointment over the inefficient response taken by the UK Government amid the COVID-19 pandemic[11]. He also commented that the failure of Contain-Delay-Mitigate-Research strategy, which was launched on 3rd March 2020 by the UK government as the preparedness plan for tackling COVID-19, was attributed to the relatively lower testing capacity in UK. Richard Horton also expressed his concern over the new plan of UK government shifting to Suppress-Shield-Treat-Palliate may be too late to deal with the consequence of this pandemic with the lack of preparedness, putting the lives of front-line staff and patients at stake[11].

The UK government launched action plans for tackling COVID-19 which includes four phases: contain, delay, research and mitigate[12]. The initial containment measures aimed to prevent COVID-19 from spreading by implementing approaches include the early detection, isolation and care of the infected patients and coupled with contact tracing and screening. These approaches have seen to be effective in country like China which implemented one of the so-called 'draconian' and controversial containment approaches by almost forcing the entire population to stay home. Although many argued that these extreme measures are unlikely to be replicated in Europe, which curtail human rights and cripple economies, Italy government eventually had resorted to impose the national lockdown measures on 9th March 2020 as a consequence of the overstraining of the country's healthcare system[13].

Case finding, contact tracing and testing and strict quarantine are the imperative measures in public health to control infectious diseases[14]. However, contact tracing started in the UK but stopped early in the epidemic, due to the questioning on its effectiveness. The reasons of

discontinuation of control tracing, which is against the WHO recommendation, have not been explained by the UK government. It seems to be linked to the shift from "contain" to "delay" by the UK government's action plan on 12th March 2020, when control tracing was substituted instead of coupling with other control measures[14]. Despite facing the criticisms on the slow decision made to move to delay from contain phase, the delay phase aims to slow the spread and push the peak of cases towards the spring and summer months to reduce pressure on the already overwhelmed NHS, in order to give time the researchers to comprehend the virus and potentially reduce the transmission given there is a seasonal element – as happens with influenza[7].

A modelling study by the researchers at Imperial College London has forced the UK government to shift their response plans for COVID-19, showing that the UK's heath service would soon be overwhelmed with severe cases of COVID-19 and resulted more than 500,000 deaths if no alternatives are taken by the government[15]. Almost immediately, the Prime Minister Boris Johnson announced new stringent restrictions on the movement of populations on 16th March 2020[16]. 'Urging everyone to practice social distancing and avoiding contact with others, households quarantine for 14 days if develops symptoms of COVID-19 and isolation of the high risk group (pregnant women and aged over 70) for 12 weeks', represented a critical factor in jolting the UK government into changing its policy which had previously only told people with symptoms to isolate at home for a week and suggested people over 70 may have to self-isolate[16]. Moreover, the study also suggests that population-wide social distancing applied to the population has the largest impact to reduce onward transmission. In addition, the combination of population-wide social distancing with other measures, such as self-isolation of cases and closure of school and university, which require the minimum policy has the potential to suppress transmission below the threshold of R=1 and effectively reduce the case incidence[15]. On 23rd March 2020, the Prime Minister officially announced to place UK in a state of lockdown, whereby all non-essential businesses are to close with immediate effect and residents are only allowed to go out to shop for essential items. The UK government's decision to impose this restrictions came under the increasing pressure to curb the spread of the virus and the joint efforts by the public health specialist, epidemiologists, scientist and doctors urging the government with the evidence on the best strategy to flatten the peak of COVID-19 outbreaks and to widen COVID-19 testing[17]. Initially, there were even reports on whether it is worthwhile to impose restriction, while also reports on "zero prospect" of lockdown of the city London[18]. Nevertheless, this enforced social distancing is absolutely crucial to save lives, to protect vulnerable in society and to ensure the healthcare system can cope and care for patients. According to another modelling study, a lockdown scenario of 8 days (17th March 2020) earlier than on the 24th March 2020 would have reduced the deaths from over 81,000 to below 19,000 by the end of a 12 week lockdown[19].

Apart from the lockdown intended to ease the pressure on hospitals, redeployment of clinical staff, recalling of retired doctors, newly graduated medical students and many clinicians may also be asked to practise outside their defined areas of expertise in responding to the unprecedented hospital demand[20]. In this challenging time, the situation in the healthcare setting is further compounded by the apparent increased risk of infection among healthcare workers, the understaffed service because of illness or self-isolation as well as shortages of personal protective equipment (PPE) in the past month. Despite the government has repeatedly assured the healthcare workers that millions of units of PPE have been delivered to the frontline[21], a survey by British Medical Association (BMA) showing that more than half of doctors working in high risk environment with either shortages or no supply of adequate face masks and no access to eye protection[22].

In addition to unpreparedness of the government and shortages of personal protective equipment, UK is also falling short on testing. Testing has regarded as one of the most effective strategies to curb with the rapid spreading COVID-19, thereby it offers the authorities the opportunity to isolate the infected patients and stem the spread of COVID-19. 'Test, test, test' is the mantra of the WHO and other countries in response to the pandemic[13]. Meanwhile, tests for healthcare workers are only becoming available in UK. South Korea has been among the most aggressive when it comes to testing, in contrary to the early stages in UK - where the government officials had even talked up a theory of allowing the disease to spread while protect the vulnerable in the society. As of 20th March 2020, there were only around 957 tests per million in UK as compared to countries like South Korea (6182 tests per million), Italy (3019 tests per million) and Australia (4294 test per million) [23]. On 2nd April 2020, reports showed that only 2,000 NHS frontline workers out of about half a million have been tested for coronavirus. On the same day, the health secretary, Matt Hancock, pledged that there will be 100,000 tests for coronavirus available daily by end of the month of April across UK [24].

At the time of writing, various countries are wondering when and how to ease coronavirus lockdowns as curves flatten and COVID-19 cases start to fall in some European countries, including Denmark, Germany, Switzerland and Austria[25]. The WHO has also warned that lifting the lockdowns should be done slowly and only when additional capacity in the healthcare system is in place to isolate cases and contact-tracing[26]. Meanwhile, the UK will probably have to maintain some level of social distancing for another 18 months or until a vaccine for the novel coronavirus is available, Neil Ferguson said, an epidemiologist and government adviser from Imperial College, who has helped shape the government's response to the pandemic. Furthermore, the health secretary also commented on 16th April that it was still too early to lift the lockdown[27].

Conflict of Interest

The authors declare that there is no conflict of interest in this work.

Reference

1. World Health Organization. Coronavirus disease 2019 (covid-19). Situation report−92, 2020 [22 April 2020]. Available from: https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200421-sitrep-92-covid-19.pdf?sfvrsn=38e6b06d_4
2. Vengadesh L, Ab Mutalib NS, Goh BH, *et al*. Novel coronavirus 2019-nCoV: Could this virus become a possible global pandemic. Prog Microbes Mol Biol 2020; 3(1): a0000068.
3. Lee VS, Chong WL, Sukumaran SD, *et al*. Computational screening and identifying binding interaction of anti-viral and anti-malarial drugs: Toward the potential cure for SARS-CoV-2. Prog Drug Discov Biomed Sci 2020; 3(1).
4. Ser HL, Vengadesh L, Law JWF, *et al*. PMMB COVID-19 BULLETIN: SPAIN (22 April 2020). Prog Microbes Mol Biol 2020; 3(1): a0000074.
5. Wu JT, Leung K, and Leung GM. Nowcasting and forecasting the potential domestic and international spread of the 2019-nCoV outbreak originating in Wuhan, China: a modelling study. The Lancet 2020; 395(10225): 689−697.
6. Cowper A. Covid-19: Testing times for the government—but not for NHS staff. BMJ 2020; 369: m1433.
7. Moss P, Barlow G, Easom N, *et al*. Lessons for managing high-consequence infections from first COVID-19 cases in the UK. The Lancet 2020; 395(10227): e46.
8. Lillie PJ, Samson A, Li A, *et al*. Novel coronavirus disease (Covid-19): The first two patients in the UK with person to person transmission. J Infect 2020; 80(5): 578−606.
9. World Health Organization. COVID-19 Strategy update 14 April 2020,2020 [20 April 2020]. Available from: https://www.who.int/publications-detail/covid-19-strategy-update-13-april-2020.
10. World Health Organization. Report of the WHO-China Joint Mission on Coronavirus Disease 2019 (COVID-19) 16-24 February 2020, 2020 [20 April 2020]. Available from: https://www.who.int/docs/default-source/coronaviruse/who-china-joint-mission-on-covid-19-final-report.pdf
11. Horton R. Offline: COVID-19 and the NHS&-"a national scandal". The Lancet 2020; 395(10229): 1022.
12. The Lancet Respiratory M. COVID-19: delay, mitigate, and communicate. The Lancet Resp Med 2020; 8(4): 321.
13. Cohen J and Kupferschmidt K. Countries test tactics in 'war' against COVID-19. Sci 2020; 367(6484): 1287−1288.
14. Pollock AM, Roderick P, Cheng K, *et al*. Covid-19: Why is the UK government ignoring WHO's advice? BMJ 2020; 368: m1284.
15. Ferguson N, Laydon D, Nedjati Gilani G, *et al*. Report 9: Impact of non-pharmaceutical interventions (NPIs) to reduce COVID19 mortality and healthcare demand. Imperial College COVID-19 Response Team 2020.
16. Mahase E. Covid-19: UK starts social distancing after new model points to 260 000 potential deaths. BMJ 2020; 368: m1089.
17. Iacobucci G. Covid-19: UK lockdown is "crucial" to saving lives, say doctors and scientists. BMJ 2020; 368: m1204.
18. Cowper A. Andy Cowper: Covid-19—government communications need to build and sustain trust. The BMJ Opinion 2020 [21 April 2020]. Available from: https://blogs.bmj.com/bmj/2020/03/20/andy-cowper-covid-19-government-communications-need-to-build-and-sustain-trust/.
19. Dropkin G. COVID-19 UK Lockdown Forecasts and R_0. medRxiv 2020. Available from: https://doi.org/10.1101/2020.04.07.20052340
20. Willan J, King AJ, Jeffery K, *et al*. Challenges for NHS hospitals during covid-19 epidemic. BMJ 2020; 368: m1117.
21. Department of Health and Social Care. Coronavirus (COVID-19): personal protective equipment (PPE) plan, 2020 [21 April 2020]; Available from: https://www.gov.uk/government/publications/coronavirus-covid-19-personal-protective-equipment-ppe-plan.
22. British Medical Association. BMA survey finds doctors' lives still at risk despite Government pledges on PPE,2020 [21 April 2020]; Available from: https://www.bma.org.uk/news-and-opinion/bma-survey-finds-doctors-lives-still-at-risk-despite-government-pledges-on-ppe.
23. Feilding C and Anand K. Coronavirus testing: Which countries are leading? 2020 17th April 2020]; Available from: https://graphics.reuters.com/HEALTH-CORONAVIRUS-GLOBAL-TESTING/0100B5LC45H/.
24. Department of Health and Social Care. Health secretary sets out plan to carry out 100 000 coronavirus tests a day, 2020 [21 April 2020]; Available from: https://www.gov.uk/government/news/health-secretary-sets-out-plan-to-carry-out-100000-coronavirus-tests-a-day.
25. Brandon S. These European countries are starting to lift their coronavirus lockdowns. World Economic Forum, 2020. [20 April 2020]; Available from: https://www.weforum.org/agenda/2020/04/these-european-countries-are-starting-to-end-their-lockdowns/.
26. Gilbert M, Dewatripont M, Muraille E, *et al.* Preparing for a responsible lockdown exit strategy. Nat Med 2020.
27. Day M. Covid-19: European officials warn that exiting lockdown will be "very long" and will require cooperation. BMJ 2020; 369: m1549.