

Discuss the long-term impacts of the COVID-19 pandemic and the extent to which things will go back to normal.

Carissa Lee

Norwich Medical School

Word count (excluding titles and captions): 1483

The Unofficial Guide to Medicine Essay Competition

It is undeniable that our lives have changed drastically over the last few months. Hospitals were built, vaccines were produced and many of us have adjusted to staying at home. Thankfully, this nightmare will eventually end. But to what extent will our lives return to normal? What does the future hold for us? In this essay I hope to explore the long-term impacts of the covid-19 pandemic and its significance on healthcare.

What will happen after the vaccine?

After the introduction of a polio vaccine in 1955, cases and deaths in the US for both diseases significantly dropped (figure 2)¹ but the disease was not fully eradicated until 2000. It is a possibility that COVID-19 will follow a similar trajectory.

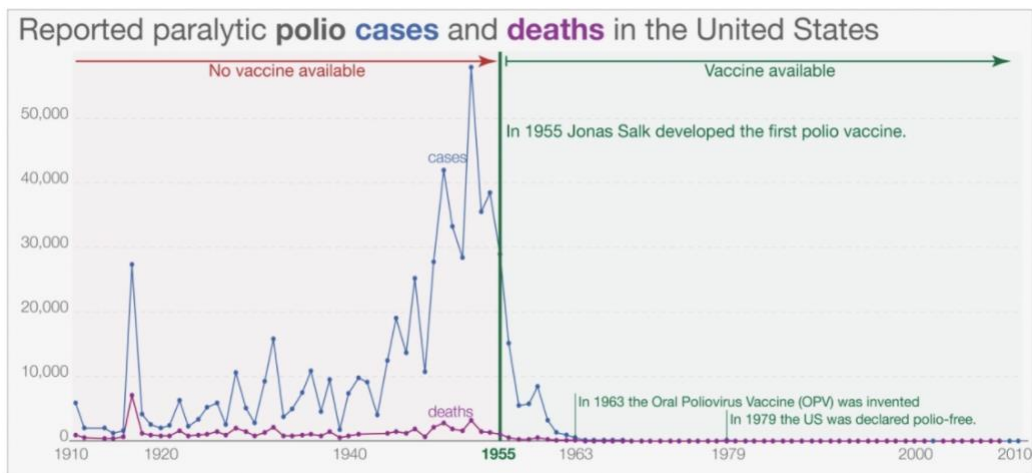


FIGURE 2.

However, the virus could also appear seasonally like the influenza. Viruses constantly mutate and the UK is already facing its third strain since the virus stepped foot in the UK. Continuous development of vaccines to provide immunity for all would be necessary. Thankfully, over time the population can confer more immunity to coronaviruses as research indicates that antibodies for SARS-CoV can cross-react with other coronaviruses². Hence one can expect coronavirus pandemics to return, but our immune systems would be better prepared.

Nevertheless, our mask-wearing, hand sanitising protocol will be here for years to come. “Will there be a big moment where we have a massive party and throw our masks and say ‘that’s it, that’s behind us’? No, I don’t,” England’s deputy chief medical officer, Jonathan Van-Tam stated. Many are prepared for a second pandemic in their lifetime, but only time can tell how frequent they will come and to what extent it will become a part of our lives.

Shifting to online care

Digital consultations have now become the new normal. Doctors now rely on services such as AccuRx and Pharmacy2U to speak with their patients whilst sparing the infection risk. Though intended to be a temporary substitute for face-to-face consultations, it seems like online consultations will be here to stay.

The NHS plans to provide patients with an option to have consultations either online or in person, starting from 2023/24. This should significantly reduce the number of no-shows³, as patients who were previously unable to attend appointments due to scheduling conflicts or logistical difficulties can now easily access the consultation (figure 1)⁴. Improved patient flow within the hospital system brings greater efficiency⁵, thus agonisingly long waiting lists could be shortened.

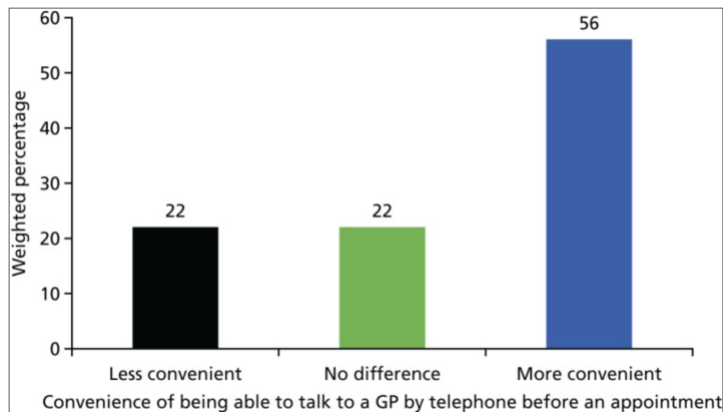


FIGURE 1. Bar chart shows that more people find online consultations more convenient.

Though some prefer the convenience of an online consultation, others prefer to speak to their doctor in-person. Having a good chat with the doctor truly makes a patient’s day and

helps them cope better with their condition⁶. A simple hug or laugh can really make all the difference. Some patients prefer in-person clinics as they find it difficult to explain their condition over the phone and feel the need to show their condition to the doctor⁷. Online consultations could also be potentially dangerous, as doctors could miss out on red flags or incidental findings. Therefore in a post-covid era, doctors will have to reconstitute the way they connect and build rapport with patients.

Another long-term implication of online teleclinics is that it could promote health-seeking behaviour. An appointment is only one click away⁸ and patients will be more willing to seek help. Though this could be beneficial, it could also lead to patients booking unnecessary appointments, which could increase the waiting time for patients who need the service more urgently.

All in all, society should anticipate the permanent implementation of teleclinics in healthcare. Shortcomings in patient communication can easily be overcome by doctors over time and conversations online will naturally be more intuitive as society continues to adopt more technology. The NHS may also modify their online programmes and ways to prioritise patients to further increase efficiency.

Changes in ethical standards

Over the past year we have seen unprecedented levels of change. The BioNTech-Pfizer vaccine was approved in months which would have otherwise taken years. Legislations were changed and the MHRA engaged in a 'rolling review' where data from an ongoing review can be released instead of publishing it all at once at the end of the trial⁹. Trials that would take years to complete now take days. It could be argued that technological development has naturally accelerated the approval process, but it cannot be denied that some regulations were put aside (figure 3). With all these regulations bypassed, trials that would usually be deemed ethically challenging could become feasible.

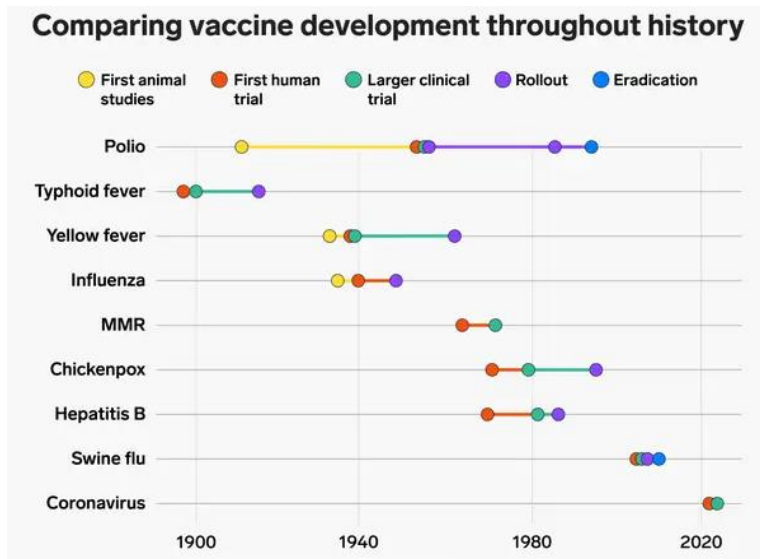


FIGURE 3¹⁰ With exception to the influenza vaccine, the COVID-19 vaccine was rolled out much quicker than others.

An example would be the human challenge trial which planned to deliberately inoculate patients with COVID-19, to help researchers determine an appropriate vaccination dose¹¹. Though patient consent was given and measures were put to give patients maximum protection, it could be argued that deliberately inoculating a patient breaches the virtue of non-maleficence. However Professor Savulescu, an expert in ethics at Oxford university, argues that “in a pandemic, time is lives. So far, over a million have died.” A positive discovery could potentially save tens of thousands of lives and could be a key driver in resolving this pandemic.

As the world will likely face more pandemics in the future¹², there is a possibility that such trials will become increasingly normalised. Ethical values are dependent on public opinion, so if we face multiple pandemics and the public becomes more desperate to return to normal life, trials may become more morally justified in the long run¹³.

Fighting the next pandemic with technology

As this current pandemic has yet to come to a close, researchers are already anticipating and preparing for the next one. There will undoubtedly be greater emphasis for research

on infectious diseases. Puschnik, a German researcher affiliated with the Chan Zuckerberg Biohub, is devising a broad antiviral drug which targets common cellular pathways of viruses¹⁴. If successful, this means that the antiviral drug can target all viruses. Rather than waiting for drugs to be trialled and produced after discovery of the novel virus, which would mean months of waiting, Puschnik hopes that this will be the one-stop universal vaccine to suppress all viral pandemics.

There may also be an increased use of AI in solving future pandemics. For instance, Oxford university has devised artificial intelligence (AI) screening test CURIAL, which provides rapid diagnosis of COVID-19 within an hour based on blood tests, blood gas testing and vital signs¹⁵. Though not completely accurate (92.3%), it allows a majority of covid-positive patients to be promptly contained whilst maintaining flow of the hospital¹⁶.

However, AI has its limitations. Bluedot, an AI software company, was the first to identify the COVID-19 pandemic. Using foreign language news reports and animal and plant disease networks, it alerted hospitals and the government that there was going to be a global pandemic¹⁷. If that is the case, why did the pandemic happen?

Authorities did not respond promptly to the information. They are not to blame though, as AI does not take into account the different forms of values and preferences in the population and political implications of a lockdown¹⁸. All in all, this pandemic will indefinitely accelerate AI implementation in healthcare, but also prompts authorities to reconsider ways to work alongside AI.

Tackling shortages

The novel virus caught many healthcare systems unprepared and revealed deficits in the system. The NHS suddenly faced a shortage of PPE supply and ICU beds quickly filled up (figure 4)¹⁹. COVID-testing was at its capacity early on in the pandemic. Though more resources were swiftly provided, infection rates among staff and the community could have been reduced had the PPE come earlier. This could encourage hospitals to always have

reserves of resources and be better prepared for worst-case scenarios in the long term. Protocols and more stringent rules on test, tracing and tracking may be devised to rapidly respond and suppress future outbreaks. These measures contributed to the effective containment of COVID-19 in Hong Kong, which adapted after its first crisis of SARS-CoV in 2003²⁰.

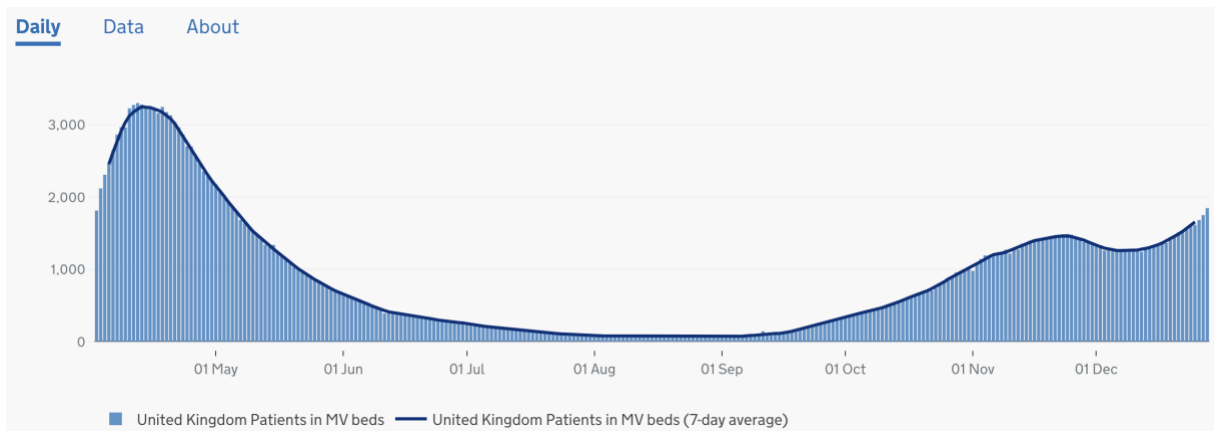


FIGURE 4. Number of occupied ventilator beds in the UK neared its capacity in April²¹.

The pandemic also further highlighted the lack of manpower in the NHS. Currently, patients receiving their initial cancer treatment 2 months after diagnosis is significantly reduced from 86% to 25%²². Care for non-essential services are “deferred as hospitals needed to repurpose the beds for COVID care in a country that already had one of the fewest acute care beds per capita in Europe”²³. Staff morale is at an all time-low as they face waves and waves of COVID-19 crises²⁴. Healthcare systems will need to reconsider ways to maintain quality of care for non-essential patients in times of crisis. In the context of the UK, COVID-19 could precipitate an increased intake of medical students and greater regard for NHS staff.

Conclusion

Eventually, we will be able to return to work without masks and meet with friends again. However we must not forget how the pandemic will provide new meaning to doctor-patient interactions and to scientific pursuit. COVID-19 has also helped reveal deficits

within the healthcare system which hopefully prompts positive change. If there is a silver lining to the pandemic, this would be it.

References

¹ Regalado, Antonio. "This One Chart Is the Proof Pfizer's Vaccine Works." MIT Technology Review. MIT Technology Review, December 11, 2020.
<https://www.technologyreview.com/2020/12/10/1013914/pfizer-biontech-vaccine-chart-covid-19/>.

² Che, Xiao-yan, Li-wen Qiu, Zhi-yong Liao, Ya-di Wang, Kun Wen, Yu-xian Pan, Wei Hao, Ya-bo Mei, Vincent C. C. Cheng, and Kwok-yung Yuen. 2005. "Antigenic Cross-Reactivity Between Severe Acute Respiratory Syndrome–Associated Coronavirus And Human Coronaviruses 229E And OC43". *The Journal Of Infectious Diseases* 191 (12): 2033-2037. doi:10.1086/430355.

³ Car, Josip, Van Galen Joseph. "Telephone Consultations." *BMJ*, May 3, 2003, 966–69.
<https://doi.org/10.1136/bmj.326.7396.966>.

⁴ Newbould, Jennifer, Sarah Ball, Gary Abel, Matthew Barclay, Tray Brown, Jennie Corbett, and Brett Doble et al. 2019. "A 'Telephone First' Approach To Demand Management In English General Practice: A Multimethod Evaluation". *Health Services And Delivery Research* 7 (17): 1-158. doi:10.3310/hsdr07170.

⁵⁵ "Digital-First Primary Care." Primary Care Strategy and NHS Contracts Group. NHS, June 2019. <https://www.england.nhs.uk/wp-content/uploads/2019/06/digital-first-primary-care-consultation.pdf>.

⁶ Newbould, Jennifer, Sarah Ball, Gary Abel, Matthew Barclay, Tray Brown, Jennie Corbett, and Brett Doble et al. 2019. "A 'Telephone First' Approach To Demand Management In English General Practice: A Multimethod Evaluation". *Health Services And Delivery Research* 7 (17): 1-158. doi:10.3310/hsdr07170.

⁷ Newbould, Jennifer, Sarah Ball, Gary Abel, Matthew Barclay, Tray Brown, Jennie Corbett, and Brett Doble et al. 2021. "Patient Experience Survey". *Ncbi.Nlm.Nih.Gov*.

<https://www.ncbi.nlm.nih.gov/books/NBK540756/>.

⁸ Olawuyi, Abisola T., and Ikeola A. Adeoye. 2018. "The Prevalence And Associated Factors Of Non-Communicable Disease Risk Factors Among Civil Servants In Ibadan, Nigeria". *PLOS ONE* 13 (9): e0203587. doi:10.1371/journal.pone.0203587.

⁹ "How The U.K. Approved The COVID-19 Vaccine Faster Than The U.S. And Europe". 2021. *Time*. <https://time.com/5917109/u-k-covid-vaccine-approved/>.

¹⁰ "How The Coronavirus Vaccine Development Compares To Other Shots In History". 2021. *Business Insider*. <https://www.businessinsider.com/how-coronavirus-vaccine-development-compares-to-other-shots-in-history-2020-11>.

¹¹ "Dozens To Be Deliberately Infected With Coronavirus In UK 'Human Challenge' Trials". 2021. *Nature.Com*. <https://www.nature.com/articles/d41586-020-02821-4>.

¹² "Coronavirus: This Is Not The Last Pandemic". 2021. *BBC News*. <https://www.bbc.com/news/science-environment-52775386>.

¹³ Jamrozik, Euzebiusz, and Michael J Selgelid. 2020. "COVID-19 Human Challenge Studies: Ethical Issues". *The Lancet Infectious Diseases* 20 (8): e198-e203. doi:10.1016/s1473-3099(20)30438-2.

¹⁴ "Andreas Puschnik". 2021. *MIT Technology Review*. <https://www.technologyreview.com/innovator/andreas-puschnik/>.

¹⁵ Soltan, Andrew A S et al. "Rapid Triage For COVID-19 Using Routine Clinical Data For Patients Attending Hospital: Development And Prospective Validation Of An Artificial

Intelligence Screening Test". *The Lancet Digital Health*, 2020. Elsevier BV, doi:10.1016/s2589-7500(20)30274-0.

¹⁶ "News". *Healthcare IT News*, 2021, <https://www.healthcareitnews.com/news/emea/ai-test-rules-out-covid-19-diagnosis-within-one-hour-emergency-departments#:~:text=According%20to%20the%20CURIAL%20study,a%20two%2Dweek%20test%20period>.

¹⁷ Niiler, Eric. "An AI Epidemiologist Sent The First Alerts Of The Coronavirus". *Wired*, 2021, <https://www.wired.com/story/ai-epidemiologist-wuhan-public-health-warnings/>.

¹⁸ "The True Dangers Of AI Are Closer Than We Think". *MIT Technology Review*, 2021, <https://www.technologyreview.com/2020/10/21/1009492/william-isaac-deepmind-dangers-of-ai/>.

¹⁹ "Coronavirus: Has The NHS Got Enough PPE?". *BBC News*, 2021, <https://www.bbc.com/news/health-52254745>.

²⁰ Shaw, Karen. "The 2003 SARS Outbreak And Its Impact On Infection Control Practices". *Public Health*, vol 120, no. 1, 2006, pp. 8-14. Elsevier BV, doi:10.1016/j.puhe.2005.10.002.

²¹ "Official UK Coronavirus Dashboard". *Coronavirus.Data.Gov.Uk*, 2021, <https://coronavirus.data.gov.uk/details/healthcare>.

²² Griffin, Shaun. "Covid-19: Waiting Times In England Reach Record Highs". *BMJ*, 2020, p. m3557. *BMJ*, doi:10.1136/bmj.m3557.

²³ Hunter, David J. "Trying To "Protect The NHS" In The United Kingdom". *New England Journal Of Medicine*, vol 383, no. 25, 2020, p. e136. Massachusetts Medical Society, doi:10.1056/nejmp2032508.

²⁴ "NHS Hospital Staff Illness Or Absence Up To Three Times Usual Level". *The Guardian*, 2021, <https://www.theguardian.com/uk-news/2020/dec/30/nhs-hospital-staff-illness-or-absence-up-to-three-times-usual-level>.