

“Discuss the long-term impacts of the COVID-19 pandemic.”

Robyn Wilcha

Medical Student, University of Manchester

Word Count (excluding title page and references = 1495)

The Unofficial Guide to Medicine Essay Competition 2021

Introduction

The World Health Organisation (WHO) declared COVID-19 as a global health emergency on the 30th January 2020¹. Despite rigorous containment measures, COVID-19 has rapidly spread from its epicentre in Wuhan City, China, causing international worry for the effects on the economy, population and healthcare institutions¹. COVID-19, also termed severe acute respiratory syndrome (SARS-CoV-2), is a novel RNA beta coronavirus spread through respiratory droplets². With a median incubation period of 2 – 12 days³ and an initial absence of symptoms⁴, COVID-19 is known for its high contagion rate². The presentation of COVID-19 displays further variability amongst individuals, ranging from mild infections to severe respiratory failure and ultimately death through the mechanisms of pneumonia, shock, acute respiratory distress syndrome and multi-organ failure⁵⁻⁶. Undoubtedly, the United Kingdom (UK) is one of the worst affected countries; as of the 10th January 2021, the UK COVID-19 death toll stands at 78,647 with 25.3% of total deaths citing COVID-19 on the death certificate⁷. Following a multitude of research and the development of vaccines alongside antivirals and supportive care, the global aim is to reduce the incidence of COVID-19⁸, however, despite anticipated success, long-term implications of COVID-19 will remain. This essay will first explore the long-term economic impacts of COVID-19, understanding the interaction of current public health preventative measures and economic burden. It will then adopt a more medicalised focus, exploring the long-term impacts of COVID-19 on patient health, medical specialities and mental health. To conclude, it will contend that change must be embraced, in the formats of virtual technology and disease surveillance, to minimise long-term effects of COVID-19 and to prevent similar pandemics in the future.

The economy

In line with increasing infection rates, the UK government endorsed the implementation of national lockdowns to control the virus and protect lives⁹. Using computable general equilibrium models, Keogh-Brown demonstrated that the use of isolation strategies across a 12-week period successfully reduced case fatalities by 29%, however, strikingly produced an economic burden of £308 billion¹⁰. This was further increased to £668 billion, accounting for 29.2% GDP, when isolation strategies were extended, mainly as a result of business closures¹⁰. Understanding the economic impacts from previous pandemics, such as SARS, is central to assuming the long-term implications on the economy following COVID-19. Economic losses, from the SARS outbreak, proved to be temporary with deficits recovered over time¹¹, however this hopefulness post COVID-19 should be countered by failure of businesses, increased unemployment thus resulting in limitations to normal financial spending¹⁰.

Implications on patient health and medical specialities

Alike the economy, COVID-19 has placed huge strain on healthcare institutions, with the vast majority exercising strong policies of cancelling appointments and surgical procedures^{12,13}. Short-term implications of COVID-19 include increased patient anxiety; delayed diagnoses; reduced medication adherence and reduced disease management¹². It is vital to appreciate the short-term impacts of COVID-19 in order to consider the long-term implications on patient health and medical specialities, with a particular focus on surgery and oncology.

Effects on patient health

Public health measures, including distancing and quarantine, have fostered an unintentional health crisis. Reductions of physical activity, due to closures of gyms, pools and limitations to outdoor space¹², have been linked with numerous negative outcomes, including: greater disease severity, increased risk factors (e.g. obesity, hypertension, hyperglycaemia¹⁴) and cognitive decline of the elderly¹⁵. Moreover, rises in mental health conditions have been noted due to reduced contact¹². Other negative long-term outcomes of the pandemic include increased mortality, malnutrition and vitamin D deficiency¹⁶. Long-term observations following COVID-19 may reflect a greater proportion of unhealthy lifestyles, in turn, causing more co-morbidities in the future¹².

Furthermore, negative patient outcomes have been further influenced by racial disparities. Black, Asian and Minority Ethnic (BAME) communities have accounted for 63% of COVID-related deaths¹⁷ with a 3.5x risk-fold in these individuals¹⁸. However, despite increased cases, Lester identified that cutaneous manifestations of COVID-19 was almost exclusively shown in lighter skin tones¹⁹. This inequality needs to be addressed and in the long-term, future publications and educational events should prioritise learning related to darker skin tones to prevent further worsening of health disparities.

Surgical services

On average, 330 million operations are conducted globally²⁰. Due to the COVID-19 pandemic, an unprecedented number of operations have been cancelled or deferred as a result of new demands for ventilators, hospital space and the temporary redeployment of clinical staff¹³, as evidenced by Figure 1. There is no robust data

available to model the limitations to surgical procedures¹³; however, literature suggests that with extended disruptions, the risk of adverse prognosis increases, including loss of function, loss of timely care for otherwise correctable or curable disease and reductions in life expectancy²¹. To date, there are no recommendations exploring how to reopen surgical delivery¹³. Future planning must consider the backlog of surgical patients and must strategise new ways to restore surgery in order to prevent long-term collateral damage of the pandemic¹³.

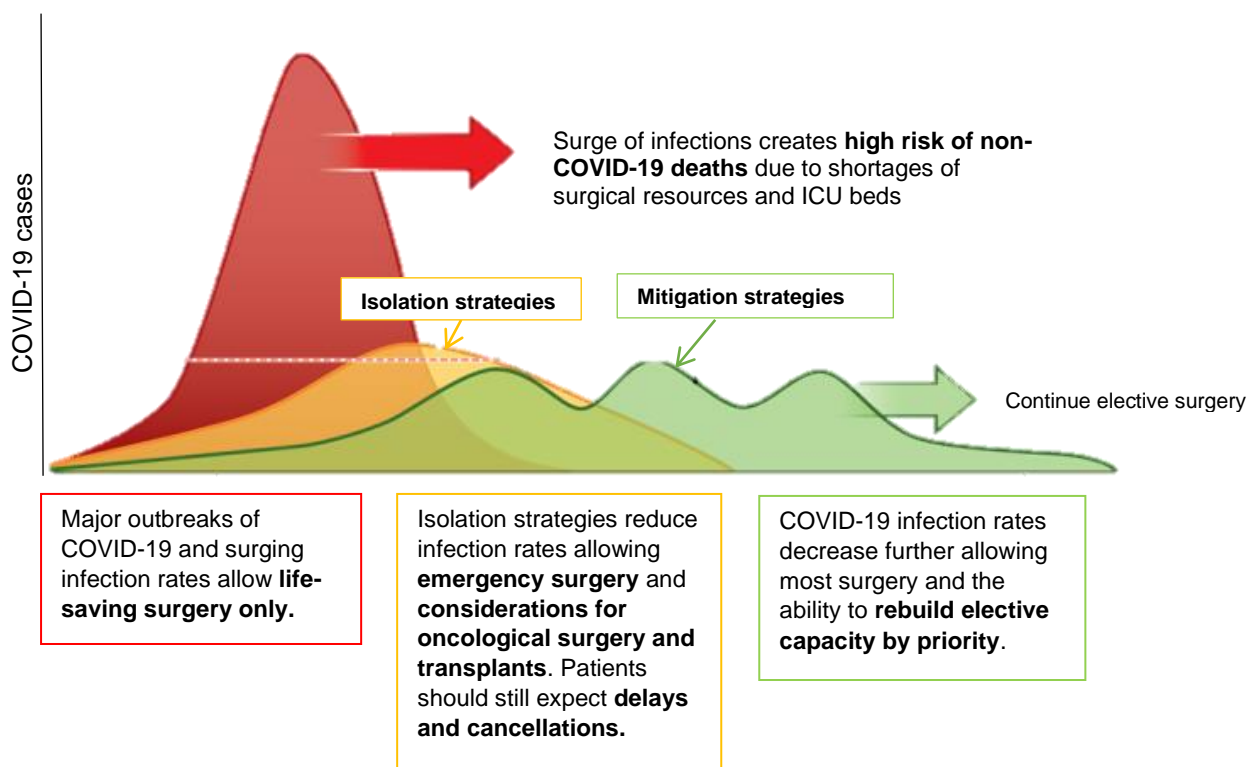


Figure 1. A graph demonstrating how COVID-19 infection rates impacts on surgical services. The red line shows the impact of major outbreaks on surgical services. The yellow line shows how isolation strategies suppress the virus allowing greater considerations for surgical procedures. The green line shows that with reduced risk of contracting COVID-19, surgical services may normalise once more. Adapted from [13].

Oncology

Cancer diagnostics and management have also experienced further disruptions due to COVID-19²². Delayed diagnosis and treatment contribute to the advancement of cancers which negatively affect patient long-term survival²³. A study by Sud calculated the per-day hazard ratios of cancer progression with 3–6-month delay periods to represent COVID-19, data analysis shows attributable deaths of 4755 individuals with a loss of 92,214 life-years²². It is evident that delays on cancer diagnostics and management incur an exponential burden of case mortality; future planning is essential to prevent a long-term public health crisis of unnecessary cancer deaths and rapid attention must address backlogs of accumulated cancer cases²².

The mental health implications of COVID-19

Having demonstrated the pressures placed on healthcare institutions as well as the associated negative patient outcomes, this essay will now address the mental health implications of COVID-19. Due to COVID-19's novel nature, no literature has gained an understanding of the long-term mental health impacts of COVID-19; however, by utilising an understanding of the mental health implications of the SARS outbreak, similar conclusions may be drawn.

Within the general population, symptoms of post-traumatic stress disorder, anxiety and depression have been reported as a response to COVID-19²⁴. Public health measures, such as distancing and isolation²⁵⁻²⁶, as well as misinformation²⁵⁻²⁶, personal fears of infection²⁵⁻²⁶ and financial stress²⁷ have attributed to the development of psychiatric symptoms. A similar rise in psychiatric morbidities was seen following the SARS pandemic in Hong Kong with a percentage increase of

39.5%²⁸. Furthermore, Tansey demonstrated that increased patient anxiety following pandemics may cause patients to utilise healthcare services more readily, increasing work burdens of institutions once more²⁹. Assuming a similar impact of COVID-19, it would be estimated that of the 9 million recovered COVID-19 patients (to July 2020), over 45 million visits would occur as a result of patient anxiety²⁸. To prevent a long-term psychological crisis, governments should increase the amount of support available to the public and should empathetically seek to normalise feelings of distress caused by the pandemic, encouraging people to seek help if needed³⁰.

Moreover, healthcare professionals have been placed in extraordinary circumstances and, as result, faced rises in physician burnout³¹, mental health illness³¹⁻³³ and contrastingly, displayed signs of post-traumatic growth³². A study of 54,407 frontline workers showed that up to 40% of healthcare workers reported anxiety, depression, distress or sleep problems³⁴. Associated contributors to psychiatric manifestations included excess workload³², moral injury³² and the absence of healthy schedules which accommodated adequate rest, sleep and restoration²⁸. Protection of staff breaks, access to support and encouraging staff to share difficult moments is vital to protect the working force^{32,33}.

Conclusion

In conclusion, patients and healthcare professionals must be prepared to adapt. The COVID-19 pandemic has presented unique challenges and healthcare institutions must strive to minimise the long-term impacts on the economy, patients and healthcare services. Virtual technology has thrived alongside the COVID-19 pandemic and should be utilised to provide ongoing support with a particular focus on psychological services and healthy living after COVID-19. Active monitoring of mental health conditions within healthcare professionals should be encouraged

during and after COVID-19, with positive encouragement to speak to others and prioritise leave. Further guidelines are necessary to optimise surgery and cancer services to prevent unnecessary deaths. Most importantly, disease surveillance is vital to help predict, observe and minimise harm from future pandemics to strike.

References

1. Sohrabi C, Alsafi Z, O'Neill N, Khan M, Kerwan A, Al-Jabir A et al. World Health Organization declares global emergency: A review of the 2019 novel coronavirus (COVID-19). *International Journal of Surgery*. 2020;76:71-76.
2. Pascarella G, Strumia A, Piliengo C, Bruno F, Del Buono R, Costa F et al. COVID-19 diagnosis and management: a comprehensive review. *Journal of Internal Medicine*. 2020;288(2):192-206.
3. Lauer S, Grantz K, Bi Q, Jones F, Zheng Q, Meredith H et al. The Incubation Period of Coronavirus Disease 2019 (COVID-19) From Publicly Reported Confirmed Cases: Estimation and Application. *Annals of Internal Medicine*. 2020;172(9):577-582.
4. Rothe C, Schunk M, Sothmann P, Bretzel G, Froeschl G, Wallrauch C et al. Transmission of 2019-nCoV Infection from an Asymptomatic Contact in Germany. *New England Journal of Medicine*. 2020;382(10):970-971.
5. Wu Z, McGoogan J. Characteristics of and Important Lessons From the Coronavirus Disease 2019 (COVID-19) Outbreak in China. *JAMA*. 2020;323(13):1239.
6. Xu Z, Shi L, Wang Y, Zhang J, Huang L, Zhang C et al. Pathological findings of COVID-19 associated with acute respiratory distress syndrome. *The Lancet Respiratory Medicine*. 2020;8(4):420-422.
7. Coronavirus (COVID-19) latest insights - Office for National Statistics [Internet]. <https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/articles/coronaviruscovid19/latestinsights> 2021 [cited 10 January 2021]. Available from:
8. Liu J, Liu S. The management of coronavirus disease 2019 (COVID-19). *Journal of Medical Virology*. 2020;92(9):1484-1490.

9. Nande A, Adlam B, Sheen J, Levy M, Hill A. Dynamics of COVID-19 under social distancing measures are driven by transmission network structure. 2020;.
10. Keogh-Brown M, Jensen H, Edmunds W, Smith R. The impact of Covid-19, associated behaviours and policies on the UK economy: A computable general equilibrium model. *SSM - Population Health*. 2020;12:100651.
11. Siu A, Wong Y. Economic Impact of SARS: The Case of Hong Kong. *Asian Economic Papers*. 2004;3(1):62-83.
12. Palmer K, Monaco A, Kivipelto M, Onder G, Maggi S, Michel J et al. The potential long-term impact of the COVID-19 outbreak on patients with non-communicable diseases in Europe: consequences for healthy ageing. *Aging Clinical and Experimental Research*. 2020;32(7):1189-1194.
13. Søreide K, Hallet J, Matthews J, Schnitzbauer A, Line P, Lai P et al. Immediate and long-term impact of the COVID-19 pandemic on delivery of surgical services. *British Journal of Surgery*. 2020.
14. Dekker J, Buurman BM, van der Leeden M. Exercise in people with comorbidity or multimorbidity. *Health Psychol*. 2019;38:822–830. doi: 10.1037/hea0000750.
15. Pentikainen H, Savonen K, Ngandu T, et al. Cardiorespiratory fitness and cognition: longitudinal associations in the FINGER study. *J Alzheimers Dis*. 2019;68:961–968. doi: 10.3233/JAD-180897.
16. Parker GB, Brotchie H, Graham RK. Vitamin D and depression. *J Affect Disord*. 2017;208:56–61. doi: 10.1016/j.jad.2016.08.082.
17. Coronavirus is hitting BAME communities hard on every front [Internet]. *The Conversation*. 2020 [cited 12 December 2020]. Available from: <https://theconversation.com/coronavirus-is-hitting-bame-communities-hard-on-every-front-136327>
18. Otu A, Ahinkorah B, Ameyaw E, Seidu A, Yaya S. One country, two crises: what Covid-19 reveals about health inequalities among BAME communities in the United Kingdom and the sustainability of its health system?. *International Journal for Equity in Health*. 2020;19(1).
19. Lester J, Jia J, Zhang L, Okoye G, Linos E. Absence of images of skin of colour in publications of COVID-19 skin manifestations. *British Journal of Dermatology*. 2020;183(3):593-595.

20. Weiser TG, Haynes AB, Molina G, Lipsitz SR, Esquivel MM, Uribe-Leitz T *et al*/ Size and distribution of the global volume of surgery in 2012. *Bull World Health Organ* 2016; 94: 201F–209F
21. Spinelli A, Pellino G. COVID-19 pandemic: perspectives on an unfolding crisis. *Br J Surg* 2020; 10.1002/bjs.11627 [Epub ahead of print].
22. Sud A, Jones M, Broggio J, Loveday C, Torr B, Garrett A *et al*. Collateral damage: the impact on outcomes from cancer surgery of the COVID-19 pandemic. *Annals of Oncology*. 2020;31(8):1065-1074.
23. Elliss-Brookes L., McPhail S., Ives A. Routes to diagnosis for cancer – determining the patient journey using multiple routine data sets. *Br J Cancer*. 2012;107:1220–1226
24. Mukhtar S. Pakistanis' mental health during the COVID-19. *Asian Journal of Psychiatry*. 2020;51:102127.
25. Ahorsu D, Lin C, Imani V, Saffari M, Griffiths M, Pakpour A. The Fear of COVID-19 Scale: Development and Initial Validation. *International Journal of Mental Health and Addiction*. 2020.
26. Sakib N, Bhuiyan A, Hossain S, Al Mamun F, Hosen I, Abdullah A *et al*. Psychometric Validation of the Bangla Fear of COVID-19 Scale: Confirmatory Factor Analysis and Rasch Analysis. *International Journal of Mental Health and Addiction*. 2020;.
27. Kawohl W, Nordt C. COVID-19, unemployment, and suicide. *The Lancet Psychiatry*. 2020;7(5):389-390.
28. Leung T, Chan A, Chan E, Chan V, Chui C, Cowling B *et al*. Short- and potential long-term adverse health outcomes of COVID-19: a rapid review. *Emerging Microbes & Infections*. 2020;9(1):2190-2199.
29. Tansey CM, Louie M, Loeb M, *et al*. . One-year outcomes and health care utilization in survivors of severe acute respiratory syndrome. *Arch Intern Med*. 2007;167(12):1312–1320.
30. Mukhtar S. Mental Health and Psychosocial Aspects of Coronavirus Outbreak in Pakistan: Psychological Intervention for Public Mental Health Crisis. *Asian Journal of Psychiatry*. 2020;51:102069.
31. Bradley M, Chahar P. Burnout of healthcare providers during COVID-19. *Cleveland Clinic Journal of Medicine*. 2020;.

32. Koutoangelos K, Economou M, Papageorgiou C. Mental Health Effects of COVID-19 Pandemia: A Review of Clinical and Psychological Traits. *Psychiatry Investigation*. 2020;17(6):491-505.
33. Walton M, Murray E, Christian M. Mental health care for medical staff and affiliated healthcare workers during the COVID-19 pandemic. *European Heart Journal: Acute Cardiovascular Care*. 2020;9(3):241-247.
34. Muller A, Hafstad E, Himmels J, Smedslund G, Flottorp S, Stensland S et al. The mental health impact of the covid-19 pandemic on healthcare workers, and interventions to help them: A rapid systematic review. *Psychiatry Research*. 2020;293:113441.
35. Krause A, Simon E, Mander B, Greer S, Saletin J, Goldstein-Piekarski A et al. The sleep-deprived human brain. *Nature Reviews Neuroscience*. 2017;18(7):404-418.