1. Introduction

The Covid-19 pandemic [1,] is a devastating global healthcare emergency with seismic impact on how modern surgical services function. Surgeons worry that whilst healthcare-resources are directed against the pandemic, double effect may predict these benevolent public health efforts will cause unintended maleficent effects through delays to surgical treatment. Surgeons will make many challenging ethical judgements during this pandemic, here we conduct a narrative review of how medical ethics may help us make the best available choices.

A narrative review of all the relevant papers known to the author was conducted. We discuss the key aspects of medical ethics, and how they have applied to surgeons during the Covid-19 pandemic.

The four fundamental principles of medical ethics include: Beneficence, Nonmaleficence, Autonomy and Justice. Surgeons will face many decisions which shall challenge those ethical principles during the pandemic, and wisdom from medical ethics can guide surgeons, to do the right thing, make best available choices, and get the best available outcome for patients during the Covid-19 pandemic.

The practice of surgery is distinguished by good judgement in the face of uncertainty, we must strive to do the right thing, advocate for our patients, and be honest in the face of uncertainty. Medical Ethics can guide us to make the best available choices for our patients during the Covid-19 pandemic, afterwards, we must emerge wiser having learnt lessons and rebuilding trust in surgical care.
2. Beneficence, nonmaleficence and best interests

Beneficence is to care for, or help, others and “do good”. Nonmaleficence is to “do no harm”. The ancient Oath of Hippocrates [9] bound a physician to act “for the benefit of my patients, and abstinence from what is deleterious or mischievous”. The primacy of patient welfare is the foundation of Medical Ethics, and assurance of those values form the bedrock of most professional codes [10,11]. Doctors have a primary responsibility to act in a patient’s best interests, without being influenced by any personal consideration, and patients must have trust in us to do the right thing. During this pandemics some individual best-interests must come secondary to that of society, for the greater good.

The patient-doctor relationship has always been a privileged one, where patients place their trust in their doctors to act in their best interests. That trust will be challenged during the pandemic as surgeons and surgical services cannot function as normal, especially if unintended harm to patients results. However, certain decisions are clearly beyond our control. During the pandemic most healthcare systems have stopped all but emergency surgical care, indeed in many areas a moratorium has been placed on scheduled surgery [12,13]. Even the remaining emergency surgical care is restricted, with diminished critical care support, and the need to balance increased risks from complex surgery with attendant risk of contraction of Covid-19 in the peri-operative period [13]. Surgical societies have provided support to frontline surgeons by established criteria by expert consensus for triage and prioritisation in order to identify procedures that can be postponed until after the pandemic and those that should not [3,4,12,13].

Worldwide most deaths have occurred in elderly patients with co-morbid disease and we know operations on Covid-19 positive patients carries a high mortality, but we must not consider all surgery futile in older, infirm or Covid-19 positive patients [4]. Our duty is to protect the most vulnerable but Doctors are under no obligation to offer treatment they consider futile [14]. However, we cannot withhold care entirely from certain groups and risk an avoidable cur of the elderly and infirm during the pandemic, but rather we should apply an individualised and context-specific approach to risk assessment [15].

Indirect harm, will take many forms, including: lost curative cancer surgery; increased stomas and amputations from damage-control surgery; fatalities from delayed cardiac, vascular, or neurosurgical operations. Cancer patients are a particular vulnerable group, contracting Covid-19 during treatment exposes them to a higher mortality but delays in cancer surgery may also lose opportunity for cure [16]. Cancer Networks have reorganisation to reduce the direct and indirect impact on cancer mortality by providing neo-adjuvant therapy and some essential surgery through “clean” centres supported by telemedicine, Covid-19 Testing, Isolation-Protocols and even anti-viral pharma-cotherapy [16]. The doctrine of double effect, where an action intended for good unintentionally causes harm, predicts how these benevolent public health initiatives can have maleficient effects. A balance must be struck between postponing treatment that is currently too risky, and continuing to save the lives of patients with urgent health needs unrelated to covid-19. Surgical leaders must remain vigilant and when local circumstances permit advocate for cautious and safe staged re-introduction of surgical services prioritised by clinical need and working across specialties to clear the backlog [4,17–19].

3. Altruism and duty

Covid-19 Hospital-based transmission has occurred [2,5,6] and Surgeons face particular risks due to intimate physical proximity and contact with potentially infectious bodily fluids, blood, urine and faeces. Sadly, Surgeons have been exposed unknowingly to large viral loads early in the pandemic, especially amongst Ophthalmic, Oto-laryngology, Maxillo-Facial and Thoracic Surgeons. Other Surgeons have become ill or died in the course of delivering emergency surgical care or re-deployed to support overstretched critical care services. Altruism is the selfless concern for the well-being of others, and Surgeons will selflessly place themselves at risk to help patients and support colleagues. Surgeons have willingly redeployed to assist other front-line services in critical care and emergency departments. Teams have worked flexibly to cover vacant roles and maintain emergency care [18,19]. Patients have still benefited from urgent or emergency operative intervention for time-sensitive disease processes such as malignant neoplasia or for true emergencies such as perforated viscus, bleeding, ischaemia or traumatic injury [3,4,17–19]. To manage the risk of Covid-19 transmission persons presenting for surgical intervention are suspected of infection (and thus transmissibility) even if asymptomatic and treated accordingly [18,19]. Surgeons have demonstrated that it is possible to provide safe surgical care even for SARS-CoV-2-positive patients, whilst minimizing nosocomial transmission to healthcare workers [13,18,19]. However, it is vital that infection prevention and control measures are robust, patients risk stratified by COVID-19 testing and staff protected with personal-protective equipment (PPE) and environmental shielding, otherwise isolated or sick staff will further deplete surgical care. Early in the Pandemic Surgeons identified as their key priorities, in the following order: the need to maintain emergency surgical capabilities, to protect and preserve the surgical workforce, and fulfill alternate surgical roles within the team or non-surgical roles on redeployment [3]. Surgeons have demonstrated altruism, done their duty, and worked collaboratively to share surgical experience and strive to provide non-surgical care competently with upskilling and support from colleagues.

4. Autonomy and informed consent

Autonomy, is to respect another's wishes. Surgeon-patient relationship should be considered a partnership, in which the surgeon’s duty is to honestly educate and empower patients to make appropriate informed choices about surgical care [11]. People have the right to control what happens to their bodies including the refusal of treatment, because they are free and rational, and these decisions must be respected by everyone, even if those decisions aren't in the best interest of the patient. In law, the principle of autonomy is often taken to bestow a negative right, a right to non-interference [8,11,14]. To interpret autonomy positively, by contrast, would arguably entitle everyone to any requested treatment, regardless of medical advisability or competing claims for scarce resources. A positive interpretation of autonomy is therefore often taken to be incompatible with the ethical principles of non-maleficence (do no harm), justice (distribute scarce resources fairly) and with the practical realities of healthcare provision especially during a global pandemic [8,11,14]. The combined effects of a moratorium on elective surgery and annexation of private surgical facilities have meant patient choice has been restricted. More concerningly in epicentres where healthcare systems have been overwhelmed by the pandemic surge finite resources such as critical care beds and ventilators have not been available for all who may have benefited and patient choice has been removed [2,5,6,14]. In a pandemic some choices must be restricted or even withheld. Informed consent is ethically and legally required prior to invasive surgical procedures and should include a discussion of the risks, benefits and alternatives [11,20,21]. To be valid consent the patient must have capacity, have understood the relevant information, consented voluntarily and communicate that decision. There are many challenges to informed consent, especially in vulnerable patients, including patient-centred barriers (such as age, education, language, illness and disability) and process-centred barriers (forms, information, communication and timing). Communication barriers are increased during this pandemic by personal-protective equipment (masks and visors), social-distancing, and isolation from family or best-friends. Surgeons have made efforts to overcome those barriers with innovative use of proven digital and audio-visual interventions [22]. In emergency situations surgeons will continue and strive to act in patients best-interests.
5. Justice and healthcare rationing

Justice, is to act or treat justly or fairly. We should try to be as fair as possible when offering treatments to patients and allocating scarce medical resources. You should be able to justify your actions in every situation [8,10,11]. During a pandemic the individual patient’s best interests must become secondary to that of society as a whole. Social justice in Healthcare demands we consider the available resources and the needs of all patients while taking care of an individual patient. In epicentres, the highest death rates coincide with breakdown of local healthcare systems. Even well-resourced healthcare systems, overwhelmed by demand for life support and ventilators have had insufficient for all in need, and finite resource has had to be directed to those most likely to survive [9,10]. These grave decisions should not be taken in isolation but working in partnership and recognising the uncertainty that exists. In tackling the pandemic there are also grave risks of indirect harm to patients as diagnosis, treatment, procedures and surgeries are delayed. To honour the principle of beneficence, providers should try to relieve suffering to the best of their ability. In the aftermath a concerted effort must be made to provide redress for disadvantaged patients. Surgeons and Healthcare providers will need to work collaboratively and creatively to safely and sustainably restore surgical services cognisant of risks of a second pandemic surge and financially constrained by the pandemics economic devastation [4,18,19].

6. Confidentiality, conflicts and medical mistakes

Confidentiality is integral to patient-doctor trust [10,11]. With social-distancing during the pandemic we have witnessed a parallel outbreak of social-media usage and exploration of novel video-conferencing (VC) in healthcare. This process has been optimised by rapid upskilled of surgeons in best-practice in communications skills for telephone or audio-visual consultations [23]. Surgeons must temper their instinct to publicise experiences as they overcome adversity with novel approaches to protect the fundamental duty to protect patient confidentiality. Naturally, vital experience, evidence and research must be disseminated to ensure care is evidence-based [18,19] but must follow the principles of research ethics outlined in the Helsinki Declaration [24], ensure consent is informed, and declare and avoid conflicts of interest and by working collaboratively to be best, rather than first. Surgeons, like other citizens, must also endure social-distancing and a financial hardship with loss-of-earnings and for some who run small business and hire staff the real threat of insolvency. Indeed the economic effects of the Covid-19 pandemic on tariff-based healthcare systems such as the United States of America, where a moratorium had been placed on elective surgery, has been grave despite federal financial support measures. The ethical danger is that many providers may not survive unless a sustainable resumption of elective surgery can be achieved soon but financial needs must not take primacy over safety [25]. Whilst we endure these seismic events on surgical practice some medical mistakes will also happen, and can violate the principle of nonmaleficence, and here truthfulness and justice will guide us [26]. Learning how to prevent mistakes, openly reporting mistakes, and learning from mistakes helps us demonstrate respect and rebuild trust.

7. Conclusions

The practice of surgery is distinguished by good judgement in the face of uncertainty, we must strive to do the right thing, advocate for our patients, and be honest in the face of uncertainty. Medical Ethics can guide us to make the best available choices for our patients during the Covid-19 pandemic. We must emerge wiser having learnt lessons and rebuild trust in surgical care whilst respecting those principles of beneficence, nonmaleficence, autonomy and justice.

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I have read and understood the policy on declaration of interests and have no relevant interests to declare. The responsibility for the content lies with the author and the views stated herein should not be taken to represent those of any organisations or groups with and for which he works.

References

[1] WHO Director-General’s opening remarks at the media briefing on COVID-19 - 11 March 2020, https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19—11-march-2020.
[2] W.J. Guan, Z.Y. Ni, Y. Hu, W.H. Liang, C.Q. Ou, J.X. He, et al., Clinical Characteristics of Coronavirus Disease 2019 in China, N. Engl. J. Med. 382 (18) (2020) 1708–1720, https://doi.org/10.1056/NEJMoa2002032 NEJMoa2002032; [Epub ahead of print].
[3] Intercollegiate Royal Colleges of Surgery, Intercollegiate clinical guide to surgical prioritisation during the coronavirus pandemic, Online 11 April 2020 http://C:/Users/denis/Downloads/Intercollegiate%20clinical%20guide%20to%20surgical%20prioritisation%20during%20the%20coronavirus%20pandemic.pdf.
[4] D. Alderson, To operate now or later—that is the surgical question, BMJ (2020) April 17 https://blogs.bmj.com/bmj/2020/04/17/derek-alderson-to-operate-now-or-later-that-is-the-surgical-question/.
[5] S. Yang, P. Cao, P. Du, Z. Wu, Z. Zhang, Y. Wang, X. Feng, X. Wang, W. Li, E. Liu, J. Chen, Y. Chen, D. He, Early estimation of the case fatality rate of COVID-19 in mainland China: a data-driven analysis, Ann. Transl. Med. 8 (4) (2020 Feb) 128, https://doi.org/10.21037/atm.2020.02.66.
[6] N. Gan, N. Thomas, D. Culver, CNN. Over 1,700 frontline medics infected with coronavirus in China, presenting new crisis for the government, [cited 2020 Mar 2], 2020. https://edition.cnn.com/2020/02/13/asia/coronavirus-health-care-workers-infected-intl-hnk/index.html.
[7] Nihr Global Health Research unit on Global Surgery, CovidSurg modelling Studies, https://globalsurg.org/covidsurg-surveys/.
[8] T. Beauchamp, J. Childress, Principles of biomedical ethics: marking its fortieth anniversary, Am. J. Bioeth. 19 (11) (2019 Nov 9–12), https://doi.org/10.1080/15265161.2019.1665402.
[9] The Oath of Hippocrates, From the Genuine Works of Hippocrates Translated from the Greek by Francis Adams vol. 2, Surgeon, London, 1849.
[10] Working Party of the Royal College of Physicians, Doctors in society: medical professionalism in a changing world (2005), Clin. Med. 5 (6 Suppl 1) (2005 Nov-Dec) S5–S40.
[11] General Medical Council, Good medical practice, https://www.gmc-uk.org/ethical-guidance/ethical-guidance-for-doctors/good-medical-practice, (2013).
Center for Medicare and Medicaid Services CMS adult elective surgery and procedures recommendations: limit all non-essential planned surgeries and procedures, including dental, until further notice, https://www.cms.gov/files/document/31820-cms-adult-elective-surgery-and-procedures-recommendations.pdf, (2020) accessed 04.01.20.

V.N. Prachand, R. Milner, P. Angelos, M.C. Posner, J.J. Fung, N. Agrawal, V. Jeevanandam, J.B. Matthews, Medically necessary, time-sensitive procedures: scoring system to ethically and efficiently manage resource scarcity and provider risk during the COVID-19 pandemic, J. Am. Coll. Surg. (2020 Apr 9), https://doi.org/10.1016/j.jamcollsurg.2020.04.011 [Epub ahead of print].

E. Gedge, M. Giacomini, D. Cook, Withholding and withdrawing life support in critical care settings: ethical issues concerning consent, J. Med. Ethics 33 (4) (2007 Apr) 215–218.

D.S. Heffner, H.L. Evans, J.M. Huston, J.A. Claridge, D.P. Blake, A.K. May, G.S. Beilman, P.S. Barie, L.J. Kaplan, Surgical infection society guidance for operative and peri-operative care of adult patients infected by the severe Acute respiratory Syndrome coronavirus-2 (SARS-CoV-2), Surg. Infect. (2020 Apr 20), https://doi.org/10.1089/sur.2020.101 [Epub ahead of print].

E. Raymond, C. Thieblemont, S. Alran, S. Faivre, Impact of the COVID-19 outbreak on the management of patients with cancer. Targeted Oncol. (2020 May 22) 1–11, https://doi.org/10.1007/s11523-020-00721-1 [Epub ahead of print].

L. Moletta, E.S. Pierobon, G. Capovilla, M. Costantini, R. Salvador, S. Merigliano, M. Valmasoni, International guidelines and recommendations for surgery during covid-19 pandemic: a systematic review, Int. J. Surg. (2020 May 23), https://doi.org/10.1016/j.ijsu.2020.05.061 [Epub ahead of print].

A. Al-Jabir, A. Kerwan, M. Nicola, Z. Alsaﬁ, M. Khan, C. Sohrabi, N. O’Neill, C. Io-βiﬁdis, M. Griffin, G. Mathew, R. Agha, Impact of the coronavirus (COVID-19) pandemic on surgical practice - Part 1 (review article), Int. J. Surg. (2020 May 12), https://doi.org/10.1016/j.ijsu.2020.05.022 [Epub ahead of print].

A. Al-Jabir, A. Kerwan, M. Nicola, Z. Alsaﬁ, M. Khan, C. Sohrabi, N. O’Neill, C. Io-βiﬁdis, M. Griffin, G. Mathew, R. Agha, Impact of the coronavirus (COVID-19) pandemic on surgical practice - Part 2 (surgical prioritisation), Int. J. Surg. (2020 May 12), https://doi.org/10.1016/j.ijsu.2020.05.002 [Epub ahead of print].

American Medical Association, Informed consent. [accessed 8 Sept 2019], Available from: http://www.ama-assn.org/delivering-care/ethics/informed-consent.

Department of Health, Reference Guide to Consent for Examination or Treatment, second ed., Department of Health, London, 2009.

J. Glaser, S. Nouri, A. Fernandez, P.L. Sudore, D. Schillinger, M. Klein-Fedyshyn, Y. Schenker, Interventions to improve patient comprehension in informed consent for medical and surgical procedures: an updated systematic review, Med. Decis. Making 40 (Issue 2) (February 2020) 119–143, https://doi.org/10.1177/0272989X19896346.

A.A. Hakim, A.S. Kellish, U. Atabek, F.R. Spitz, Y.K. Hong, Implications for the use of telehealth in surgical patients during the COVID-19 pandemic, Am. J. Surg. (2020 Apr 21), https://doi.org/10.1016/j.amjsurg.2020.04.026 [Epub ahead of print].

World Medical Association, World Medical Association Declaration of Helsinki: ethical principles for medical research involving human subjects, J. Am. Med. Assoc. 310 (20) (2013 Nov 27) 2191–2194, https://doi.org/10.1001/jama.2013.281053.

C.M. O’Connor, A.A. Anoushiravani, M.R. DiCaprio, W.L. Healy, R. Iorio, Economic recovery after the COVID-19 pandemic: resuming elective orthopedic surgery and total joint arthroplasty, J. Arthroplasty (2020 Apr 18), https://doi.org/10.1016/j.arth.2020.04.038 [Epub ahead of print].

A.S. Byju, K. Mayo, Medical error in the care of the unrepresented: disclosure and apology for a vulnerable patient population, J. Med. Ethics 45 (12) (2019 Dec) 821–823, https://doi.org/10.1136/medethics-2019-105633 Epub 2019 Aug 9.