Elective Colorectal Surgery Service Provision during SARS-CoV-2 Pandemic

Atividade coloproctologica eletiva durante a pandemia de SARS-CoV-2

Pedro Oscar R. Cunha[1]

[1] NHS Greater Glasgow and Clyde Board, United Kingdom

J Coloproctol 2022;42(4):327–334.

Address for correspondence Pedro Oscar R. Cunha, FRCS, TSBCP, NHS Greater Glasgow and Clyde Board, House 06, Rowand Avenue, G46 7PE, United Kingdom (e-mail: p.cunha@nhs.net).

Abstract

The SARS-Cov-2 pandemic and its immediate public health impact has caused severe disruption of regular medical care provision. The morbimortality of other diseases continues to affect people regardless of the viral infection. Indeed, it would be reasonable to assume that they have been aggravated by the period of most restrictive public health measures that were adopted against the virus. Recovery and maintenance of healthcare provision is required despite the ongoing threat. Therefore, it is critical to resume services in a structured and safe way, otherwise greater harm could come to our patients and to ourselves. The present article proposes to be a broad guide to the recovery and maintenance of elective outpatient, surgical and lower endoscopic services, aiding the colorectal surgeon in identifying risks, assessing their multiple dimensions, and implementing risk management strategies in a pragmatic and efficacious way.

Keywords

- pandemic
- Covid-19
- SARS-Cov-2
- colorectal surgery

Resumo

A pandemia de SARS-Cov-2 e suas imediatas consequências para a saúde coletiva causaram enormes restrições ao atendimento médico-hospitalar normal. A despeito disso, os riscos de morbimortalidade relacionados a outras doenças e agravos à saúde são incessantes. E é razoável de presumi-los como aumentados pela falta de atendimento regular no período restrições mais severas decorrentes das medidas sanitárias contra a epidemia. A retomada do atendimento é necessária, ainda que o vírus permaneça uma ameaça. Portanto, é crítico que esta seja feita de forma estruturada e segura, sob pena de causar mal adicional aos nossos pacientes e a nós mesmos. O presente artigo se propõe a servir como guia para a retomada e manutenção dos atendimentos eletivos ambulatorial, cirúrgico e endoscópico baixo, auxiliando o coloproctologista a identificar os riscos, avaliar a suas dimensões e implementar medidas de controle de forma pragmática e eficaz.

Palavras-chave

received
September 11, 2020
accepted
January 15, 2021

DOI https://doi.org/10.1055/s-0042-1759802.
ISSN 2237-9363.

© 2022. Sociedade Brasileira de Coloproctologia. All rights reserved.
This is an open access article published by Thieme under the terms of the Creative Commons Attribution-NonDerivative-NonCommercial-License, permitting copying and reproduction so long as the original work is given appropriate credit. Contents may not be used for commercial purposes, or adapted, remixed, transformed or built upon. (https://creativecommons.org/licenses/by-nc-nd/4.0/)

Thieme Revinter Publicações Ltda., Rua do Matoso 170, Rio de Janeiro, RJ, CEP 20270-135, Brazil

Introduction

Covid-19 is a zoonotic disease caused by SARS-CoV-2, a coronavirus. The World Health Organization (WHO) declared it an international public health emergency on the 30th of January 2020 and, later, a pandemic on the 11th of March.[1] The infection involves primarily the lower respiratory tract, causing viral pneumonia. It is in fact multisystemic,[2] also directly affecting the gastrointestinal (GI) system.[3] Its mortality rate varies, and it is difficult to be ascertained since it depends on population risk factors, availability of viral testing and medical care. The best estimates suggest that its mortality rate is of $\sim$ 0.5 to 1.0%[4] when considering undiagnosed cases. The risk of contracting the disease and dying are related to risk factors like certain health conditions, but also to age, ethnicity, and socioeconomic status.[5] Healthcare workers are particularly exposed, and SARS-CoV-2 infection should be considered an occupational hazard.[6] Nosocomial transmission has been documented, and is particularly deadly for hospitalized patients.[7,8] Asymptomatic or presymptomatic infection of healthcare workers has been reported[9] and is likely to have a major role in this type of transmission.

The morbidity and mortality from other acute or chronic diseases continues to affect people regardless of the viral infection. It would be reasonable to assume they have been aggravated by the period of most restrictive public health measures that were adopted against the virus.[10] Recovery and maintenance of healthcare provision is necessary. However, people suffering from colorectal diseases may be particularly vulnerable to COVID-19 complications and death. Some risk factors for colorectal cancer,[11] in particular obesity, are markers of worse prognosis for COVID-19. Cancer and inflammatory bowel disease patients undergoing immunosuppressive treatments are in a particularly higher risk group.[12] The present paper proposes to be a guide to the identification, assessment, and mitigation of the multiple risks all involved parties are exposed to during a medical encounter. Hopefully, it will aid the reader to apply, in a pragmatic and mindful of local resources way, several protective measures both in state-funded and private practice.

The present guidance is divided into four parts. The first contains the basic necessary knowledge to understand and manage COVID-19 infection risks. The following three parts will discuss the implementation of the first part concepts to elective outpatient (ambulatory), surgical, and lower endoscopy settings. Although most of the concepts presented would be applicable to the emergency care setting, emergencies have particularities that are not within the scope of the present article, which was written with the colorectal surgeon in mind, but the information contained in the present paper can be easily applied to most healthcare workers practices and care settings. Due to COVID-19 being an emerging disease, much of the knowledge about it is new and in constant revision. There has been a great volume of scientific and lay information produced and made available over a very short period. The number of scientific papers published before peer review is significant and a reflection of a less robust editorial process in favor of a more rapid dissemination of knowledge. Unfortunately, this increase in quantity has also led to decrease in quality, as a recent retracted paper from The Lancet has shown. Some of the information in the present article was obtained from reports, blogs and other reputable sources. This means they are less likely to be of robust scientific quality. Therefore, we must interpret the information and advice contained in the present guide with care and consider them in the light of the best available scientific evidence available at the moment.

Health Risk Management Principles Applied to SARS-CoV-2 Pandemic Times

Understanding and Identifying Risks

First, we must distinguish between the two presenting but related risks: risk of being infected and risk of complications and death from the infection. The risk of being infected during an outbreak depends primarily on its local prevalence. Epidemiological research has demonstrated a variable prevalence of SARS-Cov-2 seropositive population following local outbreaks: 17% in London at the end of May 2020,[13] 42% in Ischgl (a ski resort city in Austrian Tyrol) in Abril 2020,[14] 6.9% in New York state also in Abril 2020,[15] and up to 47.6% in larger cities of Maranhão,[16] a Brazilian state, in August 2020. Therefore, the chance of an individual being infected with COVID-19 during a local outbreak is variable, but still considerable.

Once infected, the risk of developing severe illness, defined as requiring hospital admission, is estimated to be $\sim$ 19% for symptomatic patients.[17] Risks of developing complications or dying depend to a great extent on pre-existing risk factors. Age, obesity, and heart failure have been identified as preponderant risks.[18] These and other risk factors are quite prevalent in the general population. It is estimated that at least 22% of the world population suffers at least from one chronic health condition that is also an adverse prognosticator for COVID-19.[19] This does not include other risks such as age, ethnicity, professional occupation and socioeconomic status. Obesity, for instance, affects 22.1% of the population of Brazil, compared with 36.2% in the USA and 27.8% in the United Kingdom.[20] Fortunately, since Brazil has a younger population, with only $\sim$ 15% > 60 years old[21] is a protective factor. Nevertheless, it is reasonable to assume that a significant proportion of the population falls within at least one category of higher risk, more so if you consider poverty and lack of access to healthcare.

Unfortunately, the risk factors for severe illness are not immediately modifiable or not modifiable at all. The best strategies to mitigate the risks are those that decrease the level of exposure to the virus and, as consequence, the risk of infection. Current accumulated evidence strongly suggests that the predominant form of SARS-Cov-2 dissemination is airborne. Aerosol containing viable viruses is generated by the airways of infected individuals, and infection occurs when contaminated air is inhaled by a susceptible individual. The hand to mouth route is also thought to be important, and the virus may stay viable on surfaces for several hours or days.[22] Currently, it is believed that airborne transmission in closed and poorly ventilated spaces is of particularly high

 © 2022. Sociedade Brasileira de Coloproctologia. All rights reserved.

risk,[23] and probably the most relevant mode of transmission. In the context of medical care, waiting rooms and other hospital communal areas are probably riskier environments.

The viral load and infectious dose of SARS-Cov-2 are important concepts to be understood. Infectious dose is the concentration of a pathogenic organism necessary to produce host infection, while viral load is the concentration of virus an infected individual sheds (that is, the concentration of virus an individual releases in the air through their breathing). The correlations between SARS-Cov-2 viral load, infectious dose, and the risk of becoming infected and infection severity are not yet established.[24] However, it would be prudent to work under the assumption that this correlation not only exists, but it is also positive and proportional. This means that higher viral loads and infectious doses are more likely to cause infection, and for this infection to be more severe. Another important consideration is the length of exposure.[25] The longer an individual is exposed to the virus (that is, breathing contaminated air), the higher would be the infectious load to which they are exposed. Therefore, we could explain the risk in a simple equation, *Infection (viral dose) = viral load X duration of exposure.* Keeping in mind this simplified correlation would help to make better judgment and sense of which measures we should adopt to decrease both viral load and duration of exposure, ultimately reducing both the risk of infection and the risk of severe infection.

The other category of risks to be considered are all the other health issues an individual has or may have. Risks of increased morbidity and mortality from neoplastic, inflammatory, functional or other infectious diseases are ongoing. Those risks must be considered alongside the COVID-19 risks. Qualification and quantification of the risks of colorectal diseases are the bread and butter of the colorectal surgeon and fall outside the scope of the present guidance.

Risk Assessment

Once the risks have been identified, the next step is to assess their magnitude. This is very often a complex task, since it involves the correlation of several different risks, many of which are measured in different ways and often are not fully understood. Surgeons are particularly used to abstract risk assessment, but we could make good use of tools and resources to aid this process and make it more objective, uniform, comparable and reproducible. This is particularly useful for teams, when multiple decision-making professionals work together, as it removes some of the subjectivity of the process. Being comparable and reproducible is also helpful over time, since the epidemic or local outbreaks tend to be cyclic or recurrent. The risk assessment matrix is one of these resources we have at our disposal.[26] This matrix is a two-axis table in which two different risks are separated by their different magnitudes. The combination of both risks yields the overall or accumulated risk (►**Table 1**). In this example matrix, the table stratifies the risk of an outpatient appointment. On the vertical axis, we have the individual risk, for the doctor or for the patient, based on their comorbidities. This would be a proxy representation of severe COVID-19 illness risk. On the horizontal axis, we have the infection risk based on a rough estimation of the local prevalence of the infection. As an example, an appointment with a patient with no risk factors during a period of low disease prevalence would be an encounter of overall lower risk to the patient. On the other end of the spectrum, a surgeon with multiple risk factors consulting a patient during a period of high local prevalence of the infection would be an encounter of overall higher risk to the surgeon. Different combinations of risks could be assessed with other similar matrixes, and the results can be used in another matrix, creating a more complex and broad risk assessment.

Risk Mitigation

Finally, risk mitigation follows after we have successfully identified and assessed its magnitude. There is not always solid scientific evidence of which interventions work better and how they should be used. However, this should not be used as an excuse not to use them, unless there are considerable risks of serious adverse events caused by their implementation. It would be wiser to consider all available resources and use as many of them that are available on the different circumstances the surgeons will find themselves in. Pharmacological interventions are a complex and controversial subject, and it will not be discussed in depth in the present guidance, but will only be briefly mentioned in the last part of the present article.

The final outcome of using multiple minor interventions, especially without evidence of a measurable impact of each one individually, can be difficult to be perceived as useful. The *theory of marginal gains*[27] is an interesting concept that could be applied to this situation. This theory suggests that multiple interventions, with very small or unmeasurable results (the marginal gains), when implemented simultaneously, would yield a measurable positive outcome. This idea shot to fame when used by the coach of the British professional cycling team. Over the past 15 years, his athletes

Table 1 Example of risk assessment matrix for an outpatient appointment

Outpatient appointment overall risk		Epidemiological Covid-19 risk (prevalence in local population)		
		Low	Moderate	High
Individual Risk for severe Covid-19	No risk factors	Very low	Low	Moderate
	One risk factor	Low	Moderate	High
	Two or more risk factors	Moderate	High	Very high

 © 2022. Sociedade Brasileira de Coloproctologia. All rights reserved.

won 16 Olympic gold medals, 6 Tours de France and almost 60 other professional cycling competitions. Ironically, the theory itself has little science to back it up. Likewise, most of the interventions proposed on the present guidance have limited scientific evidence. However, they are based on logical concepts or established knowledge applied to a different circumstance. They also have very low or no risk of serious adverse effects and, therefore, are safe. The core idea is that the accumulated risk reduction from each single intervention will ultimately decrease the risk of getting infected and developing serious infection.

Continuous Review of Risk Management Strategy

It is important to accept that the risk will never be eliminated. Its severity is variable in time and space, as is the availability of resources to deal with it. One of the most important risks is the local prevalence of the viral infection, which will dictate the baseline chance patients and healthcare workers have of being infected at any given time. Unfortunately, Brazil has not yet developed enough testing capacity for efficient monitoring of the disease.[28] Testing 20 times less than the necessary, there is no "real-time" information on the magnitude of the issue. Decisions are being made based on the numbers of hospital admissions and deaths, which respectively, reflect the level of community transmission that occurred between $\sim$ 10 days and 3 weeks earlier.[19] The surgeon should be aware of this lag of information when considering his practice.

Recovery and Maintenance of Elective Care

General Aspects

First and foremost, priorities should be established. The several weeks of disrupted care has caused a backlog of patients awaiting diagnosis and treatment. It goes without saying that those with cancer or yet to be investigated should come first. Communicating with patients and relatives is crucial at this point. Changes that will be implemented for a safe return are likely to modify their experience while attending an appointment, investigation or treatment. It is important to explain this to them. Leaflets, emails or standard texts read by medical secretaries over the phone should be sufficient. Information will reassure patients that their safety is being cared for and manage expectations better.

A triage for COVID-19 symptoms is extremely important.[29] It should be done over the phone a few hours or on the day before the appointment. It can be done by the medical secretary and should have 4 questions. Over the last 14 days, has the patient experienced: fever? New or persistent cough/shortness of breath? Change or loss of taste/smell? Contact with a suspected or known COVID-19 case? A positive response for ANY of the 4 questions means that the patient is a suspected COVID-19 case and that the appointment should be postponed until 14 days after symptom resolution or a negative RT-PCR for SARS-CoV-2. This recommendation is stricter for elective surgery and will be discussed later.

Personal protective equipment (PPE) is recommended when dealing with suspected or confirmed COVID-19 cases in care settings. In practice, this means every patient. Asymptomatic or presymptomatic transmission is possible despite the lack of evidence of its importance on the overall outbreak.[30] Specificities on the type of PPE will vary according to the type of consultation – outpatient, surgical or endoscopic – and will be discussed on each corresponding session. Hand washing with water and soap and use of 70% alcohol-based hand sanitizers are a basic infection control measure and should be used frequently and encouraged.[31] Keeping distance between the people involved is also recommended,[32] in particular in waiting rooms. The ideal safe distance between two people is not yet known, but generally, the longer the better.[33] The minimum "safe" distance is one meter. During any form of consultation, the least possible number of people should be involved.

As mentioned before, SARS-CoV-2 affects the GI tract. It can be symptomatic in up to 35% of patients, and viable viruses have been isolated from faeces.[34] Anecdotal reports have identified stools positive for RT-PCR up to 47 days after the resolution of respiratory symptoms. Fecal-oral infection route by SARS-CoV-2 has been identified in Hong Kong, 2003.[35] This is an extraordinary report that reported that leaking sewage aerosolized by a ventilation duct was implicated as the cause of an outbreak in a residential building. Although this is more a proof of concept rather than a known form of contamination during medical procedures, it raises the possibility of aerosolized SARS-CoV-2 containing feculent liquid infecting healthcare workers.

Elective Outpatient Clinic

Outpatient appointments should be avoided or have their duration and frequency reduced to decrease exposure to risk. The use of technology to mediate the doctor-patient relationship is considered generally safe and well-accepted by doctors and patients, but its use in Brazil has been hampered by regulation for many years,[36] although restrictions have been relaxed during the pandemic period. Patient and type of appointment selection is important, as is the type of technology available. Videoconferences are probably the best tool, but phone calls, high definition images, and e-mails are also used. Different methods, including standard face-to-face appointments, can be used individually or in conjunction. Obviously, it is not possible to perform physical examination remotely. A mixed type of appointment could be used to decrease face-to-face consultation time by taking history remotely and meeting the patient for examination and final management decision. A multitude of software allows safe electronic prescription and tests requisition, thus decreasing the need to attend clinics. Some laboratories for clinical analysis and imaging centers will have test results available online, further aiding the objective of reducing personal contact. It is worth noting that by reducing the number of contacts a patient has with the health care system, one also reduces their exposure to risks involved by traveling to and from appointments.

Managing the waiting room is very important. Usually, the space is limited, poorly ventilated and cramped. As mentioned before, this type of situation is now considered

 © 2022. Sociedade Brasileira de Coloproctologia. All rights reserved.

Table 2 Waiting room management suggestions

Waiting room management suggestions
• Patients wait outside until appointment time. • Limit or do not allow relatives or family attendance. • Punctuality. • Free intervals between appointments. • Provide masks and 70% alcohol-based hand sanitizers. • Maintain and encourage safe distancing with marked seats and chairs. • Remove objects of communal use (magazines, games etc.) • Limit complimentary drink and food (coffee, biscuits etc.), especially if self-serving. • Regular surface cleaning. • Maintain room well ventilated with open doors and windows. • Protective barrier between administrative staff and patients (similar to bank tills). • Preference for electronic payment methods. • Multitasking / home office / staggered shifts to decrease number of workers on site.

one of the highest risks of transmission. ►**Table 2** is a list of suggestions on how to manage risk in the waiting room, and ►**Table 3** is an example of the risk assessment matrix of the level of transmission risk in the waiting room.

Cordial physical salutations so common in Brazilian culture, such as handshakes, hugs, and kisses, should be avoided. Personal protective equipment should be used throughout the appointment. The type of PPE depends on the COVID-19 status of the patient[37] but, as precaution, all patients should be considered suspected cases. Colorectal surgical outpatient appointments, or outpatient appointments in general, are normally considered of lower risk, unless aerosol is generated. Standard EPI in lower risk appointments consist of at least mandatory gloves and fluid repellent surgical masks. Plastic aprons and eye protection are additional recommended measures for increased protection. Gloves and aprons should be disposed of after every appointment, but masks can be used for a few hours, provided they remain intact. Faceshields and protective goggles can be disinfected with appropriate disinfectants or washed with soap and water. Many professionals have adopted the use of surgical scrubs instead of whatever attire they used to dress for work. Ideally, they should use scrubs only in the place of work and wash it separately from other personal clothing. Patients should also use surgical masks or face covering and take them off only for the duration of the physical examination. For the anorectal examination, when the colorectal surgeon could be exposed to contaminated fecal matter, the same PPE is enough. Faceshield can get in the way of proper viewing during rigid rectosigmoidoscopy, but protective goggles are more ergonomic. However, the risks are quite low, if existent at all, and absence of protective face/eye cover should not prevent examination if necessary. Frequent hand hygiene is important, as it is cleaning between appointments any surfaces the patients may have been in contact with. Assistant nurses should wear similar PPE to the surgeon. Secretaries only need masks. Clinical waste should be handed according to local regulations, and the cleaning staff should have masks added to their standard PPE.

Finally, despite all recommendations, common sense should be used when deciding the best use of available protective measures. The surgeon must feel that he is in safe conditions in order to work well and with dignity, as do their colleagues and coworkers. No one should be harassed for using a higher level of protection if they feel it is appropriate. However, there will be circumstances when some measures could be appropriately not applied. Breaking bad news of cancer diagnosis or prognosis would be best done by a compassionate unmasked face and a comforting physical touch.

Elective Surgical Care

SARS-CoV-2 infection during the perioperative period is potentially catastrophic to patients. An international multicenter prospective study analyzed 1,128 surgical patients, across many specialties, who had COVID-19 on the perioperative period.[38] While only 24.8% were elective patients and GI surgery represented 23.1% of the cases, the morbimortality caused by the virus is alarming. The overall 30-day mortality was 23.8%, regardless if the infection was diagnosed before or after surgery. More specifically, the overall elective surgery mortality was 19.1 and 23.1% in GI surgery in general surgery, respectively. Patients with lower procedural risks such as American Society of Anesthesiologists (ASA) classifications 1 and 2 or those undergoing minor operations still had a shocking mortality rate of 11.6 and 16.4%, respectively. Clearly, the risk of developing SARS-CoV-2 in the perioperative period must be minimized by any means necessary. Risk management suggestions will be divided into three parts relating to patients, surgeons (and extended team), and hospitals. It is strongly recommended that the additional risks imposed by the viral infection are discussed with the patient and relatives and that they be included in the surgical consent form.

The individual patient risk must be established using the risk matrix or a similar tool. In fact, some patients will

Table 3 Risk assessment matrix of transmission risk in the waiting room

Transmission risk in the waiting room		Quality of room ventilation		
		High	Medium	Poor
Room occupation	Low	Very low	Low	Moderate
	Medium (full but distancing possible)	Low	Moderate	High
	High (distancing not possible)	Moderate	High	Very high

 © 2022. Sociedade Brasileira de Coloproctologia. All rights reserved.

probably have to wait until a vaccine is available, like those in higher risk groups awaiting major surgery for benign conditions. Others may have alternative treatments recommended to them. Once the decision to operate has been made, the patient must be advised that they should adhere to several safety measures to minimize the risk to themselves and others. The following conditions must have been met before admission for elective surgery:[39] 1) radical social isolation for 14 days; 2) no contact with suspected or confirmed cases within the last 14 days; 3) being asymptomatic; and 4) a recent, approximately around the last 72 hours, negative RT-PCR test for COVID-19. Postoperatively, mainly in hospital and also after discharge, social isolation should also be advised whenever possible.

Members of the surgical team must exert care to avoid unnecessary exposure to risks. Radical social isolation is not a real option, but they should avoid activities, both social and professional, that put them at a higher risk of infection. Work in intensive care units (ICUs), in COVID-19 wards or in emergency departments are common situations of higher exposure risk, especially during local high infection prevalence. Members of the surgical team should be tested regularly with RT-PCR, although the frequency of testing will depend on local and individual circumstances. Serological tests for IgG and IgM have not yet been established as meaningful markers of acquired immunity. Being tested positive for IgG should not mean less care should be taken. On the top of the chance this may be a false positive result, it is unknown for how long immunity lasts, how protective it is and, more importantly, if it is possible for individuals to transmit the virus even if themselves are protected from a serious infection.

Operating theaters are spaces where aerosol generating procedures (AGP) are performed.[40] Even if the anesthetic modality does not include airway manipulation, it is conceivable it may be required in the middle of the operation, and the team must be protected for this eventuality. The recommended PPI for AGP is filtered masks such as FFP3 or N95, eye/face protection, water repellent surgical gown, and double gloving.[41] The surgical team must be trained in donning and doffing (wearing and removing) PPE, and theaters should have visual aids exposed at key areas. Beard or other facial hair compromises mask sealing and should be shaved. Fogging eyeglasses mean the mask is not sealed, as air is leaking in and out. As team leaders, surgeons must not only look after themselves, but also after the welfare of their team and patients, demanding appropriate measures in their working place. Professional bodies, regulatory entities and specialty collegiate – across different professions – must work together to agree on minimum recommended standards, supporting their members and the wider population.

Recovery of elective surgical services demand hospital-specific protocols and standard operational policies. Ideally, hospitals should jointly adopt broadly similar policies and disseminate them among their staff and attending physicians. Hospitals must separate elective surgical patients from other patients and create safe pathways. Elective surgical patients should only be admitted if they have followed recommendations and demonstrate a negative RT-PCR test, not forgetting that a positive IgG serological test is not sufficient, as delineated above. Preferably, elective operations should be conducted in hospitals that will not treat COVID-19 patients. If it is not possible to operate in COVID-19-free sites, elective patients should be segregated from other patients and only be admitted to collective accommodations with other test-confirmed COVID-19 negative patients. Patients should be tested every 5 to 7 days throughout their length of stay.[42] Visits from family and friends should be limited, if allowed at all. Exceptions should be agreed on hospital policy and informed in advance. Operating theaters require a significant number of procedural changes,[43] and this discussion falls outside the scope of the present guide. However, one important measure is to have designated and segregated elective COVID-19-free and COVID-19 unknown/confirmed operating theaters. Ideally, operating theaters should have laminar flow and/or negative pressure systems. Circulation and number of personnel coming in and out of the room should be minimized.

Since the outbreak, the risks of SARS-Cov-2 infection in the context of laparoscopic surgery has been a concern to the abdominal surgeon. There are concerns if viable viruses could be spread by surgical flumes, similar to what happens in HPV surgery,[44] or by aerosolized bodily fluids. However, there are significant differences between the surgical circumstances, in particular the fact that HPV surgery often vaporizes viral lesions directly. Good surgical technique and equipment should minimize the loss of laparoscopic gas. And considering that the surgical team is adequately protected by appropriate PPE for AGP procedures, surgical flumes or aerosolized fluids are unlikely to increase the baseline risk. The author is of the opinion that the infection risk caused by laparoscopic surgery is only theoretical and insignificant in real life. It would not be appropriate to deny to our patients the benefit of laparoscopic surgery because of it. For those more concerned or unconvinced, there are laparoscopic port filters that could be used[45,46].

Elective Lower Gastrointestinal Endoscopy

The risk of infection by COVID-19 during lower GI endoscopy is unknown, but probably low.[47] Priorities should be established and indications for endoscopy should be scrutinized. Patients on follow-up protocols from past polypectomy should have indications reviewed under the light of new guidance, such as the new guidelines from the British Society of Gastroenterology.[48] Alternative investigations, such as computed tomography (CT) colonography,[49] should be considered for selected cases. Once the need for endoscopic investigation has been confirmed, before attending for the test, the patient should be screened for SARS-CoV-2 symptoms (please refer to outpatient triage session). SARS-CoV-2 RT-PCR testing is not critical, as lower GI endoscopy is not considered AGP. However, patients undergoing tests under general anesthetic, which should be avoided anyway, or at higher risk of complications requiring surgery, such as large mucosectomies, probably should have a confirmed negative COVID-19 status. Personal protective equipment should be worn by all personnel in the endoscopy room. For lower risk patients (those tested and negative), the

 © 2022. Sociedade Brasileira de Coloproctologia. All rights reserved.

minimum PPE required is face/ocular protection, simple fluid repellent surgical mask, simple plastic gown, and gloves.[50] Untested patients should be examined with FFP3/N95 instead of with a simple surgical mask. Endoscopic processing equipment should follow standard manual cleaning and high-grade decontamination.[51]

Final Considerations and the Future ahead of us

The most likely scenario is the one of several more months of significant disruption to health care provision. Relaxation of wider societal restrictions implemented to contain virus spread, however well managed they will be, is likely to result in some level of recrudescence of infection rates. Therefore, risk management measures should be constantly monitored and adjusted to the required level. After the restrictions were lifted, a hospital in England had to close for elective and emergency care following an outbreak of COVID-19 among its staff.[52] Many European countries have reported re-emerging number of new cases after locking down cities or regions,[53] with France reporting the highest number ever of new cases on the September 4, 2020, although, to some extent, this may reflect more widespread and better testing. More restrictive public health measures had to be reintroduced in the Scottish city of Aberdeen after an outbreak that was linked to people who had visited a specific bar.[54] The chances of returning to a situation of significant disruption on healthcare systems is clearly present.

Efficacious pharmacological prophylaxis, which could be taken by patients before operations or continuously by health care workers in high risk settings, remains elusive. A powered randomized control trial using postexposure hydroxychloroquine[55] revealed no benefit from the drug. There are still many ongoing trials for this and other drugs.[56] The continuous use of vitamins, other micronutrients and elements to prevent viral infections is not new, but has been revamped by the SARS-CoV-2 pandemic.[57] There is a long-standing controversy regarding how much they help to prevent viral illness or if they work at all, but, certainly, there is nothing convincing enough to be a gamechanger. Nevertheless, they tend to be of low cost and low risk for adverse effects, and people should not be discouraged from using them. Several vaccines are being trialed by different countries, some with promising results. Unfortunately, it is widely accepted that large scale vaccination will not be possible before several months or years.[58]

Implementing protective measures will have an impact on the efficiency of healthcare provision. Costs will increase as more tests, equipment and personnel are deployed and employed. On the other hand, the number of patients seen will fall, since capacity will be reduced. This will have financial implications to doctors and hospitals. Individuals and institutions must prepare for this as well.

Finalizing with a word of realistic but cautious hope, all systems tend to a point of equilibrium. The relationship between this virus and humanity will also reach balance. Collective immunity is very likely possible in the long term. It will need a combination of innate or acquired immunity from cured infection, crossed immunity from other coronaviruses, and vaccination. Unfortunately, meanwhile, lives will be lost, economies will be damaged, and life will look different to most people. This pandemic woke us up to the risk of emerging zoonotic infections, related not only to the industrial way we rear animals for human consumption, but also to our relationship with wildlife.[59] SARS-CoV-2, SARS-CoV, MERS-CoV, avian and swine flu are threats that emerged over the last 2 decades. They are known or thought to have come to infect humans from a primarily wildlife host, some jumping species through domesticated animals such as pigs and chickens. Therefore, we should not be blinded by the light at the end of the tunnel. The threat of emergent zoonotic viral diseases is irrefutably real.

Conflict of Interests
The author has no conflict of interests to declare.

References

1 https://www.who.int/news-room/detail/27-04-2020-who-timeline—covid-19; accessed 29/06/2020
2 Zhang Y, Geng X, Tan Y, et al. New understanding of the damage of SARS-CoV-2 infection outside the respiratory system. Biomed Pharmacother 2020;127:110195. Doi: 10.1016/j.biopha.2020.110195
3 Wong SH, Lui RN, Sung JJ. Covid-19 and the digestive system. J Gastroenterol Hepatol 2020;35(05):744–748. Doi: 10.1111/jgh.15047
4 https://media.nature.com/original/magazine-assets/d41586-020-01738-2/d41586-020-01738-2.pdf: accessed 29/06/2020.
5 https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/people-at-increased-risk.html: accessed 29/06/2020
6 https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/articles/whichoccupationshavethehighestpotentialexposuretothecoronaviruscovid19/2020-05-11: accessed 29/06/2020.
7 Rickman HM, Rampling T, Shaw K, et al. Nosocomial transmission of COVID-19: a retrospective study of 66 hospital-acquired cases in a London teaching hospital. Clin Infect Dis 2020:ciaa816. Doi: 10.1093/cid/ciaa816
8 https://www.krisp.org.za/news.php?id=421: accessed 29/06/2020
9 Rivett L, Sridhar S, Sparkes D, et al; CITIID-NIHR COVID-19 BioResource Collaboration. Screening of healthcare workers for SARS-CoV-2 highlights the role of asymptomatic carriage in COVID-19 transmission. eLife 2020;9:e58728
10 https://www.cdc.gov/nchs/nvss/vsrr/covid19/excess_deaths.htm: accessed 29/06/2020.
11 Keum N, Giovannucci E. Global burden of colorectal cancer: emerging trends, risk factors and prevention strategies. Nat Rev Gastroenterol Hepatol 2019;16(12):713–732. Doi: 10.1038/s41575-019-0189-8
12 https://www.nhs.uk/conditions/coronavirus-covid-19/people-at-higher-risk/whos-at-higher-risk-from-coronavirus/: accessed 29/06/2020
13 https://www.gov.uk/government/speeches/health-and-social-care-secretarys-statement-on-coronavirus-covid-19-21-may-2020: accessed 01/07/2020
14 https://www.i-med.ac.at/pr/presse/2020/40.html: accessed 01/07/2020
15 Havers FP, Reed C, Lim TWet al. … Owen, S. M. (2020). Seroprevalence of Antibodies to SARS-CoV-2 in Six Sites in the United States, March 23-May 3, 2020. Cold Spring Harbor Laboratory. https://doi.org/10.1101/2020.06.25.20140384
16 https://www.ma.gov.br/agenciadenoticias/?p=283567 Access: 01/09/2020

 © 2022. Sociedade Brasileira de Coloproctologia. All rights reserved.

17 HISTÓRIA NATURAL DA COVID-19 E SUAS RELAÇÕES TERAPÊUTICAS Meseses, AS, Scielo Preprints: accessed 01/07/2020
18 Petrilli CM, Jones SA, Yang J, et al. Factors associated with hospital admission and critical illness among 5279 people with coronavirus disease 2019 in New York City: prospective cohort study. BMJ 2020;369:m1966
19 Clark A, Jit M, Warren-Gash C, Guthrie B, Wang HHX, Mercer SW. … Jarvis, C. I. (2020). Global, regional, and national estimates of the population at increased risk of severe COVID-19 due to underlying health conditions in 2020: a modelling study. Lancet Glob Health. Doi: 10.1016/s2214-109x(20)30264-3
20 https://www.who.int/gho/ncd/risk_factors/overweight_obesity/obesity_adults/en/ accessed 01/07/2020
21 Síntese de indicadores sociais Uma análise das condições de vida da população brasileira 2016. IBGE, Brasil.
22 Morawska L, Cao J. Airborne transmission of SARS-CoV-2: The world should face the reality. Environ Int 2020;139:105730. Doi: 10.1016/j.envint.2020.105730
23 Qian H, Miao T, Liu L, Zheng X, Luo D, Li Y. Indoor transmission of SARS-CoV-2. Indoor Air 2020
24 A importância da carga carga viral e dose infecciosa do novo coronavírus na transmissão da covid-19. Nishioka, SA. https://www.unasus.gov.br/especial/covid19/markdown/191: accessed 01/07/2020
25 The Risks – Know them – Avoid them. Bromage, Eric. https://www.erinbromage.com/post/the-risks-know-them-avoid-them; acessado em 02/07/2020
26 https://www.solvexia.com/blog/risk-assessment-matrix-your-complete-guide: accessed 02/07/2020: accessed 02/07/2020
27 https://en.wikipedia.org/wiki/Dave_Brailsford#cite_note-Marginal_gains-10: accessed 02/07/2020
28 https://olhardigital.com.br/coronavirus/noticia/covid-19-numeros-mostram-que-brasil-faz-menos-testes-do-que-deveria/102059: accessed 02/07/2020
29 https://www.cdc.gov/coronavirus/2019-ncov/hcp/non-us-settings/sop-triage-prevent-transmission.html: accessed 02/07/2020
30 Savvides C, Siegel R (2020). Asymptomatic and presymptomatic transmission of SARS-CoV-2: A systematic review. Cold Spring Harbor Laboratory. https://doi.org/10.1101/2020.06.11. 20129072
31 https://www.who.int/gpsc/clean_hands_protection/en/: accessed 02/07/2020
32 Chu DK, Akl EA, Duda S, Solo K, Yaacoub S, Schünemann HJCOVID-19 Systematic Urgent Review Group Effort (SURGE) study authors. Physical distancing, face masks, and eye protection to prevent person-to-person transmission of SARS-CoV-2 and COVID-19: a systematic review and meta-analysis. Lancet 2020;395 (10242):1973–1987. Doi: 10.1016/s0140-6736(20)31142-9
33 Jones NR, Qureshi ZU, Temple RJ, Larwood JPJ, Greenhalgh T, Bourouiba L. Two metres or one: what is the evidence for physical distancing in covid-19? BMJ 2020;370:m3223. Doi: 10.1136/bmj.m3223
34 Amirian ES. Potential fecal transmission of SARS-CoV-2: Current evidence and implications for public health. Int J Infect Dis 2020; 95:363–370. Doi: 10.1016/j.ijid.2020.04.057
35 McKinney KR, Gong YY, Lewis TG. Environmental transmission of SARS at Amoy Gardens. J Environ Health 2006;68(09):26–30, quiz 51–52
36 Catapan Sde C, Calvo MCM. Teleconsultation: an Integrative Review of the Doctor-Patient Interaction Mediated by Technology. Rev Bras Educ Med 2020;44(01). Doi: 10.1590/1981-5271v44.1-20190224.ing
37 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/878750/T2_poster_Recommended_PPE_for_primary__outpatient__community_and_social_care_by_setting.pdf: accessed 08/07/2020
38 Archer JE, Odeh A, Ereidge S, et al; COVIDSurg Collaborative. Mortality and pulmonary complications in patients undergoing surgery with perioperative SARS-CoV-2 infection: an international cohort study. Lancet 2020;396(10243):27–38. Doi: 10.1016/s0140-6736(20)31182-x
39 https://www.rcseng.ac.uk/coronavirus/recovery-of-surgical-services/tool-2/: accessed 09/07/2020
40 https://www.gov.uk/government/publications/wuhan-novel-coronavirus-infection-prevention-and-control/covid-19-personal-protective-equipment-ppe: accessed 10/07/2020
41 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/886707/T1_poster_Recommended_PPE_for_healthcare_workers_by_secondary_care_clinical_context.pdf: accessed 10/07/2020
42 https://www.uhb.nhs.uk/coronavirus-staff/inpatient-testing-protocol.htm: accessed 10/07/2020
43 Coccolini F, Perrone G, Chiarugi M, et al. Surgery in COVID-19 patients: operational directives. World J Emerg Surg 2020;15(01): 25. Doi: 10.1186/s13017-020-00307-2
44 Fox-Lewis A, Allum C, Vokes D, Roberts S. Human papillomavirus and surgical smoke: a systematic review. Occup Environ Med 2020;77(12):809–817
45 Mowbray NG, Ansell J, Horwood J, et al. Safe management of surgical smoke in the age of COVID-19. Br J Surg 2020;107(11): 1406–1413. Doi: 10.1002/bjs.11679
46 https://www.alsgbi.org/2020/04/22/laparoscopy-in-the-covid-19-environment-alsgbi-position-statement/: accessed 10/07/2020
47 Repici A, Aragona G, Cengia G, et al; ITALIAN GI-COVID19 Working Group. Low risk of COVID-19 transmission in GI endoscopy. Gut 2020;69(11):1925–1927
48 Rutter MD, East J, Rees CJ, et al. British Society of Gastroenterology/Association of Coloproctology of Great Britain and Ireland/Public Health England post-polypectomy and post-colorectal cancer resection surveillance guidelines. Gut 2020;69 (02):201–223. Doi: 10.1136/gutjnl-2019-319858
49 CT Colonography activity and Covid-19: British Society of Gastrointestinal and Abdominal Radiology guidance DATE: 19.04.20. VERSION 3.0, https://www.bsgar.org/society/covid-19-and-bsgar-updates-1/: accessed 13/07/2020
50 Chiu PWY, Ng SC, Inoue H, et al. Practice of endoscopy during COVID-19 pandemic: position statements of the Asian Pacific Society for Digestive Endoscopy (APSDE-COVID statements). Gut 2020;69(06): 991–996. Doi: 10.1136/gutjnl-2020-321185
51 https://www.sages.org/management-endoscopes-reprocessing-storage-covid-19/; accessed 14/07/2020
52 https://www.ft.com/content/a2cb944b-6f81-4f51-9e65-5d9aa4bb44c6: accessed 14/07/2020
53 https://www.euronews.com/2020/09/03/is-europe-having-a-covid-19-second-wave-country-by-country-breakdown: accessed 09/09/20/2020
54 https://www.bbc.co.uk/news/uk-scotland-53650214: accessed 09/08/2020
55 Boulware DR, Pullen MF, Bangdiwala AS, et al. A Randomized Trial of Hydroxychloroquine as Postexposure Prophylaxis for Covid-19. N Engl J Med 2020;383(06):517–525. Doi: 10.1056/nejmoa2016638
56 https://clinicaltrials.gov/ct2/results?term=prophylaxis& cond=Covid19&Search=Apply&recrs=a&recrs=d&recrs=e&age_v=&gndr=&type=&rslt= Acessado 14/07/2020
57 Ilie PC, Stefanescu S, Smith L. The role of vitamin D in the prevention of coronavirus disease 2019 infection and mortality. Aging Clin Exp Res 2020;32(07):1195–1198. Doi: 10.1007/s40520-020-01570-8
58 https://www.ecdc.europa.eu/en/covid-19/latest-evidence/vaccines-and-treatment: accessed 14/07/2020
59 White RJ, Razgour O. Emerging zoonotic diseases originating in mammals: a systematic review of effects of anthropogenic land-use change. Mammal Rev 2020. Doi: 10.1111/mam.12201

 © 2022. Sociedade Brasileira de Coloproctologia. All rights reserved.