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European Association of Urology

Brief Correspondence

European Association of Urology Guidelines Office Rapid Reaction Group: An Organisation-wide Collaborative Effort to Adapt the European Association of Urology Guidelines Recommendations to the Coronavirus Disease 2019 Era

Maria J. Ribal [a,], Philip Cornford [b], Alberto Briganti [c], Thomas Knoll [d], Stavros Gravas [e], Marek Babjuk [f,g], Christopher Harding [h], Alberto Breda [i], Axel Bex [j,k], on behalf of the GORRG Group, Jens J. Rassweiler [l], Ali S. Gözen [l], Giovannalberto Pini [m], Evangelos Liatsikos [n], Gianluca Giannarini [o], Alex Mottrie [p,q], Ramnath Subramaniam [r], Nikolaos Sofikitis [s], Bernardo M.C. Rocco [t], Li-Ping Xie [u], J. Alfred Witjes [v], Nicolas Mottet [w], Börje Ljungberg [x], Morgan Rouprêt [y], Maria P. Laguna [z,aa], Andrea Salonia [c], Gernot Bonkat [bb], Bertil F.M. Blok [cc], Christian Türk [dd,ee], Christian Radmayr [ff], Noam D. Kitrey [gg], Daniel S. Engeler [hh], Nicolaas Lumen [ii], Oliver W. Hakenberg [jj], Nick Watkin [kk], Rizwan Hamid [ll], Jonathon Olsburgh [mm], Julie Darraugh [nn], Robert Shepherd [nn], Emma-Jane Smith [nn], Christopher R. Chapple [oo], Arnulf Stenzl [pp], Hendrik Van Poppel [qq], Manfred Wirth [rr], Jens Sønksen [ss,tt], James N'Dow [uu], on behalf of the EAU Section Offices and the EAU Guidelines Panels*

[a] *Uro-Oncology Unit, Hospital Clinic, University of Barcelona, Barcelona, Spain;* [b] *Liverpool University Hospitals Foundation NHS Trust, Liverpool, UK;* [c] *Department of Oncology/Unit of Urology, Urological Research Institute, IRCCS Ospedale San Raffaele, Milan, Italy;* [d] *Department of Urology, Sindelfingen-Böblingen Medical Centre, University of Tübingen, Sindelfingen, Germany;* [e] *Department of Urology, University Hospital of Larissa, Larissa, Greece;* [f] *Department of Urology, 2nd Faculty of Medicine, Hospital Motol, Charles University, Prague, Czech Republic;* [g] *Department of Urology, Medical University of Vienna, Vienna, Austria;* [h] *Urology Department, Freeman Hospital, Newcastle-upon-Tyne, UK;* [i] *Oncology Urology Unit, Department of Urology, Fundació Puigvert, Universitat Autònoma de Barcelona, Barcelona, Spain;* [j] *The Royal Free London NHS Foundation Trust and UCL Division of Surgery and Interventional Science, London, UK;* [k] *Department of Urology, The Netherlands Cancer Institute, Antoni van Leeuwenhoek Hospital, Amsterdam, The Netherlands;* [l] *Department of Urology, SLK Kliniken Heilbronn, University of Heidelberg, Heilbronn, Germany;* [m] *Department of Urology, Ospedale San Raffaele–Turro, Milan, Italy;* [n] *Urology Department, University of Patras, Patras, Greece;* [o] *Urology Unit, Academic Medical Centre Hospital "Santa Maria della Misericordia", Udine, Italy;* [p] *Department of Urology, Onze Lieve Vrouw Hospital, Aalst, Belgium;* [q] *ORSI Academy, Melle, Belgium;* [r] *Department of Paediatric Urology, Leeds Teaching Hospitals NHS Trust, Leeds, UK;* [s] *Department of Urology, Medical School, University of Ioannina, University Campus, Ioannina, Greece;* [t] *Department of Urology, University of Modena and Reggio Emilia, Modena, Italy;* [u] *Department of Urology, The First Affiliated Hospital, School of Medicine, Zhejiang University, Hangzhou, Zhejiang Province, China;* [v] *Department of Urology, Radboud University Medical Center, Nijmegen, The Netherlands;* [w] *Department of Urology, University Hospital, St. Etienne, France;* [x] *Department of Surgical and Perioperative Sciences, Urology and Andrology, Umeå University, Umeå, Sweden;* [y] *Urology, Sorbonne University, GRC 5 Predictive onco-uro, AP-HP, Pitie-Salpetriere Hospital, Paris, France;* [z] *Department of Urology Medipol Mega, Istanbul Medipol University, Istanbul, Turkey;* [aa] *Amsterdam UMC, Amsterdam, The Netherlands;* [bb] *Alta Uro AG, Merian Iselin Klinik, Center of Biomechanics and Calorimetry, University Basel, Basel, Switzerland;* [cc] *Department of Urology, Erasmus MC, Rotterdam, The Netherlands;* [dd] *Department of Urology, Hospital of the Sisters of Charity, Vienna, Austria;* [ee] *Urologische Praxis mit Steinzentrum, Vienna, Austria;* [ff] *Department of Urology, Medical University of Innsbruck, Innsbruck, Austria;* [gg] *Department of Urology, Sheba Medical Centre, Tel-Hashomer, Israel;*

☆ Please see the Supplementary material for all members of the Guidelines Office Rapid Response Group (GORRG), the EAU Guidelines Panels, and the EAU Section Offices.

* Corresponding author. Uro-Oncology Unit, Hospital Clinic, University of Barcelona, Villarroel 170, Escalera 12, planta 1ª, 08036 Barcelona, Spain. Tel.: +34 93 227 55 45; Fax: +34 93 227 55 45.
E-mail address: m.ribal@uroweb.org (M.J.).

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[hh] Department of Urology, Cantonal Hospital St Gallen, Switzerland; [ii] Department of Urology, Ghent University Hospital, Ghent, Belgium; [jj] Klinik und Poliklinik für Urologie, Universitätsmedizin Rostock, Rostock, Germany; [kk] NHS Foundation Trust, St. George's University Hospitals, London, UK; [ll] Department of Female, Functional and Restorative Urology, University College London Hospitals NHS Foundation Trust, London, UK; [mm] Department of Urology and Transplant, Guy's & St Thomas' NHS Trust Hospitals, London, UK; [nn] European Association of Urology Guidelines Office, Arnhem, The Netherlands;; oo Department of Urology, Sheffield Teaching Hospitals NHS Trust, Sheffield, UK; pp Department of Urology, University Hospital Tuebingen, Tuebingen, Germany; qq Department of Urology, University Hospitals Leuven, Leuven, Belgium; rr Department of Urology, Medical Faculty Carl Gustav Carus, Technical University of Dresden, Dresden, Germany; ss Department of Urology, Herlev and Gentofte University Hospital, Herlev, Denmark; tt Faculty of Health and Medical Sciences, University of Copenhagen, Copenhagen, Denmark; uu Academic Urology Unit, University of Aberdeen, Aberdeen, UK

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Abstract

The coronavirus disease 2019 (COVID-19) pandemic is unlike anything seen before by modern science-based medicine. Health systems across the world are struggling to manage it. Added to this struggle are the effects of social confinement and isolation. This brings into question whether the latest guidelines are relevant in this crisis. We aim to support urologists in this difficult situation by providing tools that can facilitate decision making, and to minimise the impact and risks for both patients and health professionals delivering urological care, whenever possible. We hope that the revised recommendations will assist urologist surgeons across the globe to guide the management of urological conditions during the current COVID-19 pandemic.

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1. Introduction

The coronavirus disease 2019 (COVID-19) pandemic is unlike anything seen before by modern science-based medicine. As of April 14, 2020, there are 1 933 800 confirmed cases globally in 210 countries and 120 434 deaths [1]. Health systems globally have struggled. Anaesthetists and theatre teams have been redeployed, and intensive care units (ICUs) struggle with demands as the entire service is refocused on managing the acutely unwell. Added to this are the effects of social confinement and isolation. Staff at risk are removed from the workforce for their own health and some of them get sick, also limiting capacity. This brings into question whether the latest guidelines based upon the best evidence and published only 2 wk ago are relevant in this crisis.

As a scientific society and via the Guidelines, Section Offices, and the *European Urology* family of journals, we believe that it is important that we try to support urologists in this difficult situation. We aim to do this by providing tools that can facilitate decision making. Our goal is to minimise the impact and risks for both patients and health professionals delivering urological care, whenever possible, although it is clear that it is not always possible to mitigate them entirely. It should be understood that there may not be high-quality evidence for the compromises proposed, but we hope that this document will function as an important additional guide to the management of urological conditions during the current COVID-19 pandemic, caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), based on the current European Association of Urology (EAU) guidelines.

2. Methods

The Guidelines Office commissioned a Rapid Reaction Group (GORRG) on March 19, 2020 to facilitate the development of adapted guidelines, to deal with a range of situations and priorities. Using the resources of the Guidelines Office, the panel chairmen, and panel members, in collaboration with other relevant EAU section offices plus the Executive Committee, the aim was to ensure an aligned organisation-wide consensus and response underpinned by the best knowledge at our disposal describing how to react to the urgent crisis impacting urological care and services.

All recommendations in the guidelines have been reviewed in light of the COVID-19 pandemic and have been adapted where appropriate. Panels also had access to and reviewed a range of national and local COVID-19 guidelines to ensure complementarity wherever possible. New evidence has been searched for by targeted (nonsystematic) screening of the available published literature, as well as including those recently accepted and in press with access provided by the publisher in strict confidence. The findings (mostly level 3/4 evidence) were discussed and approved by panel members across 21 EAU Guideline Panels using electronic communication. Regarding surgical approach that applies across several guidelines, it was decided that the GORRG will provide general recommendations instead of guideline-specific surgical approach recommendations in each disease area. All panels were provided the following specific terms of reference.

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2.1. Protocol for adaptation of guidelines recommendations to COVID-19 period

2.1.1. Review of recommendations across four broad areas

1. Diagnosis
   - Imaging and/or tests
   - Invasive procedures
2. Surgical treatment and medical therapy
3. Follow-up/telemedicine (give updated recommendations on follow-up tailored for the COVID-19 era, with the aim of limiting as much as possible health care resources without losing our ability to timely diagnose disease recurrences/progressions)
4. Emergencies

2.1.2. Levels of priority

Panels were asked to provide tables with recommendations based on the level of priority, not necessarily covering all recommendations on the recently published updated EAU guidelines 2020 [2], but those that the panels felt were critical drivers of outcome and would especially be impacted by the current crisis, and always based on the highest level of evidence that was possible and referenced whenever possible to maintain a transparent link from evidence to adapted recommendation. In order to achieve this, the GORRG produced a colour-coded risk stratification tool (Table 1) for completion by guideline panels to aid them with the adaption of their recommendations:

Low priority: clinical harm (progression, metastasis, and loss of function) very unlikely if postponed for 6 mo (green colour)

Intermediate priority: cancel but reconsider in case of increase in capacity (not recommended to postpone for >3 mo): clinical harm (progression, metastasis, and loss of organ function) possible if postponed for 3 mo, but unlikely (yellow colour)

High priority: the last to cancel, prevent delay of >6 wk; clinical harm (progression, metastasis, loss of organ function, and deaths) very likely if postponed for >6 wk; (red colour)

Emergency: cannot be postponed for >24 h; life threatening—organ function threatening condition (black colour)

2.1.3. Criteria for prioritisation

The criteria established for prioritisation regarding procedure and disease are the following:

- Impact of delay on primary outcomes (for instance overall survival in oncology, cancer-specific survival in oncology, risk of metastases, and kidney failure for transplant patients)
- Possibility of alternative methods that could replace the procedure with less operating room requirement
- Presence of comorbidities and/or increased risk of complications
- Possibility of a threat to patient life if the procedure is not performed immediately.
- Possibility of a threat of permanent dysfunction of the organ system if the treatment is not performed
- Probability of a risk of rapidly progressing severe symptoms that are time sensitive

The criteria derived from COVID-19 pandemic are as follows:

- Current and projected COVID-19 cases in the facility and region; the final decisions should be made in consultation with the hospital, surgeon, patient, and other public health professionals
- Supply of personal protective equipment (PPE) to the facilities in the system
- Staffing availability
- Bed availability, especially ICU beds
- Availability of adjuvant treatments (ie, chemotherapy) without which the primary treatment is less/not effective
- Ventilator availability
- Health status and age of the patient, especially given the risks of concurrent COVID-19 infection during recovery
- Urgency of the procedure
- Risk of bleeding/transfusion—there is a lack of red blood cell units because blood donors do not go to the hospital. Co-morbidities such as chronic obstructive pulmonary disease should be taken into account; patients taking anticoagulants/antiplatelet therapy (due to increased risk for transfusion)
- Length of hospitalisation
- Risk of acquiring the COVID infection by the patient during the treatment course
- Risk of contamination of the staff by asymptomatic but already positive patient
- Capacity of COVID-19 testing

2.1.4. Peer-reviewing process

Once submissions of adapted recommendations were received from all 17 EAU Guideline Panels, the GORRG proceeded with a first round of peer review and ensured

Table 1 – Levels of priority.

Priority category	Low priority	Intermediate priority	High priority	Emergency
Definition	Clinical harm very unlikely if postponed for 6 mo	Clinical harm possible if postponed for 3–4 mo, but unlikely	Clinical harm very likely if postponed for >6 wk	Life-threatening situation; likely to have presented via A&E despite the current pandemic

A&E = accident and emergency department.

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uniformity of the format of recommendations, checked for consistency, and limited duplication across panel recommendations.

Finally, a second-step peer-reviewing process was done by seven independent Section Office members (three experts in oncology and three in nononcology, and one to comment on both oncology and nononcology); we also sought peer-review comments from China, given the significant experience they have had with COVID-19 and being a few months ahead of Europe in terms of stage of pandemic and recovery.

After the second round of peer-review process, different recommendations have been released and these can be consulted in 17 guideline topics provided in Supplementary Tables 1–17.

3. Discussion

The guidance produced is based on expert opinion and consensus building across the EAU with contributions from all 250 members of the EAU Guidelines Office and with contributions from the 130 key opinion leaders forming the

Table 2 – General recommendations applicable during the COVID-19 pandemic.[a]

General recommendations for surgical procedures
• Depending on the resources and capacity, we recommend treating only high-priority and emergency cases surgically during the COVID pandemic.
• Consider not only equipment, OR, and ICU bed capacity, but also blood supplies available and drug shortage, in order to prioritise your surgeries.
• Consider that even if capacity is available, low-priority patients increase the footfall and the risk of COVID transmission between patients and staff.
• Consider that surgery has been reported to be harmful in asymptomatic patients who subsequently tested COVID positive [6].
• Consider treating intermediate-priority patients if capacity is available but not during the COVID surge.
• Consider older patients with comorbidity at severe risk of COVID infection and a fatal outcome. Therefore, carefully balance if surgery is the only alternative in high-priority cases.
• Where ventilator capacity for COVID patients has been breached, high-priority surgical candidates requiring ICU ventilation should be triaged according to local recommendations—or if unavailable—age and comorbidity.
• Follow the local recommendations to test staff and patients for COVID, if resources are available. These may differ across hospitals and countries; you should familiarise yourself with them. Be aware that they may change as new information is coming in.
• Follow the local recommendations for personal protective equipment (PPE), if resources are available; the Society of American Gastrointestinal and Endoscopic Surgeons (SAGES) advise full PPE irrespective of COVID status of the patient. Familiarise yourself with their recommendation [16,17].
• Wear full PPE for COVID-positive patients according to the World Health Organization (WHO). This should include double gloves, gowns, face shields, and virus-proof masks [17,18].
• Intubation and extubation should preferably take place in a negative pressure room if available [19].
• All nonessential staff should stay outside the operating room during the procedure.
• Set electrosurgery units to the lowest possible settings to reach the required effect.
• Avoid or reduce the use of monopolar electrosurgery, ultrasonic dissectors, and advanced bipolar devices, as these can lead to particle aerosolisation.
• Use, if available, monopolar diathermy handheld devices with attached smoke evacuators.
• Clean surgical equipment of COVID-positive or suspected patients separately.
General guidance on what to do when faced with a known COVID-19–positive patient needing surgery (these measures are partially also applicable to COVID-19–negative patients)
• A specially equipped dedicated OR has to be prepared for these cases. For endourology, a mobile C-arm fluoroscopic x-ray system for radiological imaging and an experienced personnel for its handling has to be in the special OR.
• Surgeons and operating team (surgeons, anaesthetists, nurses, technicians, nursing assistants/health care workers, and hospital housekeepers) in the OR should be completely protected against infection of COVID-19 and adopt adequate protection devices.
• All minimally invasive procedures should preferably be performed by experienced surgeons, and the number of experienced OR staff members required should be minimum. Additionally, no external observer is allowed in the OR [7] (https://uroweb.org/wp-content/uploads/ERUS-guidelines-for-COVID-def.pdf).
• To date, there are no specific data demonstrating an aerosol presence of the COVID-19 virus released during minimally invasive abdominal surgery.
• Smoke evacuation systems with active filtered smoke evacuation mode, capable of filtering the aerosolised particles from the carbon dioxide, should be provided during laparoscopic surgeries [16].
• CO_2 insufflation should be utilised with a closed system with appropriate filtering of aerosolised particles:
◦ It should be ensured that 8 mm instruments are not inserted in a 12 mm da Vinci trocar without a reducer.
◦ It should be ensured that a 5 mm instrument is not inserted in a 12 mm da Vinci trocar even with the reducer in place.
◦ CO_2 insufflation should be turned off and the gas should be vented through a filter prior to specimen extraction.
◦ Consultation with the CO_2 insufflation manufacturer used in your hospital may be necessary to ensure that proper settings are selected for maximal filtration effect.
◦ The full recommendation of SAGES on this topic as well as the cited published evidence can be found on the SAGES website [16]. A recent publication that reports the experience of minimally invasive surgeons from China and Italy in the setting of known/suspected COVID-19 can be accessed from the *Annals of Surgery* [8].
• For (robot-assisted) laparoscopy and retroperitoneoscopy, the lowest allowed intra-abdominal pressure with the use of intelligent integrated Insufflation systems is recommended (ERUS) [7].
• It is recommended that electrocautery power setting be lowered as much as possible in order to reduce the surgical smoke production, especially in laparoscopic surgery. During access, electrocautery should be provided with automatic suction system.
• Evacuation of irrigation fluid during endourological procedures (cystoscopy, TURB, BPH, endoscopic surgery, URS, RIRS, and PCNL) should be collected through a close system.
General guidance for testing patients before surgery in the COVID-19 period

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- Patients with clinical symptoms such as fever and respiratory distress and/or with a travel history to endemic areas and previous contact with COVID-19 patients should all undergo preoperative COVID-19 test. In an emergency situation, it is suggested that these patients should be handled as COVID-19–positive patients in order to reduce the risk of contagion for both patients and health care workers.
- Among patients without any clinic symptoms, without a travel history to endemic areas, and without previous contact in the past 2 wk with a COVID-19–positive patient, testing of elective patients is recommended whenever possible within 48 h prior to surgery in an outpatient clinic setting. One may consider starting with PCR testing and withholding a chest CT only if the PCR is positive for a COVID-19 infection. However, this might have severe logistical implications (patients need to visit the hospital repeatedly), and joint testing of PCR and CT may be a more desirable and practical approach, depending on the local situation. The main reasons for that approach are as follows:
  - Patients may be in the incubation period of a COVID-19 infection and subsequently develop COVID-19 postoperatively, placing them at risk for adverse postoperative outcomes [6].
  - Patients may be asymptomatic/mildly symptomatic carriers and shedders of SARS-CoV-2 and place hospital workers at risk, particularly during intubation and aerosolising procedures.
  - Patients may be asymptomatic/mildly symptomatic carriers and shedders of SARS-CoV-2 and place other hospitalised patients at risk, who are often in higher age groups with comorbidities and at higher risk of severe COVID-19 disease.
- The group is aware that, at present, different triage policies may be applicable depending on the region or country. Even following accounts of the false negative results of the test and the fact that PPE has to be adopted in all surgical patients, information on the test may be useful in the postoperative period.
- In addition, we strongly recommend advising patients to comply with general directions regarding social distancing as stated by the government, since this will likely lower the risk for COVID-19 disease at the time of operation.

General guidance on other assistance aspects beyond surgery

- Telemedicine.
- Potential or proven COVID-19–positive patients must be treated according to local, national, and WHO requirements [18]. In this case, a comprehensive and robust infection control workflow has to be followed [20].
- A network of expert high-volume centres, at the regional, national, or even supranational level, should guarantee the continuity of the oncological care in an appropriate way, ensuring the availability of hospital beds and timely management of new patients.
- Remote consultation and a multidisciplinary team are recommended to offer the optimum therapeutics.
- Testing for SARS-CoV-2 should be considered before any high-dose chemotherapy.
- Patients should be guided to get access to nonemergency medical services such as chronic disease treatment online to reduce the number of visitors in hospitals.
- Patients should be encouraged to take full advantage of digital self-service devices to avoid contact with others, to reduce the risk of cross infections.

BPH = benign prostatic hyperplasia; COVID-19 = coronavirus disease 2019; CT = computed tomography; EAU = European Association of Urology; ERUS = EAU Robotic Urology Section; ICU = intensive care unit; OR = operating room; PCNL = percutaneous nephrolithotomy; PCR = polymerase chain reaction; RIRS = retrograde intrarenal surgery; SARS-COV-2 = severe acute respiratory syndrome coronavirus 2; TURB = transurethral resection of the bladder; URS = ureterorenoscopy.

[a] Disclaimer: The EAU Guidelines Office COVID-19 recommendations are to support health care systems under severe constrain during the pandemic, but their application should be modulated according to local pandemic conditions and restrictions in clinical and surgical activity due to local medical directives and guidance.

membership of the EAU Section Offices. It is important to emphasise that during the rapidly evolving COVID-19 pandemic, this guidance may further change and critically will require adaptation to local resources, health systems, and specific circumstances of each country or city, bearing in mind that different countries and indeed different cities are likely to be at different phases of the pandemic and national/local health system capacities must dictate the level of prioritisation implemented in line with local COVID-19 policies.

In addition, there are some overarching principles that should be emphasised (as presented in Table 2). In order to minimise the number of staff who become infected, all medical personnel should comply with the PPE regulations. If possible, patients should be asked whether they are at risk of COVID-19 prior to any visit in a practice or clinic or hospital setting. Patients who are currently known to be shedding COVID-19 virus should postpone any investigations of other symptoms unless they are thought to be life threatening. However, urologists working in hospitals treating COVID-19 patients may be required to perform urgent investigations on infected patients. In these cases, procedures should be performed in dedicated consultation or operating rooms following the hospital recommendation for staff PPE. Even following a negative COVID-19 test result, it is important to remember the relatively high risk of a false negative result and, as a consequence, ensure that all the necessary PPE tools and general recommendations to reduce COVID-19 transmission are adequately followed (Table 2) [3]. It is also prudent during this pandemic, in the absence of extensive community testing and effective isolation/quarantine strategies in place, that health professionals perform their duties on the presumption that all patients they treat are potentially infected with COVID-19 even if asymptomatic, given that there is increasing evidence of high infection rates in asymptomatic individuals in countries conducting extensive community testing of their citizens [4,5]. In this regard, it is important to consider the risk not only for staff but also for the patients. Recent evidence from Wuhan reported a 20% mortality rate in asymptomatic patients who tested COVID positive after the surgical procedure [6]. Onset of symptoms was within 2.6 d, and 44.1% required ICU support. Out of 20 asymptomatic COVID-positive patients undergoing level 3 complexity procedures, which are equivalent to urological transabdominal or retroperitoneal interventions, seven died in ICU from acute respiratory distress syndrome (Table 2).

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If surgical procedures are unavoidable, it is recommended that all procedures should be performed by experienced urologists confident in the procedure. They should be performed with the minimum number of staff members, who should also be fully trained and experienced. Furthermore, no external observers should be present during the procedure (ie, fellows or students) [7]. Use of ultrasonic scalpels or electrical equipment producing surgical smoke should be discouraged because such smokes could carry the COVID-19 [8]. In previous studies, activated *Corynebacterium*, papillomavirus, and human immunodeficiency virus (HIV) have been detected in surgical smoke, and several doctors contracted a rare papilloma virus suspected to be connected to surgical smoke exposure. There is no reason to suppose that COVID-19 infection could not be spread in the same way. One study found that after using electrical or ultrasonic equipment for 10 min, the particle concentration of the smoke in laparoscopic surgery was significantly higher than that in traditional open surgery [8]. Thus, it is recommended to lower electrocautery power settings as much as possible. There is no conclusive evidence regarding the differences in risks of open versus laparoscopic surgery for the surgical team. However, laparoscopic surgery may be associated with a higher amount of smoke particles than open surgery [9]. On the contrary, minimally invasive surgery has the benefit of reducing the length of hospital stay and reducing the risks to the patient for contracting COVID-19 whilst in hospital. During laparoscopy, surgical smoke is released into theatre under pressure at several stages of surgery. It is advisable to keep intraperitoneal pressure as low as possible and to aspirate the inflated CO_2 as much as possible before removing the trocars (Table 2) [7–9].

The duration and frequency of shedding of COVID-19 virus in urine are unknown [10]. However, a recent study by Ling et al [11] reported limited persistence of SARS-CoV-2 nucleic acid in urine. These data do not prove a link between urine spillage and virus transmission. However, although no evidence of disease transmission through urine is demonstrated yet, urine sampling (for urine culture, dipsticks, and other analyses), urethral catheterisation, and endoscopic procedures (eg, transurethral resection of the prostate, transurethral resection of the bladder, ureteral stenting, etc.) should be executed with caution. As spills are inevitable, surfaces should be cleaned rapidly by using appropriate absorbent and by decontamination with chlorine (5000–10 000 mg/l) or another appropriate disinfectant (note that chlorhexidine is ineffective against COVID-19 and is not appropriate) [12]. Spills should be handled according to local guidelines. Similarly, in case of spillage leading to unwanted contact (ie, accidental exposure) with a member of the staff, appropriate measures should be taken following local protocols.

It is now clear that SARS-CoV-2 is present in the stools of COVID-19 patients. Therefore, the transmission during various procedures (eg, transrectal prostate biopsy and urinary diversions) might be possible [13]. Therefore, even if clear evidence of COVID-19 virus spreading through faeces is not demonstrated yet, it is preferable to minimise the risks of faecal transmissions.

Social distancing is the key player to fight against COVID-19 pandemic. We have a duty to avoid unnecessary outpatient visits and in doing so reduce the chance of virus transmission. Increasing use of telehealth may be an important way to continue to support patients and their carers during this crisis. It will be interesting to see if this change, born of necessity, is incorporated into urological practice beyond the pandemic (Table 2) [14,15].

While it cannot be predicted when we will be able to revert back from the acute phase of the COVID-19 pandemic and resume more normal levels of urological care, we need to plan ahead on how the urological community should do this.

The most logical step will be to reverse back through the aforementioned prioritisation stages. During this process, we will need to confer with our fellow surgical (sub) specialities to prioritise the available surgical time and resources among all surgical patients.

Undoubtedly there will be cases where the optimal surgical treatment time point will be surpassed. These patients may be at risk of a suboptimal outcome or an increased psychological burden due to delayed surgery, and should be prioritised in the long waiting lists that we will undoubtedly be facing on the other end of this crisis.

4. Conclusions

The EAU is a family of 19 000 members, and beyond our membership, the EAU feels a huge sense of responsibility towards each and every urologist globally, wherever they may be, appreciating that the EAU guidelines are now endorsed by national societies of 72 countries. This extended family ethos is even more important at a time like this when we are acutely aware of the despair that nations and their citizens are experiencing around the world. For instance, we realise that our colleagues and friends in Italy, Spain, France, UK, other EU member states and increasingly in the USA are being particularly impacted, whilst on the other side of the world, our friends in China, South Korea, and Japan look to rebuild and return to some form of new normality. Our thoughts are with each and every one of you. Despite these incredibly difficult times, key opinion leaders across the breadth of our membership have come together like never before to rapidly produce this publication on adapting EAU guideline recommendations to COVID-19 that we hope will fill an important urological practice void and assist urologist surgeons across the globe as they do their very best to deal with the crisis of our generation.

The EAU Guidelines Office COVID-19 recommendations can be consulted in Supplementary Tables 1–17.

Author contributions: Maria J. Ribal had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

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Study concept and design: Ribal, N'Dow, Cornford, Briganti, Knoll, Gravas, Babjuk, Harding, Breda, Bex.
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