Urology in the time of corona

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The world is currently in the grip of the COVID-19 pandemic. Rapid changes in medical priorities are being enforced across all health-care systems. Urologists have had to reduce or halt their clinical activity and assist on COVID-19 wards. The repercussions on urological patient outcomes for delayed treatments and diagnosis remain to be defined.

The situation in Lombardy, northern Italy

On 31 December 2019, Chinese authorities notified the WHO regarding a novel coronavirus, now designated SARS-CoV-2, that was first reported in Wuhan, China[1]. The virus has now spread worldwide and on 11 March 2020 the WHO defined the disease caused by this virus — COVID-19 — as a pandemic[1]. By 18 March 2020, 193,475 confirmed cases and 7,864 deaths had been reported worldwide, with these numbers increasing rapidly every day[2]. After China, Italy has been hit the hardest: 31,506 cases were reported as of 18 March 2020, alongside 2,503 deaths due to COVID-19 since the outbreak began. Numbers are rapidly increasing. Other European countries seem to be ~10 days behind in terms of the pandemic's course and effects[3]. The first documented case in Italy was identified in a 38-year-old manager in the province of Lodi, Lombardy, in the north of Italy[4]. The province of Bergamo in Lombardy, 40 km from Lodi, has over 1.1 million inhabitants and is a very wealthy and densely inhabited industrial area. Bergamo has reported the highest number of cases (4,304 cases as of 18 March 2020), which are scattered throughout all the hospitals in the province[5]. Papa Giovanni XXIII Hospital is the main tertiary referral centre for the area and has >900 beds. The first documented case in Papa Giovanni XXIII Hospital was identified on Friday 21 February 2020. Within 10 days, nearly two-thirds of the beds in the entire hospital became dedicated to COVID-19 treatment and, therefore, the hospital was virtually a completely contaminated area. Six COVID-19 wards with 48 beds each were created and the emergency room and both intensive and sub-intensive care units were expanded over their limit. The current shortages of intensive and sub-intensive care spaces were coupled with the lack of supplies and respiratory-support devices, but the main limitation for patient care is the lack of medical and paramedical staff.

How urologists are involved

The real challenge is that the health service in Italy is currently unable to easily deal with other conditions except treatment of COVID-19, causing a net shift from patient-centred medicine to a community-centred approach. Thus, decision-making within the medical community can no longer be based on single patient needs; this concept must be understood and accepted by all surgical and non-surgical specialities. In particular, urologists manage many patients with oncological diseases and surgical priorities, and also many non-oncological life-threatening conditions and other disorders that only affect quality of life. Our busy Department of Urology in Bergamo contains 45 beds and, normally, 13 full-time urologists with daily activity across 3 operating rooms, performing >2,500 surgical procedures per year. The effect of ceasing this activity is understandably major in this setting. Within the first 2 weeks of the outbreak, we progressively reduced operating capacity rapidly to 30%, dedicating one operating room per day for emergency surgery (referred from the emergency department), oncological priorities or near life-threatening conditions from the community. On 15 March 2020, surgical activity was reduced to 15% and total shut down was ordered from 19 March. Changes in surgical scheduling had to take into account many major factors. First, anaesthesiologists were needed to manage the patients in acute COVID-19 crisis and, therefore, had to withdraw from elective surgery. Second, the number of beds used for urological patients had to be reduced to dedicate beds and personnel to the new COVID-19 wards. Third, there was the need to not infect elective patients via hospital contamination. Fourth — and perhaps most importantly from a urological prospective — 30% of the residual urological medical staff became entirely dedicated to managing the infected patients on the newly formed COVID-19 ward. As of 19 March 2020, 7 of the 13 urologists in the department (53%) are isolated at home with positive swabs for COVID-19 and are symptomatic; unfortunately, numbers are likely to increase on a daily basis. As the hospital is considered a COVID-19-contaminated area, identifying and preventing positive contacts within the hospital has become impossible. Current internal guidelines mandate swabbing for COVID-19 in the event of any unprotected contact with any person who is positive or suspicious for COVID-19 or if symptomatic in order to protect asymptomatic hospital staff from infection for their own

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and for their patients' benefit during their shift, and these have imposed a home quarantine above the nationwide restriction. However, as the number of working medical staff is dramatically reducing, common practice at this stage of COVID-19 infection is to perform a swab only in the presence of respiratory symptoms, in case of fever or in cases of demonstrated unprotected exposure to positive patients, in order to gain time and allow doctors to work in the COVID-19 wards for as long as possible, waiting for the surge to reduce. Thus, this outbreak has certainly dramatically altered our everyday clinical practice. The difficult balance between priority treatment of patients with COVID-19 and other patients without the infection who require treatment for other conditions is challenging.

Potential effects on urology service

In addition to the effects on operating and the availability of staff to manage urology patients, the COVID-19 outbreak has also affected outpatients and inpatients in urological services in northern Italy. Questions regarding the long-term effect of the pandemic remain unanswered (BOX 1).

In Papa Giovanni XXIII Hospital, the decision was made to maintain outpatient clinics for any emergency consultations, all oncological patients requiring a urological evaluation, patients with high-risk non-muscle-invasive cancer within the first year of follow-up monitoring who were scheduled for cystoscopy, and for re-evaluation of patients with indwelling bladder catheters. However, stratifying these priorities correctly is very difficult. Stone clinic and surgery, private patients' clinic and surgery, functional urology assessment and procedures, extracorporeal shockwave lithotripsy and andrology clinic and surgery as well as prostate biopsies were stopped completely. Thus, we are faced with decisions regarding which oncological patients must be seen in the offices, which therapies must be continued (such as bladder instillations) and how long these treatments can be deferred. Furthermore, we must consider how we should redefine treatment options and timing.

Treatment decisions for urological inpatients are also affected. Normally, regional guidelines require that any patient requiring oncological surgery must be treated within 30 days from diagnosis. Typically, departments struggle to meet this deadline. Owing to the COVID-19 emergency, this rule has been annulled and surgery within 30 days is recommended only for oncological priorities. However, with limited resources, how we now define, select and prioritize oncological priorities is uncertain — is a patient with Gleason 8 prostate cancer a higher priority than a patient with newly diagnosed high-volume bladder cancer? Is a cT3 kidney mass in an elderly person worse than a phaeochromocytoma in a young patient?

The government of Lombardy has identified some conditions that require non deferrable treatment in hospitals that are not COVID-19 burdened. In detail, these are any condition that can determine potential urinary sepsis, urgent cystectomies, testicular cancer and large kidney cancers (>7 cm), whereas transurethral resection for bladder cancer is to be discussed case-by-case. However, these centres are unlikely to remain free from COVID-19 for long once they begin to receive patients from a COVID-19-infected area, even if those patients have a negative swab. Furthermore, questions remain regarding how to manage a patient in need of surgery who becomes positive while being referred and how to screen patients being transferred to COVID-19-free hubs for treatment.

Long-term implications for patients

The long-term implications of this reduction in clinical activity in urology are currently unknown, as determining how long the crisis will last is impossible. Certainly, preventing many patients from accessing timely and necessary surgery will clearly have unpredictable negative repercussions on their chances of being effectively treated. Furthermore, specialist referrals and access to diagnostic tools for important symptoms (for example, haematuria) will inevitably be reduced, delaying potential life-saving treatments.

Lessons and outlook

A COVID-19-infected area will inevitably have to dedicate all its human and technical resources to the treatment of patients with COVID-19, reducing attention on all non-COVID-19 conditions. A referral hospital will become a COVID-19 hub within a few days. Urologists, as is the case for any other surgical and non-surgical specialty, will have to dedicate part, if not all, of their practice to the treatment of patients with COVID-19 and drastically reduce their own clinical practice. A urological team will have to expect to be at least halved owing to their clinicians being infected. The treatment of non-deferrable oncological and non-oncological priorities can be maintained at a minimal intensity; however, these treatments are at high risk of dangerous cross infection with the SARS-CoV-2 virus. International and National Urological societies must try to support clinicians — despite the lack of current knowledge — with updated, timely and corrected indications for how to manage urological patients during the COVID-19 crisis, to guide difficult and potentially dangerous decision-making.

The lack of timely treatments or diagnosis for COVID-19 will inevitably produce negative repercussions

Box 1 | Unanswered questions during the COVID-19 pandemic

- How do we define, select and prioritize oncological priorities?
- Which treatments must be continued and which can be deferred and for how long? Should we alter which treatment options we offer and their timings?
- How long is it safe to delay treatment of currently non-life threatening oncological conditions? Which guidelines should we follow? Must this decision be centralized, multidisciplinary or case-by-case driven?
- How do we treat patients without COVID-19 in a COVID-19-infected environment? What is their risk of cross-contamination by asymptomatic medical staff?
- How should we manage a patient in need of surgery who becomes positive while being referred?
- How should we screen patients being transferred to COVID-free hubs for treatment?

on overall patient outcomes, but these are still unknown and impossible to quantify.

Ultimately, this unprecedented health scenario will help reveal the real necessity for the high number of aggressive diagnoses and treatments normally offered widely to (too) many patients, in a urological setting and beyond.

1. Sohrabi, C. et al. World Health Organization declares global emergency: a review of the 2019 novel coronavirus (COVID-19). *Int. J. Surg.* **76**, 71–76 (2020).
2. WHO. Novel coronavirus (COVID-19) situation. *WHO* https://experience.arcgis.com/experience/685d0ace521648f8a5beeeee1b9125cd (2020).
3. WHO. WHO Director-General's opening remarks at the media briefing on COVID-19 – 11 March 2020. *WHO* https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020 (2020).
4. Spina, S. et al. The response of Milan's Emergency Medical System to the COVID-19 outbreak in Italy. *Lancet* **395**, e49–e50 (2020).
5. Regione Lombardia. Covid-19: updated situation in Regione Lombardia. *Regione Lombardia* http://lispa.maps.arcgis.com/apps/opsdashboard/index.html#/637ec3dc28ec4ea591cc5c724f127701 (2020).

Competing interests
The authors declare no competing interests.