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## A Urology Department's Experience at the Epicenter of the COVID-19 Pandemic



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Since the first reported case of the novel coronavirus disease 2019 (COVID-19) in Washington State,<sup>1</sup> the United States has become the global epicenter of the pandemic. With many predicting critical shortages of hospital beds, ventilators, and health care providers in New York City (NYC), the NewYork-Presbyterian Hospital and Columbia University Irving Medical Center (CUIMC) quickly implemented system-wide changes to prepare our response. As of May 26, 2020, NYC itself had 204,111 cases and 20,795 deaths, the latter only surpassed by 5 countries outside the United States.<sup>2</sup> In this correspondence, we summarize the CUIMC Department of Urology's experience at the global epicenter of COVID-19 to guide other departments in the response to this and future pandemics.

### CLINICAL EXPERIENCE

#### Redeployment

In early March 2020, our department held twice-weekly phone conferences to address the spread of COVID-19 to NYC. All urology faculty, residents, and administrative personnel participated, allowing all parties to ask questions and give input regarding the frequent changes in protocols. These calls ensured immediacy, transparency, and fidelity of information during a rapidly evolving situation. The volume of COVID-19 patients was quickly increasing and many front-line providers were being quarantined for symptoms and/or exposure. It was clear that redeployment of our staff was imminent.

To increase available personnel, equipment, and physical space, all elective surgical cases at CUIMC were suspended on March 13. On the evening of March 25, our chairman called an emergency phone conference. Hospital leadership had declared that our emergency rooms (ERs) were overrun and in need of assistance — redeployment had been activated.

Urology faculty and residents were asked to volunteer on an “opt-in” basis. This was in consideration of the yet unknown roles and risks of redeployment. The hope was that enough willing and able staff would volunteer to fulfill the need, while considering those who may have personal reasons to abstain unless absolutely necessary. Our program leadership also emphasized that in the spirit of departmental solidarity, all volunteering urology physicians would be redeployed in pairs of 1 resident with 1 attending. This paired team model ensured that we would embark on these challenges together.

Ultimately, a total of 16 residents, 14 attendings, 2 nurse practitioners (NPs), and 3 medical assistants volunteered for redeployment. Half of the residents continued working in our urologic inpatient services, though they were available for activation should anyone in the redeployment pool need to quarantine (Fig. 1). These separate resident pools were created to minimize the risk of COVID-19 exposure within our department.

#### “Emergency Department-Intensive Care Unit”

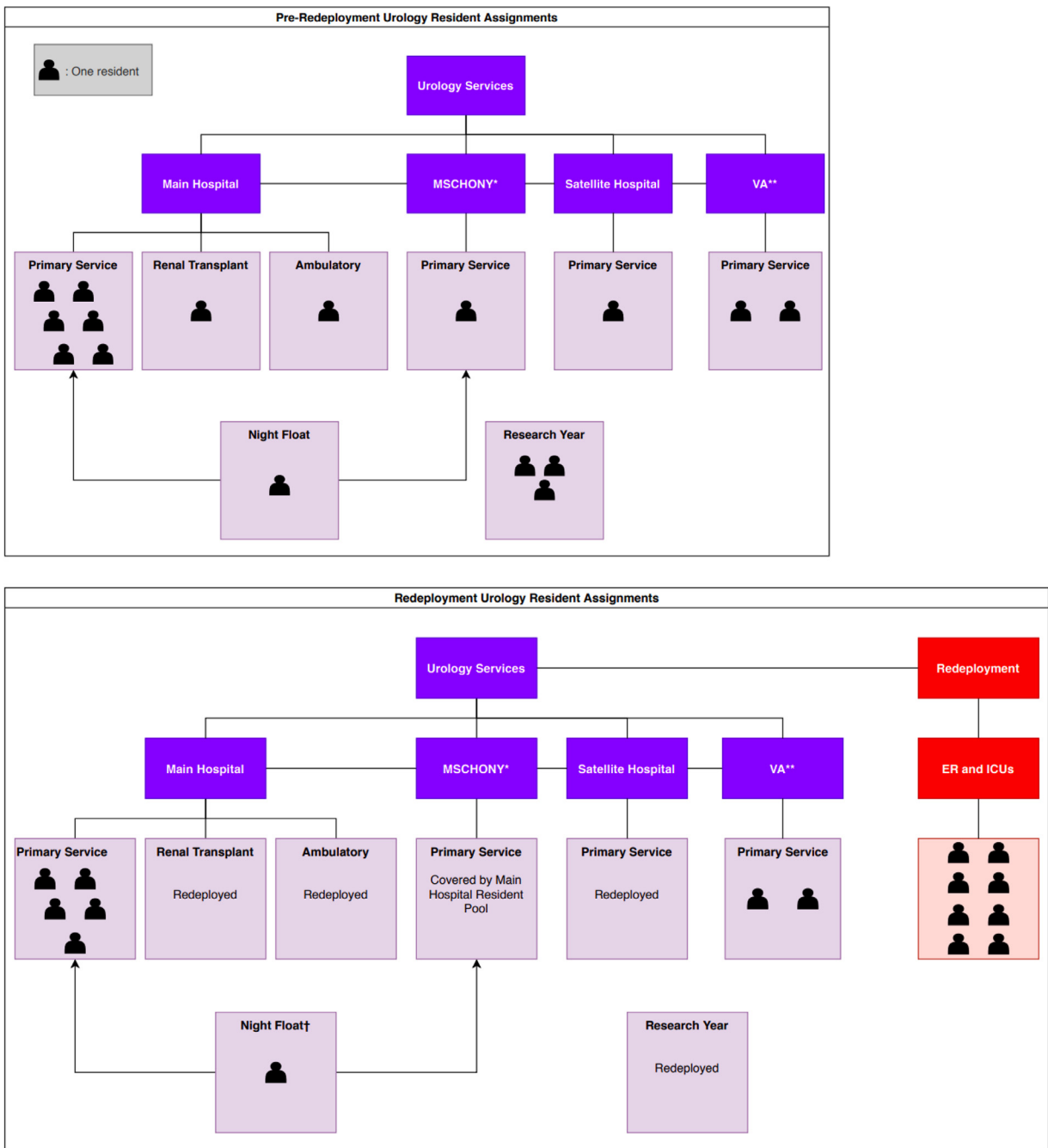
Initially, we were redeployed to 2 ERs at our main university and satellite hospitals, assigned to provide 24-hour coverage for admitted, “non-COVID” patients awaiting bed placement. On the first day of redeployment, our department encountered the overwhelming number of patients, very few of whom were “non-COVID.” Practically every patient in the ER was being ruled out for or confirmed to have COVID-19. Our assignment immediately transformed into an undefined ancillary role to serve however needed, including assisting with chest compressions, ensuring empty oxygen tanks were replaced, placing intravenous/arterial lines and Foley catheters, and constantly reassessing patients' vital signs.

As the cases of suspected/confirmed COVID-19 increased exponentially, many patients in our hospital required ICU-level care in the ER while awaiting inpatient transfer. Our department recognized this gap in care and with the help of our medical colleagues, developed a novel 16-bed “Emergency Department-Intensive Care Unit” (ED-ICU) to care for these critically ill patients. The team per 12-hour shift consisted of: (1) 1 medical

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\*MSCHONY: Morgan Stanley Children's Hospital of New York

\*\*VA: Veterans Affairs Hospital

†: Night float during redeployment was rotated on a weekly basis among the residents on the Main Hospital Primary Service

**Figure 1.** CUIMC urology resident assignments before and during the COVID-19 pandemic. (Color version available online.)

intensivist or subspecialist as the supervising attending, (2) 1-2 senior medicine ICU resident(s) as the team lead (s), (3) 1 ICU pharmacist during the day shifts, (4) 1 respiratory therapist, (5) ED nurses with prior ICU experience, and (6) 1 urology attending/resident pair with or without a urology NP.

Our attending/resident pairs were responsible for entering orders, reviewing labs and imaging, adjusting ventilator settings, contacting consultants, and speaking with patients' families. As the ED-ICU gained prominence in the care pathway of COVID-19 patients at CUIMC, we

also played an instrumental role in onboarding providers from other specialties to the attending/resident pair role. This involved creating an ED-ICU manual with a primer on critical care specific to COVID-19, hosting an online orientation, and taking extra shifts in an oversight role.

#### “Pop-up” ICUs

The volume of critically ill patients in our hospitals continued to increase to unprecedented levels. In order to further increase critical care capacity, several “pop-up” ICUs were created in various areas throughout the main and satellite

**Table 1.** Criteria for patients to be diverted directly from ER to outpatient practice

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Clinical criteria	<ul style="list-style-type: none"><li>• Urinary retention (with or without malfunctioning drainage tube—Foley or suprapubic catheter)</li></ul>
Inclusion	<ul style="list-style-type: none"><li>• Hematuria (otherwise stable)</li><li>• Urinary tract infection</li></ul>
Exclusion	<ul style="list-style-type: none"><li>• Any infectious symptoms including fevers/chills</li><li>• Intractable pain</li><li>• Nausea/vomiting</li><li>• Likely need for imaging (eg, rule out testicular torsion, suspected renal colic)</li><li>• Likely need for procedural monitoring/sedation (eg, priapism, abscess incision, and drainage)</li><li>• Likely need for admission (eg, febrile patient with GU chief complaint)</li></ul>

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hospitals, including many of the preoperative areas and operating rooms (ORs). Our roles in these “pop-up” ICUs were identical to our responsibilities in the ED-ICU.

At our satellite hospital, with all established ICU beds filled to capacity, a “pop-up” ICU of 6 critical care beds was created in the preoperative area. We began rotating in this new ICU on April 4. Given the residents’ increasing comfort with caring for critically ill COVID-19 patients, urology residents were redeployed to this ICU without an accompanying attending. Each 12-hour shift, the team consisted of: (1) 1 medical intensivist as supervising attending, (2) 1-2 medicine subspecialty fellow(s) as team lead(s), (3) 1 respiratory therapist, (4) 2-3 RNs, and (5) 1 urology resident with or without a urology NP.

At the main university hospital, several of our ORs were converted to “pop-up” ICUs (OR-ICU), with each OR able to accommodate 4 critically ill patients. On April 19, the volume of patients in the main hospital ED-ICU subsided enough that our department was fully reassigned to the OR-ICUs on April 20. Each bay, consisting of 3 OR-ICUs (maximum of 12 patients), was covered by 1 medical intensivist as supervising attending and 1 senior otolaryngology or anesthesiology resident as team lead. Each OR-ICU was then covered by 2 RNs with prior ICU experience and an attending/resident pair from urology or another redeployed specialty.

Eventually, as the overall volume of critically ill patients with COVID-19 began to subside, our department was informed that we were no longer needed in the OR-ICUs on May 4 and in the satellite hospital “pop-up” ICU on May 6.

### Urologic Services

During the swift and drastic process of redeployment, one of the many concerns was the maintenance of urologic services. Residents and attendings who were not in the deployment pools worked in staggered shifts, both in the outpatient and inpatient settings. The vast majority of outpatient visits in both the resident- and faculty-run

practices were transitioned to televisits via phone or video, unless an in-person visit was absolutely necessary.

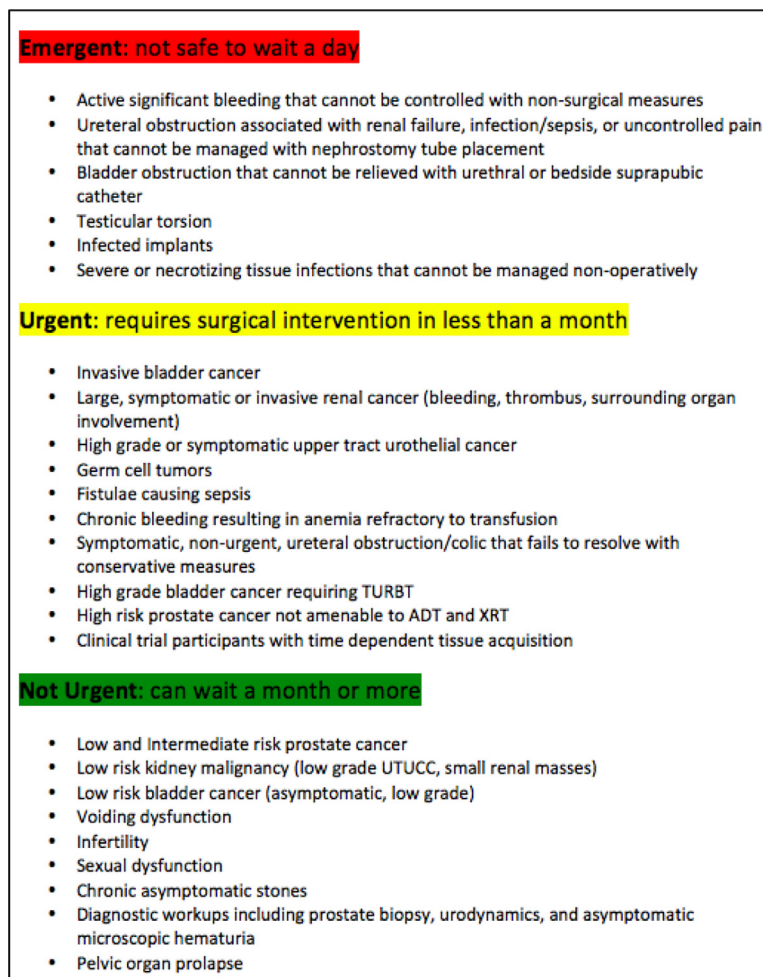
The suddenly vacant faculty practice space allowed us to utilize the clinic in another way. To minimize patient and urology consultant exposure to COVID-19 in our ERs, our department collaborated with our emergency medicine colleagues to create a new diversion protocol for patients presenting to the ER with an acute urologic issue. Once a patient was determined to meet certain inclusion and exclusion criteria (Table 1) by an ER provider in phone communication with the urology consult resident, s/he was transported to our outpatient faculty clinic to be evaluated and treated.

Our main hospital inpatient service, now limited to 2-3 residents per day from a pool of 5 residents, managed all urologic emergencies as well as concomitant urologic issues in admitted COVID-19 patients. The number of new daily inpatient urologic consults went from about 15 before the pandemic to 0-10 during the pandemic, now mostly consisting of difficult Foley catheter placements in critically ill patients and gross hematuria in the setting of therapeutic anticoagulation.

As mentioned, all elective urologic surgeries were suspended in mid-March. Only cases meeting “emergent” criteria as defined by our departmental “COVID-19 Urologic Surgery Triage Algorithm” (Fig. 2) were allowed to be booked. As a result, the weekly surgical volume at our main hospital decreased from about 40 endourologic and 20 open/laparoscopic/robotic cases prior to the pandemic to 0-5 and 0-3 cases, respectively.

### Mental Health

There have been several sources of anxiety specific to health care workers during this pandemic. Early on, there were justified concerns about adequate personal protective equipment, potential transmission of COVID-19 to family and friends, and ability to provide appropriate care if redeployed to an unfamiliar setting (ie, ER, ICU).<sup>3</sup> As these concerns somewhat dissipated, we encountered the dark



**Figure 2.** COVID-19 urologic surgery triage algorithm. (Color version available online.)

realities of critical illness and death from COVID-19 in our patients, colleagues, family, and friends. Emotions such as guilt, helplessness, and grief accompanied our anxiety.

In response to such concerns, our hospital promoted active working relationships between the Housestaff Mental Health Service and our providers. Two mental health experts, one who is a psychiatrist and director of mental health services for Graduate Medical Education at CUIMC, hosted weekly virtual peer support sessions via Zoom, separately for urology residents and faculty. These sessions allowed us to openly express concerns, share common experiences, and discuss coping techniques with our colleagues. In addition, these meetings promoted direct relationships with the mental health staff, who encouraged us to contact them by phone or e-mail at any time.

More informally, our residency program director was in constant communication with all urology residents by group text messages and Zoom video sessions. This enabled the lines of communication to remain open at all times.

## EDUCATIONAL EXPERIENCE

Another unfortunate consequence of the pandemic has been the detrimental effect on urology resident education

and training. Most urologic surgeries and clinic appointments were cancelled, and anecdotally, inpatient urologic consult requests decreased in number and variety. In addition, weekly multidisciplinary tumor boards and departmental educational conferences were suspended or transitioned to videoconferences. Though COVID-19 put a heavy strain on our health care system in general, the changes required to respond to the pandemic led to an overall increased amount of available time for urology residents and faculty.

### Educational Multi-Institutional Program for Instructing Residents

To address this need, our residents and faculty started several educational initiatives. The most prominent of these has been the Educational Multi-Institutional Program for Instructing Residents (EMPIRE) lecture series (<https://nyaua.com/empire/>), sponsored by the New York Section of the AUA. With inspiration from the “COVID” series from the Department of Urology at the University of California, San Francisco, we initiated a multi-institutional lecture series with a focus on resident mentoring, education, and the AUA Core Curriculum given by accomplished speakers across all subspecialties of urology. The

schedule of lecture topics was posted at least 1 week in advance on the EMPIRE website, the New York Section's Twitter account, and via an email Listserv. Every weekday morning in March and April 2020, two 1-hour lectures were given over Zoom, with the first 10 minutes of each lecture reserved for a Q&A session focused on resident career counseling. Each day, there were 50-150 participants, who were encouraged to post questions for the speaker to be answered at the end of each lecture. For those who could not join the live sessions, the lectures were recorded and posted on the EMPIRE YouTube page.

### **Surgical Education**

With the EMPIRE series covering clinical practice and guidelines, resident surgical training also needed to be addressed. Our department therefore initiated the Surgical Interactive Resident Curriculum and a robotic surgery competition. Surgical Interactive Resident Curriculum occurred every afternoon, with a different faculty member hosting an hour-long interactive review of prerecorded urologic surgeries with CUIMC residents and medical students over Zoom. This allowed residents to explore the attendings' operative thought processes in terms of steps, techniques, and concerns while obtaining a refresher on relevant anatomy.

Second, the residents, with faculty support, utilized the down time to improve their robotic skills. In order to promote participation and a spirit of competition, a robotic surgery fantasy league was created. Residents were split into teams, with an even distribution of postgraduate year experience. Every 2 weeks, 3 exercises on the da Vinci Skills Simulator were designated and each team member was required to record their best scores during that time period. This approach has resulted in strong resident engagement and improved operative fundamentals, an idea supported in the education literature.<sup>4</sup>

### **GOING FORWARD**

A week after our department was relieved from redeployment in early May 2020, the majority of the "pop-up" ICUs in the ORs were vacated. This allowed the space and supporting staff for surgical departments to resume scheduling procedures again, although at limited capacity. This next stage has presented unique challenges of its own.

To prioritize surgeries appropriately during decreased OR capacity, our department has continued to use our "COVID-19 Urologic Surgery Triage Algorithm" (Fig. 2) to prioritize emergent and urgent cases. Patients themselves have expressed hesitancy about undergoing surgery at our main hospital in NYC, and therefore have been rescheduled for a later date or at a satellite hospital. This slow process of rescheduling elective surgeries may prolong the detrimental effects of the COVID-19 pandemic on both resident surgical training and patient care. Leveraging the

aforementioned technologies of videoconferencing and robotic simulation will help to mitigate the effects on resident education. Unfortunately, the downstream effects of delay in surgical care will be much more difficult to ameliorate, particularly for patients with cancer.<sup>5</sup>

In regards to our outpatient practice, we have reintroduced in-person office visits for select patients, with symptom and temperature checks in the clinic lobby, mask requirements for all patients and visitors, and strict enforcement of 6-foot social distancing. Though we would like to ensure a "COVID-free" space, we recognize that the false-negative rates of the early COVID-19 tests and the presence of asymptomatic carriers make this nearly impossible. Given the increased use of televisits during the pandemic, many patients are now more comfortable with the technology, which allows consultation with our providers in the safety and comfort of their homes. Similarly to our patients being scheduled for surgeries, those who require in-person visits are being offered appointments at a later date or at a satellite hospital. We foresee that televisits will continue to be a prominent component of our outpatient practice even once the pandemic has subsided.

### **CONCLUSION**

From a big picture perspective, the long plateau of global COVID-19 case numbers<sup>6</sup> highlights the uncertainty of when, if ever, we will return to "normal." Though the future remains unclear, our department's unified response to the pandemic has strengthened our sense of solidarity and purpose. Our providers volunteered for redeployment, while creating innovative clinical care and educational solutions in a time of need. We have now started performing surgeries and seeing our patients in person again, albeit in much smaller numbers than we had in the pre-COVID era. While the recovery from this pandemic may be long, we remain even more committed to taking the best care of our patients and each other in these uncertain times.

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