LETTER TO THE EDITOR

COVID-19 in endoscopy: time to do more?

To the Editor:

We have read with great interest the paired articles on severe acute respiratory syndrome coronavirus 2/novel coronavirus disease 19 (COVID-19) in this issue of *Gastrointestinal Endoscopy*. The first, entitled "Coronavirus (COVID-19) outbreak: what the department of endoscopy should know" by Repici et al,[1] describes the Italian experience and the second, "Considerations in performing endoscopy during the COVID-19 pandemic" by Soetikno et al,[2] is drawn largely from the Hong Kong experience. We congratulate the authors for their development and rigorous account of the endoscopic practices they have successfully used to minimize infection of endoscopy staff while providing essential services in this high-risk environment. We would also like to share a U.S. hospital perspective gained from our experience contending with numerous COVID-19 cases after the Biogen conference in Boston, Massachusetts. A COVID-19 standard operating procedure for endoscopy is included in Figure 1.

These 2 articles have several similarities and also cover unique aspects regarding the management of COVID-19 in the endoscopy unit. The need for clear communication across the entire endoscopy team, and anesthesia if involved, was emphasized. We also believe a daily huddle with endoscopy leadership is critical to review policies and discuss issues so that all groups are represented in the decision-making process and can deliver the most comprehensive, accurate updates to their staff in this incredibly fluid time when guidelines may change seemingly hour by hour. Creating a step-by-step approach to suspected or COVID-19–positive patients from the time they enter the endoscopy unit to the time they leave and ensuring everyone on the team is on the same page was also addressed. Once the team has created this detailed workflow with clear delineation of who is responsible for each step and who to call for any necessary equipment that may not be readily available in the endoscopy unit such as powered air-purifying respirators (PAPRs), mock drills should be conducted with the teams.

The articles also nicely addressed the mandate to minimize nonurgent procedures in an effort to limit the spread of infection from asymptomatic patients and providers and to conserve precious personal protective equipment (PPE), hospital beds, and other important resources. We have classified nonurgent procedures into nonurgent/perform and nonurgent/postpone. Examples of nonurgent cases that may be performed include cancer staging and prosthetic removal. All screening and most surveillance procedures should be delayed. Many diagnostic procedures, including evaluation of chronic GERD, abdominal pain, and diarrhea, may be postponed as well.

Leveraging information technologies can be helpful in these nonstandard workflows. We created custom-built reports for providers within the electronic health record to facilitate triaging and rescheduling patients. The procedure list is reviewed and categorized by a nonphysician healthcare provider, with final review by a physician. The postponed cases are further classified into how long they can wait (1 month, 2 months, 3 months, etc) and by which providers can perform the case. Some cases involving complex situations may need multidisciplinary input as well as discussion with the patient before making a final decision. As a result, we have cut our daily endoscopy volume by over 80% and closed our ambulatory endoscopy practice.

For patients who have their elective procedures deferred, a virtual visit in the interim may be helpful in their GI management until their procedure can be safely performed. As part of the State of Emergency response in Massachusetts, telemedicine and virtual visit restrictions have greatly relaxed to promote usage across state lines and include new patient visits. Additionally, these types of visits are now reimbursed at the same rate as in-person visits. At present, telemedicine or virtual visits make up 91% of our upcoming clinic appointments.

Prescreening and categorization of patient risk is emphasized in these articles to identify those who may need COVID-19 testing before endoscopy and special isolation precautions. This includes asking about fever, respiratory symptoms, sick contacts, and travel to high-risk areas, although the latter is increasingly moot with the spread of the pandemic. As nearly 50% of infected patients report GI symptoms, including anorexia in over 80% and diarrhea in nearly 30%, with 3% having only GI symptoms without respiratory issues,[3,4] we have added these GI symptoms to the list of prescreening questions with importance placed on duration of symptoms.

All scheduled patients are called the day before by nurses for screening, and the same questions are again asked the day of the procedure in addition to measuring patients' temperature. Our hospital created screening forms integrated into the electronic health record to facilitate standardized screening before procedures. Additionally, our health system reaches out to patients both by automated phone calls and our electronic patient portal advising patients to contact their provider before their visit if they have any symptoms.

The importance of social or physical distancing as advocated recently by the World Health Organization throughout a patient's time in the endoscopy unit is

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COVID-19 Endoscopy Unit Standard Operating Procedure

- Triage
  - Classify procedures/patients
    - Urgent
    - Non-urgent/perform
    - Non-urgent/postpone
  - Screen for risk of COVID-19 infection
    - Fever, respiratory symptoms, anorexia, diarrhea, vomiting
      - Patient
      - Close contacts
    - Travel history
    - Assess day before procedure and re-assess on day of procedure
      - Phone/electronic patient portal
    - Take patient's temperature upon arrival to unit
    - Test all patients for COVID-19 if possible
  - Follow-up of postponed cases
    - Reschedule procedure
    - Need for clinic/virtual care visit
  - Follow-up after procedure
    - Call 7-14 days later to check for symptoms of COVID-19 infection

- Distancing
  - Patients:
    - 6 feet minimum distance between individuals
    - Verbal consent and verbal discharge
    - Patient enters waiting area only after screening/temperature check
    - No visitors in endoscopy
    - Avoid oral anesthetic sprays and consider patient swallowing viscous lidocaine
    - Consider intubation for all upper endoscopic procedures
  - If COVID-19 positive or suspected patient:
    - Try to defer case
    - If deferring not clinically possible, perform at end of the day
    - Provide mask on arrival and take directly to procedure room
    - Use negative pressure room if available in hospital
    - Recover in procedure room or in transferring unit
  - Endoscopy staff
    - Daily self-assessment/attestation for wellness to work
    - 6 feet minimum distance between individuals
    - Assign workstations daily
    - Avoid sharing common touched objects or clean before use
      - Pens, clipboards, telephones, chair
    - Minimize concomitant exposure of providers with similar or unique skill sets
    - Consolidate procedures one or few providers each day
    - At risk providers (age, immunosuppression) should minimize exposure
      - Consider virtual care/triage tasks
    - Shower after case on suspected or COVID positive patient

- Personal Protective Equipment
  - Surgical mask for all employees in areas with community spread
  - N95s for aerosol-generating procedures (all endoscopies)
  - PAPR preferred for known COVID-19 positive cases
  - Conservation with extended and reuse measures per institutional policy during supply shortage
    - Only key personnel; recommend no trainees/fellows/students/vendors
    - Careful doffing and donning of reused PPE
    - Store each PPE in separate labeled paper bag
    - Consider UV-C sanitization
  - Training, practice, and audit proper PPE donning/doffing
  - Try to test for COVID-19 if proper PPE not available

- Incident response strategy (see Figure 2)
  - Endoscopy leadership huddles daily to review key metrics, latest guidelines, issues; anticipate potential problems with proactive action taken; communicates clearly to staff and hospital leadership
  - Gather up-to-date information and guidelines
  - Convene leadership to assess situation, new information, status
  - Make adjustments to policy/practice as appropriate
  - Communicate with providers, staff, and other leaders in hospital
  - Monitor for effectiveness of strategies and potential problems
  - Iterate above cycles

Figure 1. ■ ■ ■ Q5

stressed in the articles, with a 6-foot minimum between individuals. To help meet this requirement, we only allow 1 family member/chaperone per patient who waits in a centralized waiting area, and this visitor cannot enter the pre- or postprocedure areas. Soetikno et al suggested that suspected and COVID-19–positive patients should be

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given a mask and separated from other patients by at least 6 feet or alternatively placed in a negative pressure room. We believe the latter should be emphasized with more stringent and immediate isolation precautions being instituted for these patients and procedures performed in airborne infection isolation rooms that comply with Level 3 biosafety requirements. We also agree with the need for a separate toilet as part of the isolation to minimize spread of infection due to bioaerosols from the toilet plume. If these resources are not available in the endoscopy unit, cases should be performed where the proper facilities are available. These cases should also be preferably performed at the end of the day with patients recovered in the procedure room or back in their isolation unit.

Physical distancing by staff in the endoscopy unit is emphasized in Soetikno et al.[2] We believe this is important, especially in areas with community spread. Our hospital system has recently changed policy to mandate that all employees wear surgical masks at all times while in the hospital and attest to their wellness online before reporting to work. We suggest labeling each computer so the same provider uses that computer and chair for the entire day and separating by at least 6 feet. Because many procedure rooms may be empty, 1 provider per day can use these rooms as "offices." We have converted to obtaining verbal consent by phone or in person (6 feet away) from patients and not having patients physically sign consent forms. Pens, clipboards, phones, and chairs should not be shared. If unsure, these items should be cleaned before use and hand hygiene performed after use. Deep cleaning of the entire endoscopy unit is recommended nightly.

Both articles emphasize that all endoscopic procedures (upper endoscopy, colonoscopy, EUS, ERCP) are aerosol-generating, referencing studies that show contamination of the endoscopist's face during routine procedures. This makes all endoscopic procedures high risk from an infectious standpoint, and appropriate PPE is recommended. This is an important point. N95 face masks are recommended for high-risk patients undergoing any endoscopic procedure with a standard surgical mask recommended for low-risk patients. However, we believe there is a spectrum of risk severity that is regional and temporal in nature. In a pandemic where asymptomatic transmission is known to occur, significant under-testing continues, and society is expected to practice extreme physical distancing with closure of all nonessential businesses, are there any truly low-risk patients? Remember that COVID-19 is believed to be at least 3 times as contagious as the flu virus, and most cases are believed to occur by asymptomatic transmission. It makes little sense for healthcare providers to perform aerosolizing procedures, with patients coughing or passing gas on them, while not wearing an N95 mask or better.

We believe it is important to use full PPE for all endoscopic procedures while in a pandemic such as this, especially in areas with community spread, because no one is truly low risk given our ongoing difficulties with testing. A study from China showed that no medical staff working in high-risk departments who wore N95 masks and practiced strict hand hygiene regardless of patient infection status became infected.[5] Ideally, an N95 mask and face shield should be used with other standard PPE for all endoscopy cases and PAPRs for known COVID-19–positive cases if the case absolutely cannot be deferred. The suggestion to use PAPRs for COVID-19–positive patients comes from China's anecdotal experience during endoscopic endonasal procedures where infection spread was apparently not controlled with N95 masks and only possible after use of PAPRs.

We fully appreciate that PPE is currently in tight supply; however, with careful conservation the above may be possible. It starts with only doing procedures that are absolutely necessary. PPE use should be tightly regulated. Our hospital has gathered all masks and face shields, with every provider signing 1 out each day as needed. Before this we had a PPE station in the unit where the provider signed out masks using their identification number, employee number, and patient medical record number. The mask can be reused as long as it is functional, not soiled, and not used in a suspected or COVID-19–positive patient. It is important to cover the N95 mask to prevent soiling. We prefer a face shield for this purpose because surgical masks are also running low throughout the country.

A guide to proper extended use and reuse is provided by the Centers for Disease Control and Prevention.[6] Proper donning and doffing practices should be followed.[7] It is important to remove the face shield and N95 mask after contaminated gloves are removed without touching the front of the shield or mask, with careful hand washing after mask removal. The face shield should be cleaned with disinfectant wipes before storage. Ultraviolet-C light can be effective at disinfecting masks and should be considered. Each PPE should be stored in its own paper bag labeled with the provider's name; therefore, 1 bag may be for the N95 mask and another for the face shield.

If the use of the N95 mask with all high-risk procedures is not possible, COVID-19 testing to better risk stratify patients before all endoscopy cases may be considered as an alternative. Ultimately, testing all patients before high-risk procedures such as endoscopy is likely the best approach; however, this depends on significant expansion of testing capabilities. Hopefully, the development of point-of-care testing with rapid results and increasing testing availability will make this a reality soon.

Additionally, we cannot have 2 levels of PPE used in our endoscopy cases, where anesthesiologists and nurse anesthetists wear N95 masks because joint society anesthesia guidelines state they must wear full PPE for all aerosol-generating procedures but the endoscopy team uses only surgical masks.[8] It may also be prudent to intubate all

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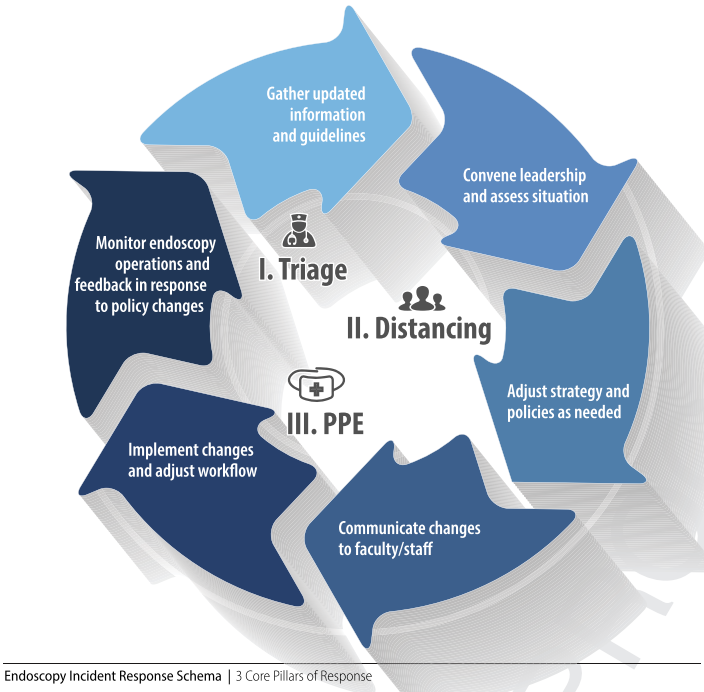

Figure 2. ■■■

upper endoscopy procedures to decrease ongoing aerosolization during these procedures. We have stopped using all topical anesthetics to numb the throat as well.

Other important principles include strategic assignment of available personnel. It is important to minimize concomitant exposure of providers with similar or unique skill sets. Nonphysician practitioners and fellows who cannot participate in cases may help screening and triaging patients or perform virtual visits. We have stopped using fellows to perform procedures with certain exceptions to preserve PPE, minimize exposure, and reduce procedure times. We have been mindful about minimizing the number of providers in the endoscopy unit at 1 time and are trying to keep the same endoscopist in the unit all day rather than rotating providers. In addition, providers who are at higher risk because of their age, comorbidities, or immune status have been reassigned to other tasks, including virtual visits and triaging. Because of the few procedure rooms in current use, our extra nursing staff have been deployed to other areas of great need in the hospital.

Adopting an incident response mentality is critical to endoscopy leadership during a time when providers and staff are asked to embrace significantly altered workflows, and both the situation and guidelines are constantly shifting (Fig. 2). The foundation of this process is having good information on which the best decisions can be made. This information flow includes having reliable top-down information from Centers for Disease Control and Prevention, state and local departments of public health, medical societies, and departmental and hospital leadership as well as accurate assessment of relevant metrics specific to the endoscopy unit. For the latter, a combination of automated means through software and manual workflows can be used to gather important data. Initial considerations may include number of symptomatic staff, number of available reserve staff, number of active procedure rooms, local epidemiology and anticipated case burden (inpatient and outpatient), stocks of PPE, and the case composition of scheduled patients, among others. Additionally, what is considered pertinent data may change over time as the pandemic evolves. It is vital to keep monitoring these metrics throughout the COVID-19 period so that any signals of potential problems can be detected early and more proactive strategies deployed. We recommend regular meetings of endoscopy leadership to review relevant information and plan in an anticipatory fashion. Last, having an upstream communication channel to hospital leadership is important, especially related to information that can affect the safety of patients and staff.

We are living through an unprecedented time and are all trying our best to protect our patients and ourselves under suboptimal conditions of limited PPE, limited testing, and limited data. However, we must continue to do the best we can, thinking creatively and strategically, planning carefully, and proceeding judiciously. It is our

collective responsibility to flatten the curve as soon as possible, which can only occur through our individual actions.

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