Global Health & Medicine. 2020; 2(2):135-137.
DOI: 10.35772/ghm.2020.01021

COVID-19 outbreak and surgeons' response at a Cancer Center in the United States

Yujiro Nishioka, Ching-Wei D. Tzeng, Hop S. Tran Cao, Jean-Nicolas Vauthey*

Department of Surgical Oncology, The University of Texas MD Anderson Cancer Center, Houston, TX, USA.

Abstract: In the pandemic of severe acute respiratory syndrome due to coronavirus-2 (SARS-CoV-2), United States (U.S.) also experienced the spread of coronavirus disease 2019 (COVID-19). Here, we report the current status of Houston, Texas and the response to COVID-19 at MD Anderson Cancer Center (MDACC) and in the Department of Surgical Oncology. MDACC has taken the institutional measures in order to prevent its employees and patients from COVID-19. Furthermore, surgeons have also responded aggressively in the outpatient setting, operating room and inpatient care. The predicted peak in Texas is on April 29 and our mitigation measures appear to be effective at the time of writing, however there still remain a lot of unknowns about SARS-CoV-2 and the performance of cancer operations remains an ongoing and delicate issue. In order to minimize the risks to patients, our healthcare system, and our community, MDACC has navigated the countering pressures through honest and open communication with patients, judicious use of alternative treatment strategies, and thoughtful selection of surgical cases.

***Keywords*:** COVID-19, SARS-CoV-2, cancer operations, patients, healthcare system

Since the first report of severe acute respiratory syndrome due to coronavirus-2 (SARS-CoV-2) in Wuhan, China was published at the end of 2019 (*1*), this coronavirus disease 2019 (COVID-19) has rapidly spread worldwide. As of the end of March 2020, the number of patients with confirmed COVID-19 reached 900,000 in the world and was declared a pandemic by the World Health Organization (*2*). The first United States (U.S.) case of COVID-19 was documented on 21 January 2020, in a Washington state patient who had recently traveled from Wuhan. In spite of initial travel bans from China and then from Europe, the number of patients with COVID-19 has been increasing exponentially worldwide and over 10,000 patients had died so far (*2*).

Here, we report the current status of Houston, Texas and the response to COVID-19 at MD Anderson Cancer Center (MDACC) and in the Department of Surgical Oncology. Texas reported its first case of COVID-19 on March 4 and the governor declared a statewide emergency on March 13 (*3*). On that exact date of the first patient reported, MDACC declared a domestic and international travel ban for all its employees and limited in-person meetings to 15 people. All internal meetings (*e.g.* tumor boards and faculty meetings) were transitioned to virtual meetings using WebEx (Cisco, San Jose, CA). After the identification of 2 cases at the Texas Medical Center on March 5, eligible employees were asked to work at home, while all patients, visitors, and employees underwent limited screening consisting of brief questionnaire items regarding symptoms and exposure, including recent travel, and a temperature check at hospital entrances. The institution moved to a one-visitor-per-patient policy and finally to a no-visitor policy on March 24, one week before the Texas Governor issued a statewide stay-at-home order. All research laboratories were closed with only critical cell lines and animals kept alive with a skeleton crew. All clinical trials not amenable to remote consenting and remote follow-up were halted. Furthermore, MDACC also developed an algorithm to stratify patients with suspected or confirmed COVID-19 by risk factors and symptoms, which rationed the limited quantity of personal protective equipment (PPE) available, especially N95 masks. This algorithm was required to limit the burn rate of the N95 masks and the regular "ear-loop" masks until stocks were re-supplied from the limited supply chain in the U.S. At the time of manuscript drafting, the operating rooms had instituted a limited trial of using ultraviolet radiation sterilization of N95 masks for up to 5 uses per individual.

Surgeons have also responded aggressively to this situation. In the outpatient setting, clinic appointments were rescheduled to a future date for all routine post-treatment surveillance visits for patients at low risk for disease recurrence. Postoperative visits were converted

to telephone (and soon video conferencing) encounters. New patients or consults were considered on a case-by-case basis to determine the urgency and timing of their visits. With regards to operating room utilization, following directions from both the governor's office and guidance from surgical societies, all elective cases were cancelled. Cancer cases, on the other hand, were carefully triaged in accordance to guidelines released by the Society of Surgical Oncology (SSO) for disease-site specific management (*4*). Nonoperative therapeutic approaches such as initiating or extending neoadjuvant chemotherapy and choosing percutaneous ablation over resection were suggested by the SSO to postpone curative intent resection in hepato-pancreato-biliary malignancies. Patients with high likelihood for blood transfusion needs or postoperative intensive care unit stay were also rescheduled for resource preservation in anticipation of the upcoming surge of COVID-19 patients in the Houston metropolitan area. Starting April 7, the remaining patients undergoing elective surgery will be tested for COVID-19 the day before surgery with same-day results. In the operating room, due to limited supply of critical PPE, N95 masks are reserved for cases where the airway is opened and remains open; cases involving the oral, nasal, or pharyngeal mucosa; esophagectomies; thoracic cases requiring double lumen intubation where one lumen remains open to air; and emergency cases where SARS-CoV-2 testing cannot be performed in a timely manner. Based on the Society of Gastrointestinal & Endoscopic Surgeons (SAGES) guidelines (*5*), MDACC mandated that all laparoscopic and robotic procedures use a filtration system such as AirSeal (ConMed, Utica, NY) devices to reduce the risk of viral particle transmission when using pneumoperitoneum. Inpatient care was streamlined by combining services to eliminate traditional surgical teaching rounds with small groups and remote technology was used for patient interactions (video calls) and orders.

At the time of writing, it appears that state- and local-level mitigation efforts may be curbing the increase of both the number of new COVID-19 cases (Figure 1A) and deaths from COVID-19 (Figure 1B) ahead of the predicted peak in Texas on April 29. Our mitigation measures appear to be effective. Our critical care and floor bed occupancy remain 30% and 60% full, respectively, with total operative volume less than 30% of normal (Figure 2). Given the unclear and unstable situation and considering the highly contagious nature of the disease and the unknown number of asymptomatic carriers of SARS-CoV-2 (*6*), there remain a lot of unknowns, including when the peak in incidence will occur in Texas and in Houston, the 4th largest city in the U.S. In areas outside of the wave of hot spots (*e.g.* New York City), much of the country remains in vigilant limbo. Each U.S. hospital is now required to conserve its resources and accumulate PPE reserves while awaiting the surge in their local area. Surgical hospitals have a societal responsibility to continue to balance the needs of urgent surgical care for the general population against the risk of being a vector of transmission amongst patients and employees until a future date when a therapy is established. The performance of cancer operations remains a fluid and delicate issue. On the one hand, delaying cancer cases has the potential to negatively impact oncologic

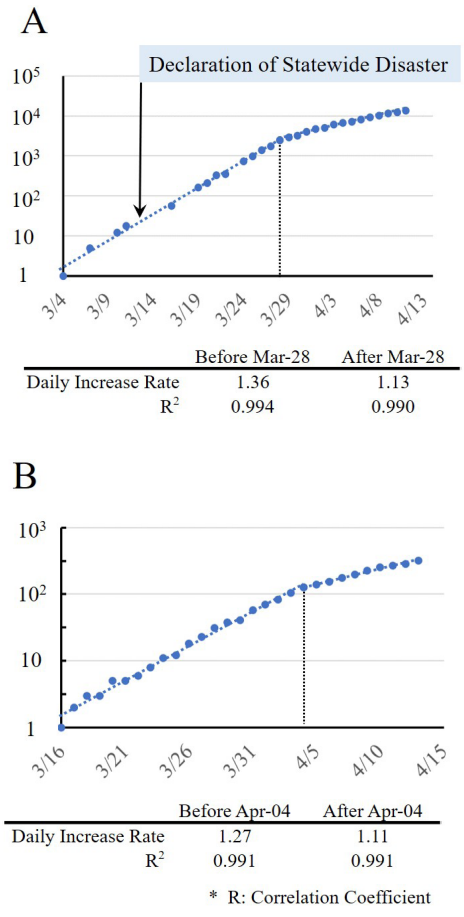

Figure 1. Trend of the Number of (A) New COVID-19 Cases and (B) Deaths from COVID-19 (from Texas Department of State Health Services, *https://txdshs.maps.arcgis.com/*). The dates of cutoffs were decided on the highest correlation coefficient of fitting line.

Figure 2. View of MD Anderson Cancer Center Fighting with COVID-19.

outcomes as well as patient's anxiety and quality of life. On the other, because the perioperative management of major cancer operations can be so resource intensive, these cases can place a significant strain on personnel, facility, and supplies alike, and divert them away from potential COVID-19 patients. MDACC has navigated these countering pressures through honest and open communication with our patients, judicious use of alternative treatment strategies, and thoughtful case selection to minimize the risks to patients, our healthcare system, and our community.

References

1. Bogoch, II, Watts A, Thomas-Bachli A, Huber C, Kraemer MUG, Khan K. Pneumonia of unknown aetiology in Wuhan, China: potential for international spread via commercial air travel. J Travel Med. 2020; 27. pii: taaa008. doi: 10.1093/jtm/taaa008.
2. Coronavirus disease (COVID-2019) situation reports. World Health Organization *https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports/* (accessed April 12, 2020).
3. Office of the Texas Governor. *https://gov.texas.gov/news/post/governor-abbott-declares-state-of-disaster-in-texas-due-to-covid-19* (accessed April 12, 2020).
4. Disease Specific Management Resources. Society of Surgical Oncology. *https://www.surgonc.org/resources/covid-19-resources/?_zs=mPljB1&_zl=DPqe5* (accessed April 12, 2020).
5. Recommendations Regarding Surgical Response to COVID-19 Crisis. Society of American Gastrointestinal and Endoscopic Surgeons, *https://www.sages.org/recommendations-surgical-response-covid-19/* (accessed April 12, 2020).
6. van Doremalen N, Bushmaker T, Morris DH, Holbrook MG, Gamble A, Williamson BN, Tamin A, Harcourt JL, Thornburg NJ, Gerber SI, Lloyd-Smith JO, de Wit E, Munster VJ. Aerosol and surface stability of SARS-CoV-2 as compared with SARS-CoV-1. N Engl J Med, 2020; doi: 10.1056/NEJMc2004973.

Received April 9, 2020; Revised April 15, 2020; Accepted April 16, 2020.

Released online in J-STAGE as advance publication April 22, 2020.

**Address correspondence to*:
Jean-Nicolas Vauthey, Department of Surgical Oncology, The University of Texas MD Anderson Cancer Center, 1515 Holcombe Boulevard, Unit 1484, Houston, TX 77030, USA.
E-mail: jvauthey@mdanderson.org