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Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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SPECIAL ARTICLE

The American College of Surgeons Responds to COVID-19

Valerie W Rusch, MD, FACS, Steven D Wexner, MD, FACS, in collaboration with the American College of Surgeons COVID-19 Communications Committee, Board of Regents, and Officers

The COVID-19 pandemic abruptly, and perhaps irrevocably, changed the way we live, conduct our business affairs, and practice medicine and surgery. In mid-March 2020, as COVID-19 infections escalated exponentially across many areas of the US, the Centers for Disease Control (CDC), the Surgeon General, and the American College of Surgeons (ACS) recommended that hospitals and surgeons postpone non-urgent operations in order to provide care to COVID-19 patients.[1-3] It quickly became obvious that the COVID-19 pandemic presented unprecedented medical challenges. ACS leadership, including the Board of Regents and Officers (Appendix), worked with the ACS Executive Director (Dr David Hoyt) and staff to rapidly organize a response to the COVID-19 crisis. The aim of this effort was to support ACS members and Fellows, as well as the broader medical community, in continuing to provide optimal patient care. Because other similar public health crises could arise in the future, we report the measures taken by the ACS to respond to the COVID-19 pandemic. (J Am Coll Surg 2020; 231:490−496. © 2020 Published by Elsevier Inc. on behalf of the American College of Surgeons.)

ACS COVID-19 BULLETIN and website

As the COVID-19 pandemic spread rapidly from Asia to Europe, and on to North America, a lack of national preparedness became obvious in many countries, including the US. One of the most urgent needs was the rapid dissemination of accurate information regarding the care of COVID-19 patients. Physicians and surgeons were initially forced to confront an overwhelming medical crisis via informal electronic exchange of anecdotal experience. Therefore, the ACS leadership convened a COVID-19 Communications Committee (CCC) to provide timely, relevant, and comprehensive information through an *ACS COVID-19 Bulletin,* issued twice weekly, and a dedicated ACS COVID-19 section of the ACS website (facs.org). This 24-member group included Officers and Regents as well as the Chairs of the Board of Governors (BoG), Advisory Council for General Surgery, Young Fellows Association (YFA), and Resident and Associate Society (RAS), and 6 ACS Integrated Communications staff (Appendix). From mid-March to mid-May 2020, the CCC met twice daily by videoconference to create and select material for the *Bulletin.* Presented in a condensed, easily readable format, the *Bulletin* included sections on the clinical management of COVID-19 patients, emerging scientific findings, clinical trial results, educational resources, relevant federal and state legislative issues, and measures for physician well-being, along with video interviews of thought leaders around the world recounting lessons learned from managing COVID-19 (entitled Surgeon's Voice/From the Frontlines), and short video messages from ACS leaders. At the time of writing this manuscript, these videos were accessed by almost 100,000 viewers each week. Evidence-based information on personal protective equipment (PPE) and clinical guidelines were a particularly important part of the *Bulletin.* Emphasis was placed on reporting therapeutic interventions that were either proven or disproven through rapidly emerging scientific evaluation during the pandemic. Hyperlinks were provided to access more detailed source material for each section. The ACS Integrated Communications staff tracked the open and read rates for all sections and topics of each *Bulletin* so that content could be adjusted by the CCC in subsequent

Members of the American College of Surgeons COVID-19 Communications Committee, Board of Regents, and Officers are listed in the Appendix.

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Abbreviations and Acronyms

ACS = American College of Surgeons
BoG = Board of Governors
CCC = COVID-19 Communications Committee
CMS = Centers for Medicare and Medicaid Services
CoC = Commission on Cancer
COT = Committee on Trauma
PPC = Practice Protection Committee
PPE = personal protective equipment
RAS = Resident and Associate Society
YFA = Young Fellows Association

editions. Copies of the *ACS COVID-19 Bulletins* remain available on the ACS website (https://www.facs.org/covid-19/newsletter).

GUIDELINES FOR CURTAILMENT AND RESUMPTION OF ELECTIVE SURGICAL PROCEDURES

One of the first and most important ACS initiatives was the creation of guidelines for the selection of patients needing urgent operations (including some cancer procedures) during the immediate, temporary suspension of non-urgent surgery. The ACS worked with surgical leaders across disciplines and throughout the country to create appropriate guidelines that were quickly referenced by the Centers for Medicare and Medicaid Services (CMS), and many surgical societies and healthcare systems.[1-4] As the COVID-19 pandemic started to wane in May 2020, a similar process was undertaken to create guidelines for the safe resumption of elective surgery, again accompanied by close communication with CMS.[5-8] In addition to inclusion in the *Bulletin* and posting on the ACS website, dissemination of these guidelines was amplified through webinars, press releases, and interviews.

SPECIFIC RESPONSES TO THE COVID-19 PANDEMIC BY THE DIVISIONS OF THE ACS

Starting in mid-March 2020, each Division of the ACS rapidly undertook specific measures to respond to the COVID-19 pandemic. Although space precludes discussion of all of these activities, we highlight some of them here.

Division of Advocacy and Health Policy

The indefinite and immediate national curtailment of non-urgent surgery had a dramatic financial impact on many practices, which was most acutely felt by surgeons in private practice. At the suggestion of one of the Regents (Dr James Elsey), a Practice Protection Committee (PPC, Appendix) was established to collaborate closely with the staff of the ACS Washington DC office, to advocate for support of surgical practices and provide fellows with accurate and up-to-date information. The PPC meets weekly by video conference to identify critical advocacy issues and information that need to be disseminated to ACS Fellows, including insurance coverage for telehealth services, financial assistance programs for surgical practices, questions to consider in consulting tax advisors, and accommodations for student loan forgiveness. The PPC was instrumental in selecting topics to be included in the *Bulletin* and also led a webinar (attended by 250 surgeons) in mid-April to provide education to surgeons on financial issues.

As they do every day, staff from the ACS Washington DC office played an essential role in advocating for the support of surgical patients and practices through regular communication with CMS and nearly daily communication with the White House COVID-19 Task Force. With the approval of ACS leadership, they submitted on behalf of the Surgical Coalition (a large group of surgical societies) several letters to Congress regarding federal financial assistance programs and legislative initiatives that were key during the COVID-19 crisis.

Division of Education

The COVID-19 pandemic severely disrupted the clinical training of medical students, surgical residents, and fellows. On March 17, 2020, the Association of American Medical Colleges recommended that all clinical rotations for medical students be suspended.[9] Many surgical trainees were redeployed to the care of COVID-19 patients. The critical care and procedural experience inherent in surgical training made surgical residents and fellows particularly valuable in the care of extremely ill COVID-19 patients, but also significantly detracted from their elective operating room experience and imposed personal stress related to physical fatigue, lack of PPE, and risk of infection. The loss of approximately 3 months of operative experience especially affected many senior trainees completing their residency or fellowship. Although many departments of surgery developed novel ways to mitigate the effects of the COVID-19 pandemic on their trainees and on surgical education, and some surgical Boards temporarily relaxed certification case requirements, the longer-term impact is still to be defined.[10-14] Under the aegis of the ACS Division of Education, the Academy of Master Surgeon Educators is working to document the impact of the pandemic on surgical trainees and their educational experience, and to develop alternative teaching and assessment methods. As

of this report, the ACS leadership and members of the Academy are developing an entirely new model for high quality, standardized, on-line, video-based learning.

At the end of May 2020, the ACS hosted a virtual Summit on Surgical Training that brought together all of the Surgical Boards, Program Director Associations, and specialty surgical societies to discuss the ways in which COVID-19 has affected surgical training and the processes for board certification in the United States. During that meeting, it became clear that new secure electronic approaches to in-training examinations and qualifying (written) Board examinations were needed to allow the safety of social distancing; and that entirely novel virtual methods of administering certifying (oral) examinations were needed.

Division of Member Services, the BoG, YFA, RAS, and the ACS Communities

In collaboration with Dr Patricia Turner, head of the Division of Member Services, the Board of Governors (BoG) facilitated bidirectional communication between Fellows and ACS leadership through participation in the CCC, a daily blog and frequent emails. Governors reached out to their constituents through their ACS chapter and society representatives to encourage best practices advocated by the ACS. Domestic and international Governors recorded their experiences managing COVID-19, or as patients for the "Surgeon's Voice" section of the *Bulletin.* In addition to Dr Turner, the ACS President (Dr Valerie Rusch) and several Regents, Governors provided videos welcoming senior medical students across the country to their surgical residency as part of their virtual graduations. The BoG Survey Workgroup developed questions related to the COVID-19 pandemic, the impact of telemedicine, the suspension of non-urgent surgery, and the resulting financial impact for inclusion in the 2020 annual Governors' survey. The BoG Quality and Advocacy Pillars developed several session proposals for potential inclusion in the 2020 Clinical Congress. The BoG Surgical Training Workgroup is collaborating with the Academy of Master Surgeon Educators to explore the effects of the pandemic on medical student and resident education and ways to mitigate those effects.

Along very similar lines, both YFA and RAS communicated very actively with their respective constituencies, largely through social media. The YFA reached out to surgeons on all continents through international discussion platforms and webinars to exchange information about clinical care, treatment challenges, strategies to decrease viral transmission, and ethical considerations. RAS held discussion forums to exchange information about resident protection from COVID-19 and educational opportunities.

The ACS Communities, moderated by Dr Tyler Hughes, ACS Secretary, have been a vibrant electronic networking platform for more than 5 years. All the communities were used to disseminate highlights from the *Bulletin* and to provide a forum for discussion of COVID-19 related issues. Questions or concerns raised in the communities, particularly reports from high incidence COVID-19 areas, became the nidus for further discussion in the *Bulletin.* Relevant issues were also forwarded to the Division of Advocacy and Health Policy. This allowed the ACS to "lead" problems, rather than simply react to them, by interactively transmitting the ideas and concerns of individual fellows directly to the ACS leadership. There was a large and sustained increase in ACS communities' activity. In March 2020, a total of 117,154 website pages were viewed—the largest 1-month total since the site was launched in 2014.

In addition to her other responsibilities, Dr Turner oversaw the section in the *Bulletin* on Surgeon Well-Being, which was very important given the stress on physicians and their families brought about by caring for COVID-19 patients.[15-17] This part of the *Bulletin* provided carefully curated information related to mental health and maintenance of emotional well-being, support for families of healthcare workers, intimate-partner violence, and hotline resources.

Division of Research and Optimal Patient Care

Cancer Programs

The ACS Cancer Programs, including the Commission on Cancer (CoC), played a pivotal role in responding to the COVID-19 pandemic. Cancer patients faced the dual risk of having their cancer diagnosis and treatment delayed and, as a highly vulnerable population, of contracting COVID-19. Through its multidisciplinary membership, the CoC was able to rapidly develop disease-specific guidelines for triaging cancer patients for treatment and to define which elements in cancer staging and care could be modified to reduce the risks of COVID-19 infection.[18] As noted above, these guidelines were posted on the ACS website and immediately disseminated through multiple media channels and webinars, each of which were attended by 250 to 1,000 interactive participants. The CoC emphasized that the immediate needs of cancer patients during the pandemic should take top priority, and that most cancer operations could not be considered "elective" or non-urgent. The CoC, which is responsible for accrediting approximately 1,500 cancer centers across the US, specified that centers should not be held accountable for practice deviations

implemented to protect patients from COVID-19. Similarly, as the incidence of COVID-19 started to wane in late April 2020, the CoC drafted guidelines for the progressive resumption of more elective cancer care.[19]

Trauma Programs and the Committee on Trauma (COT)

As the COVID-19 pandemic developed across the US, and most healthcare institutions banned professional travel, the COT made the difficult decision to convert the annual spring COT meeting and the ATLS (Advanced Trauma Life Support) Global Symposium to virtual meetings. The COT made special accommodations to support trauma centers, including a 1-year extension of all trauma center verifications and a delay in the deadlines for data submission to the Trauma Quality Improvement Program (TQIP). The COT also provided access to the ATLS and ASSET (Advanced Surgical Skills for Exposure in Trauma) videos and educational materials for just-in-time trauma training for surgeons who were deployed to cover trauma calls. The second focus of COT was to provide resources to support trauma systems. With help from members of the COT Disaster Committee and Trauma Systems Committee, a guidance document was published to support trauma medical directors in maintaining trauma center access and care during the pandemic.[20] To ensure that governmental and healthcare system leaders understood the importance of preserving the trauma system and the need for regional coordination to support the distribution of patients and resources among hospitals, the COT published a statement on the importance of these issues,[20] which was then widely distributed through state and federal advocacy teams.

Modeled on experience in South Texas and Washington State, the COT developed a guidance document for setting up a regional medical operations center and worked closely with the FEMA (Federal Emergency Management Agency) Healthcare Resilience Task Force to promote this approach and identify potential sources for funding. The infrastructure described in this document[21,22] not only supported the ability to manage the surge of COVID-19 pandemic patients, but also the healthcare system's response to future outbreaks and mass casualty events. In addition, the COT worked with trauma registry vendors and TQIP participants to collect confirmed and suspected COVID-19 cases via ICD-10 diagnosis codes in order to understand the impact of pandemic on trauma care and account for those challenges when conducting risk-adjusted benchmarking.

The regional structure of the COT, in every US state and Canadian province and many countries worldwide, provides an opportunity for lessons learned to be shared around the globe. For example, a webinar for the trauma health system in Saudi Arabia presented by Dr Eileen Bulger, Chair of the COT, on the ACS guidelines garnered 3,900 attendees, and the New York City COT shared a summary of their lessons learned through the ACS website.

ACS Data Registries

The ACS Division of Research and Optimal Patient Care houses all the Quality Improvement programs in the ACS, which include all the verification/accreditation programs as well as all the clinical data registries (eg NSQIP and TQIP). Given the several decades of experience in creating and maintaining clinical data registries, the ACS leaders decided to address the paucity of COVID-related data by collecting data, with the overarching goal to support a better understanding of COVID-19.

Several clinical data developments at the ACS during the pandemic were achieved, both in the current ACS registries, and also in the development of a new registry, aptly named the ACS COVID-19 Registry. The following is a brief description of the achievements, which were described and messaged through the ACS Newsletter. Importantly, there was a substantial response by hospitals who subsequently registered to participate in the registries.

The ACS COVID-19 Registry

The purpose of this newly developed registry was to collect key data on all COVID-19 patients — both nonoperative and operative patients. It was developed with the input of several expert clinicians at several sites in different "hotspots," who were in the midst of treating COVID-19 patients. In addition to patient demographics, variables were designed to allow ease of data collection, and were based on relevant severity predictors, admission information, hospitalization information, therapies used, discharge information, and other factors. All patients ages 18 and older were eligible. Data were collected from hospital admission through discharge. Participation in the registry is free of charge. All hospitals worldwide were invited to participate. At the time of this writing, the registry was released, and hospitals have joined and are collecting data. We continue to communicate with healthcare providers and facilities through the Newsletter to provide registry updates and to invite more to join in this important initiative.

Current ACS Data Registries

The ACS houses several registries (NSQIP, TQIP, MBSAQIP, Peds NSQIP, NCDB). By way of an

example, the National Surgical Quality Improvement Program (NSQIP) is a risk-adjusted outcomes clinical data registry. It provides among the most accurate risk-adjusted surgical outcomes. The inpatient and post-discharge surgical outcomes of COVID patients across settings remains largely unknown. Therefore, it was decided to add a COVID variable into the program, so a risk-adjusted (including COVID) outcome may be evaluated and benchmarked. This will be important given the single institution publications that have reported high mortality and complication rates. In addition to NSQIP, other ACS registries are also adding COVID-related variables. Given the rigor and high-level accuracy of data collection in the ACS registries, we hope important data will be collected that will help in our diagnoses, treatments, and decision-making for these patients. As with the COVID-19 Registry, communicating the COVID relevance of the current ACS registries through the Newsletter was important for the readership to know and understand, both in terms of participation and also in terms of understanding some of the important things the ACS and its membership are performing to combat this pandemic.

Military civilian partnership

The ACS has a long history of partnering with the US military. In 2014, the ACS and US Department of Defense (DOD) created a formal relationship designed to bring lessons learned from military conflicts to the civilian sector and to assist military personnel in maintaining surgical readiness between times of conflict. An excellent example of this collaboration was the DOD's response in deploying 1,000-bed hospital ships to New York City and Los Angeles, and in building mobile field hospitals in multiple cities including New York, Chicago, New Orleans, and Hartford. In addition, military medical teams provided care in civilian hospitals.[23]

ACS administrative initiatives

Like other large organizations across the US during the COVID-19 pandemic, the ACS faced the abrupt need to have all staff switch to working from home. With the assistance of the ACS IT (Information Technology) group (led by Brian Harper), a seamless transition to working off-site was accomplished within a week for roughly 400 staff. Daily Incident Command videoconferences that included the Executive Director, senior ACS staff, and the leadership of the Board of Regents and Officers, ensured the smooth continuation of all ACS activities. The Division of Integrated Communications, under a recently appointed new director (Cori Ashford), worked ceaselessly, not only to create all of the COVID-19 *Bulletins,* but also to support the many other communication needs of the ACS during this crisis. Multiple large ACS meetings scheduled for the spring and summer of 2020 were converted to virtual meetings with the involvement of all ACS Divisions. Careful negotiations by the ACS Conventions and Meetings staff were needed to mitigate potential financial losses related to meeting cancellations. The Chief Financial Officer (Gay Vincent) and the Executive Director worked closely with the Treasurer, Regents, and the outside financial advisory group for the ACS to weather the financial instability brought about by the COVID-19 pandemic, to preserve the ACS endowment funds, and to adjust the ACS budget proactively.

CONCLUSIONS

Through an intensive and cohesive group effort by ACS staff, leadership, and Fellows, the College has successfully managed the unprecedented challenges of the COVID-19 pandemic and has supported its members in continuing to provide high quality patient care. The response by the ACS was multifaceted, but was based first and foremost on providing surgeons around the world with a single source of easily accessible and highly reliable information. In the US, the ACS also served as a steadfast advocate for surgeons' practice needs at the state and federal level and for measures aimed at supporting optimal patient care. This approach provides a template for managing future such crises should they arise.

All crises of this scope offer opportunities for learning and behavioral change. In the remarkably short span of 6 months, the world changed radically. The COVID-19 pandemic has irrevocably opened opportunities for working remotely via electronic platforms including telemedicine, a greater ability to work from home, to hold even large meetings electronically, the expansion of virtual methods for training surgeons, and virtual site visits for programs needing ACS accreditation/verification. In the midst of stress, loss, and grief, there are also many future opportunities that the ACS is now striving to bring to fruition.

Appendix

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Members of the ACS Practice Protection Committee: Mark Aeder, MD, Patrick Bailey, MD, Julie Conyers, MD, James Elsey, MD, Tyler Hughes, MD, Charles Mabry, MD.

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Acquisition of data: Rusch, Wexner, and all authors listed in the Appendix.

Analysis and interpretation of data: Rusch, Wexner, Fried, Michelassi, Hancock

Drafting of manuscript: Rusch, Wexner

Critical revision: Rusch, Wexner, Fried, Michelassi, Hancock

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