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Navigating the COVID-19 Response at a Cancer Center: Insights from Seattle

Introduction

As one of the first cancer centers to address SARS-CoV-2 in our community, the Seattle Cancer Care Alliance and Fred Hutchinson Cancer Research Center have created this document to share our approaches, challenges and lessons learned with the hope that colleagues can learn from our efforts. Here, we have focused on what we believe other centers should consider as they prepare for the virus to impact their own communities.

This pandemic is an unusual situation in that it is likely to impact numerous systems and have a long duration. Included below are factors we have considered, issues that have arisen, and our current strategies for managing them. We have also forecasted challenges that we anticipate encountering as the situation evolves, and describe approaches we have considered to address them.

This is a living, breathing document, and will be updated as the situation changes. We have also made publicly available our protocols and screening tools as a resource which can be found here: https://www.seattlecca.org/covid-19-screening-tools

Situational Awareness

At baseline, we organize local disaster simulations and drills on a yearly basis. Such drills allowed some foundational knowledge of incident command structures and helped our local teams to better understand challenges inherent to our system; our last two major event reviews were viral outbreaks. It is important to note that such preparation, while important, could not simulate an outbreak on the scale expected with a pandemic virus such as SARS-CoV-2. However, modeling such approaches was valuable as a preamble, and allowed us to leverage a previously established leadership structure within our system.

Our Infectious Diseases team had been following closely, along with colleagues from around the world, the emerging trends of a new outbreak in China beginning in early January. To promote situational awareness, we began early discussions about the outbreak with Infection Prevention team members, clinical staff, and leadership. These early discussions provided a foundation for clinical staff and administration to understand and follow the early developments in China, South Korea, and Italy. We connected with local partners including colleagues at UW Medicine to align and share preparedness efforts. Communication with local and state public health organizations is also important. Similarly, review with local and regional experts in the field helped us to develop a better understanding of virus biology, models of possible worldwide dissemination, and currently available surveillance in the community. Furthermore, plans and discussions with local laboratory and research teams allowed early development of clinical assays.

Prepare and Organize: Setting up an Incident Command Structure

In anticipation of SARS-CoV-2 transmission in our region, we began conversations about an incident response set up when and if it became necessary. We identified individuals with focused expertise in areas such as logistics, environmental services, finance, and clinical research. These individuals were tasked with developing a full needs assessment and early strategic plans for their areas of focus. Team members were connected with clinical and epidemiologic experts to discuss timing and expected and worse-case scenarios in the community. The Seattle Cancer Care Alliance, our clinical institution, and the Fred Hutchinson Cancer Research Center set up two separate incident commands (IC) to deal specifically with clinical and research related efforts, but in doing so assured broad lines of communication and members who participated in both IC structures. For the purposes of this discussion, we will focus on the clinical IC team.

Despite having no cases within our cancer center, when community transmission was first detected in Washington State by colleagues at the Seattle Flu Study, we activated our full center-wide incident response and immediately set up our IC structures to centralize information for staff, patients, and the community; such an approach consolidates work done by multiple groups and facilitates effective communication. For our center, we have used the Hospital Emergency Incident Response System (HEICS) approach. Roles and responsibilities of our IC chiefs and officers follow:

Incident Commander

Oversees Incident Response Team — must operate tactically and strategically about immediate as well as long-range challenges and priorities. This team member does not need to be a physician or a nurse, but should have leadership experience within the system and must be given authority to make critical decisions. Importantly, our Incident Commander rotates every two weeks to avoid burnout.

Public Information Officer

This individual works with their team to gather and share external information with the IC team: media reports and changing policies that may impact how we move forward (e.g., school closures, 1135 waiver). This team also supports team members' media interview requests, reviews social media postings, and updates the team on the communications activities of other local area healthcare organizations.

Liaison Officer

Keeps people informed on incident response in the region and throughout the nation; for us, this has been particularly important in coordinating with partner institutions University of Washington (UW), Fred Hutch, and Seattle Children's Hospital. The Liaison Officer is part of all updates and briefings from UW and Fred Hutch (jointly with Incident Commander), which facilitates coordinated, inter-institute planning. Examples include: What are the implications for our patients when there is a surge in cases, and how can we support that? How do we ensure that staff receive the same messaging from partner institutions? What are resource needs in the community?

Safety Officer

Identifies upcoming risks and oversees mitigation to ensure continued safety of patients, staff, and facility. Plans and executes training, and reviews changing guidelines to be incorporated into our response (jointly with the Medical-Technical Specialist). These efforts include ensuring supplies are protected, access points are locked, helping to assure clinical entry points into the clinic are evaluated, and monitoring the facilities during off hours. For this particular incident, this role is filled by our Infection Prevention Manager.

Medical-Technical Specialist

This role provides clinical expertise and guidance, and serves as a technical expert. They liaise with local community and public health experts, as well as infection prevention leaders at our partner institutions, and give frequent updates regarding the evolving local, national, and global situation. They provide direction to guide overall center-based strategic planning efforts and development of local center-based protocols and guidelines including patient screening, testing, and employee health. In our case, this role is filled by Infectious Disease Physicians and our Director and Associate Directors of Infection Control and Prevention.

Communication Chief

Determines cadence, methodology and content of communications to providers and staff (daily email briefing, virtual town halls) as well as patients (social media, signage in clinic, scripting for pre-appointment phone calls).

Operations Section Chief

Responsible for any net new operational activity (e.g., staff testing clinic, patient testing clinic) and any change to existing operation.

Logistics Chief

Responsible for monitoring and tracking supplies and shortages: 1) Supply chain updates (e.g., personal protective equipment [PPE], hand-sanitizer, swabs for laboratory testing), 2) Procurement of new equipment and supplies, and 3) Labor pool.

Planning Section Chief

Responsible for financial and human resources: tracking redeployment of staff to SARS-CoV-2 related work, modeling impact of rescheduling appointments, tracking for reimbursement from government in wake of declaration of national emergency. Also responsible for determining policies regarding sick leave and returning to work. Tracks all activities, objectives, and issues coming into IC (items, owners, status).

Medical Section Chief

In our structure, we have three for different cancer patient populations: Outpatient, Inpatient, and Bone Marrow Transplant/Immunotherapy. Manages any provider-related issues, decisions, and communication, as well as anything unique to their patient population, such as prioritization of patient care.

Screening and Testing: Protecting our Patients and Staff

Our first priority involved protecting our patients and staff. At baseline, as with most major cancer centers, we have a respiratory virus prevention plan; we built upon our existing plan to establish point-of-entry screening to facilitate early identification and masking of symptomatic patients. We developed a communications plan to coordinate our response with partner institutions, and to provide clear and timely information to staff and patients. We assessed and planned for challenges in staffing, considered changes as to how and where we can provide care that would best protect our patients and staff, and discussed how best to manage clinical research. These discussions also included challenging issues related to patient housing, high-risk procedures, inpatient transfers, caregivers and PPE limitations. These efforts are summarized by area below:

Patients

- Screening and Testing: Early triage of cancer patients with respiratory symptoms and masking of symptomatic patients is critical to reduce exposure of other patients and staff, and for identifying patients who may require higher-level care. As part of our existing respiratory virus prevention policy, our routine practice for over a

decade has been symptom screening at the front desk with patient check-in. However, with this novel virus, we moved this process to front-door symptom screening to assure early identification of patients with respiratory symptoms at point of entry (https://www.seattlecca.org/pdf/SLU-flow-diagram-point-of-entry and https://www.seattlecca.org/PDF/primary-screening-SLU). This process includes all clinic visitors including patients, caregivers, and staff entering our outpatient clinics and hospital. In our clinic, we divert symptomatic patients to a separate area, known as our triage center, for assessment and consideration of testing based on internally developed guidelines (https://www.seattlecca.org/PDF/covid19-pt-testing-guidelines).

- Patient education: We started a process of messaging patients to call ahead if they have respiratory symptoms, and established a COVID-19 Registered Nurse phone hotline as a resource for patients with mild symptoms (https://www.seattlecca.org/PDF/guidance-telephone-monitoring-pts and https://www.seattlecca.org/PDF/phone-screen-flow-diagram-rn). This minimizes exposures in our clinic and allows us to coordinate testing at an off-site drive-through clinic when appropriate. We are also utilizing social media and signage at the clinic to broaden awareness, and coordinating with team leads so their clinical coordinators can appropriately send patients to the triage line. We have also developed patient FAQ (https://www.seattlecca.org/PDF/covid-patient-handout) and provide updated messaging to our patients through our publicly facing website (https://www.seattlecca.org/blog/2020/01/what-we-know-so-far-about-covid-19-coronavirus).

- Visitors: We adopted a no-visitor policy for inpatient oncology units, with limited exceptions in the case of disruptive behavior, altered mental status or end-of-life circumstances, despite our recognition of the important contributions of family/friend support for our hospitalized cancer patients.

Caregivers

- Caregivers are critically important to the care of cancer patients, but can bring additional exposures to the healthcare system when dealing with respiratory pathogens. In an effort to limit the number of people entering the outpatient clinic, we established a "one caregiver" policy. Caregivers are screened on entrance and those with symptoms are asked to not enter the clinic. Those caregivers that are needed for patients who are frail or who need additional support are given dispensation to enter the facility, but are masked. Education around continuing to wear masks for the full duration of the visit is reinforced throughout the system. In addition, children under the age of 12 are not allowed into the clinical or outpatient units.

- We disseminated dedicated information for patients and caregivers to practice social distancing,how to avoid high-risk exposures, what to do if symptoms and how they can help their care teams protect their loved ones (https://www.seattlecca.org/blog/2020/01/what-we-know-so-far-about-covid-19-coronavirus). In addition, efforts in print and social media to bring awareness to these efforts were also included in communication efforts (https://www.fredhutch.org/en/news/center-news/2020/03/covid19---social-distancing--in-seattle-and-beyond.html) (https://www.fredhutch.org/en/news/center-news/2020/03/coronavirus-what-cancer-patients-need-to-know.html) (https://stupidcancer.org/covid-19-concerns/).

Staff

- Screening and testing: All staff are screened at point-of-entry. We now have enhanced signage at all entrances instructing staff not to enter if they have respiratory symptoms. We have made drive-through testing available for symptomatic staff, in order to efficiently identify SARS-CoV-2-infected staff and to quickly clear uninfected staff to return to work.

- Policies for Illness: It is important to implement sick policies that serve the staff (i.e., paid leave),allowing for staff to call in even with minor illnesses. We are reinforcing a strict "stay at home when ill" policy to limit exposures (https://www.seattlecca.org/PDF/scca-sick-policy), and have developed a comprehensive policy for defining conditions for returning to work (https://www.seattlecca.org/PDF/covid-return-to-work).

- Coverage: Each Medical Section chief developed a coverage plan for staff within their service. A labor pool was created to assist with additional needs such as staff & patient off-site screening, the patient-facing COVID-19 Registered Nurse phone hotline, and for other purposes including notification of patient test results. Creatively redeploying staff from both clinical and research areas has allowed us to fill critical needs. This is important to organize in advance: as the virus spreads into the community, staff will be exposed, become sick, and need coverage while off service. To plan for anticipated events, we have developed policies for furloughs and mandatory isolation as have been recommended early during the outbreak by local public health departments.

- Education: It is important to assure that staff have awareness of ongoing issues within the system including information about local and community rates of SARS-CoV-2 infection among patients and staff. Daily updates with information, new guidelines, and procedures are provided and shared with members at community sites. Weekly virtual town halls help share information with staff about ongoing efforts and new updates, and to keep them abreast of new developments in the community. These events also provide opportunities for questions and answers from team members that address important issues such as personal protective equipment (PPE) shortages, sick policies, research, and other new developments.

- External Factors: To help our staff manage the effects of school closings, we have compiled and made available information about dependent care options. Similarly, by developing capabilities for remote work in roles traditionally done on-site, we have added some flexibility for staff while further limiting exposure. Where possible, we have considered reassignment of individuals who are older (>70 years of age), immunocompromised, and/or have co-morbidities which put them at increased risk from SARS-CoV-2 infection.

- Well-Being: To stave off provider and staff burnout, it is important to develop resources for physical and emotional support. We have begun to partner with local restaurants and businesses (struggling in this time) to provide food for staff; these community partnerships require assurance of strict standards for quarantine for workers with respiratory symptoms or known contacts. Such efforts are also important for staff who have been assigned remote options, to assist with connection and communication with their colleagues. We have also engaged our internal social work and psych-oncology colleagues to develop webcast content for staff to have strategies in balancing personal anxiety and work demands in a time of crisis.

Infection Prevention

Personal Protective Equipment (PPE): We use droplet/ contact precautions (mask, eye protection, gowns and gloves) for patients with known or suspected SARS-CoV-2, consistent with World Health Organization (https://www.who.int/publications-detail/infection-prevention-and-control-during-health-care-when-novel-coronavirus-(ncov)-infection-is-suspected-20200125) and Washington State Department of Health guidance (https://www.doh.wa.gov/Portals/1/Documents/1600/coronavirus/ppeCOVID-19confirmed.pdf), and policies developed by our partners at UW Medicine (https://covid-19.uwmedicine.org/Screening%20and%20Testing%20Algorithms/02a%20-%20PPE%20-%20Summary%20and%20Rationale%20for%20Recommendations.pdf). In the emergency room and acute care hospital setting, donning and doffing is observed by a trained observer. For critically ill hospitalized patients and those who require an aerosol-generating procedure such as intubation or nebulizer therapy, airborne/respiratory/contact precautions are used. PPE conservation policies have also been developed. In our clinic, we have reusable gowns that are laundered daily and have ordered cloth masks.

Reducing Exposures: By providing technology for remote work and mandating remote work for all staff equipped and approved to work from home, we are limiting exposures. We have also restricted all work-related travel, and restricted in-person meetings to five people or fewer, except on some clinical services.

Training: To protect staff, we updated PPE training sessions and made them available on a daily and hourly basis. We have also consolidated all policies and guidelines, including videos for proper donning and doffing of PPE (https://www.seattlecca.org/PDF/COVID-donning-and-doffing-videos), in one webpage for quick access.

Education: We discuss best practices in the clinic and in the community to avoid transmission, and provide opportunities for staff with concerns to directly communicate with Infection Prevention staff and center leadership. See also section on Staff: Education, above.

Changes to Care

- Reducing In-Person Visits: We rescheduled all "well" and non-essential follow-up visits for existing patients (https://www.seattlecca.org/PDF/rescheduling-visits-and-delays-starting-therapy), or transitioned them to telemedicine visits. Consultations for second opinions are being deferred when patients were already safely under treatment in other system (https://www.seattlecca.org/PDF/new-patients-seeking-second-opinion), as are non-urgent procedures and treatments.

- Expanding Telemedicine: By expediting physician credentialing, training and response to changing regulations, we rapidly expanded our telemedicine efforts (https://www.seattlecca.org/PDF/telehealth-provider-communication). In addition to managing "well" visits by telemedicine, we also converted new patient screening for out of state patients to telemedicine to discourage travel. The recent presidential declaration of national emergency has removed several barriers to available, billable (https://www.seattlecca.org/PDF/covid-billing-documentation) telemedicine.

- Clinical decisions regarding delay of treatment are difficult and require disease-specific, individualized discussions. Aggressive hematologic malignancy requires urgent, life-saving treatment and often cannot be delayed. The blood and marrow transplantation group is delaying non-urgent transplants, such as for multiple myeloma, intermediate-risk AML in first complete remission, and myelofibrosis, among others, to help off-load inpatient services. Transplants for patients with cardiac or pulmonary comorbidities are also being deferred. For cellular immunotherapy, treatment with commercial CAR-T products and later-phase clinical trials with expected clinical benefit are still being pursued. Cellular immunotherapies in early-phase clinical trials have been temporarily suspended. Decisions regarding which treatments can be delayed must be discussed on a case-by-case basis, and difficult decisions must be made by disease-specific experts who also have up-to-date knowledge of the rapidly changing inpatient and outpatient resource availability.

- Surgical intervention also needs prioritization since a temporary ban on elective surgery was implemented due to limited availability of PPE, staffing, and bed capacity. For slow-growing cancers, surgery may be delayed (e.g., several months of endocrine therapy and delay in curative surgery for some patients with early stage receptor-positive breast cancer); surgeon-to-patient phone calls can optimize shared decision-making to delay surgery.

- More than ever, proactive palliative care and end-of-life discussions with patients are necessary. Pursuing cancer treatment during the COVID-19 pandemic poses additional risks for patients and must be included in the risks-benefit discussions and obtaining of consent for treatment. Additionally, we require a palliative care consult and code status discussion with all cancer patients admitted with SARS-CoV-2 infection.

Clinical Trials and Research

- As care shifts to addressing acutely ill patients, clinical research need to be modified. Centers will need to limit visitors to hospitals and to individual patient rooms, making clinical trials and prospective natural history studies difficult to manage. Developing a ledger of ongoing trials can help prioritize research to keep open during this crisis. Considerations must be made as research centers move to work from home rather than on campus.

- Natural history and sample repository studies should be reviewed to assure such studies do not require the presence of excess staff in the hospital, or nursing staff in patient rooms to collect samples. Use of collection supplies (e.g., swabs), laboratory materials, and processing time may need to be considered in these decisions.

- Decisions regarding active treatment trials can be challenging, but phase 1 dose-finding trials and phase 3

comparison trials comparing an investigational approach to standard-of-care or FDA-approved therapies are being put on hold as COVID-19 cases begin to expand. Development of teams to determine the most appropriate criteria for which trials should be paused, and which should move forward, will be important. It is also important to be aware that some clinical trials will pause regardless, due to staffing concerns both locally, with sponsors, and with monitoring staffing agencies.

- Clinical laboratories on research campuses should be discussed in detail with center staff. Manyof those working in these arenas are in close contact with those working in clinical spaces. Methods to track employees, assure social distancing, and avoid crowding at critical shared work areas and common rooms are also key. Avoiding laboratory meetings and moving to virtualgroup interactions is an important step to avoid campus transmission events. It is key to developlocal plans for managing potential exposures within a large research campus, and sites where staff who are exposed can get tested. Plans for how to protect vital research, laboratory animal colonies, and other vital resources and processes, are critical decisions that require input from researchers, leadership, and those working within the outbreak.

- Many clinical research staff can also provide important reinforcement to those caring for patientsif they are redeployed to front line care, phone banks, or screening stations, for example. Those that have experience with protocol design, sample processing, and patient communication can be particularly useful for helping design novel protocols for COVID-19 research.

- Centers with expertise in vaccine design, virology, immunology, and prevention should be prioritized in the short term to maximize research on COVID-19 when possible. Partnership with local public health departments and other research centers in the community are key.

- A COVID-19 specific IRB, which could rapidly review available trials and research, may be considered in order to facilitate rapid deployment of treatment and studies in patients with active infection, as well as novel strategies for prevention.

Communications

- Within Center: We host virtual town halls with leadership to ensure that messaging is clear and consistent. A daily email briefing provides routine updates and information to staff. See also the section on Staff: Education, above.

- Between Partner Institutions: To coordinate efforts, we use shared portals with other area health systems and community partners. Our Incident Commander and Liaison Officer are jointly part of all updates and briefings from partner institutions, allowing us to partner with them on large-scale planning and align messaging to patients and staff. For, example the systems noted shortages in blood donations, so the centers partnered with blood banks to improve collection.

- Websites: To allow ready access to COVID-19 documents, we developed and maintain an internal SharePoint site as well as an external site, since staff are often off-site and may be unable to VPN in.

The Next Stage: Forecasting and Planning for System Overload

Increasing Capacity

- Hours: To reserve emergency departments and hospital resources for those requiring higher-level care, we increased our hours of operations.

- Expanding Acute Evaluation Capabilities: Anticipating that hospitals will be overburdened, we have opened an acute evaluation clinic meant to keep our patients from going to the hospital emergency department. The declaration of emergency will allow us to further expand our capabilities to potentially include inpatient beds in

our outpatient unit, by reformatting a recently renovated floor.

- Reducing Travel: Organize locations for high-risk patients to stay close to the center, to avoid long distance travel or the need for public transport. Consider options for staff to stay overnight if needed during surge periods.

Planning for Shortages

- Supplies: Real-time monitoring of supplies (including PPE, laboratory testing swabs, and alcohol-based hand sanitizer) allows us to determine where there is risk. Our Logistics Chief is troubleshooting ways to mitigate risk, including centralizing the locations of hand sanitizer, favoring soap and water hand-washing over hand sanitizer in standard precaution rooms, limiting the number of team members entering patient rooms, and reducing PPE-requiring nursing procedures. Novel ways to reuse equipment, or finding reusable items (launderable gowns vs. plastic gowns), will be needed in addressing future challenges and ongoing shortages. Protocols to reuse and "re-sterilize" masks are available (https://www.nebraskamed.com/sites/default/files/documents/covid-19/n-95-decon-process.pdf).Having your center make hand sanitizer using the WHO method is worth consideration, in order to help assure that you have a sufficient supply on hand (https://www.who.int/gpsc/5may/Guide_to_Local_Production.pdf).
- ***Examples of expected shortages to plan for:***
  - Masks (level 3 surgical masks, masks with face shields, N-95 masks)
  - Gloves
  - Face shields/goggles
  - Plastic disposable gowns
  - Hand sanitizer
  - Sanitizing/cleaning wipes for environmental cleaning (all types)
  - Nasopharyngeal swabs for testing
  - Reagents for testing
  - Pipette tips
  - Viral transport media
  - Thermometers
  - Critical medications
- Beds and Equipment: Shortages will be reported by our partner institutions and communicated to us in real time by members of our IC team who attend UW's daily calls. Communications also occur daily among all hospitals in region regarding status of beds and intensive care units, to assist with planning outpatient procedures and admission times
- Staff: Illness, school closures, and other family issues will significantly limit the ability to staff clinics. One initial priority was to establish a cover system for the clinics, in case a provider had to be quarantined on short notice. When possible, we rescheduled or deferred visits, or transitioned them to telemedicine (see Changes to Care). Options for child care are challenging with social distancing, but need to be considered in order to keep clinical team members in the workforce.
- Surge planning: Review with staff the importance of surge planning, including redeployment of staff to inpatient care services. As oncology care shifts to treatment of patients with COVID-19, consulting services will need to be prepared to take care of patients with severe respiratory illness. These efforts will allow for critical expansion

of staff who can care for sick patients. Train and re-train team members with opportunities to help in different aspects of COVID-19 response.

Changes to Care

- Logistical planning is required when transferring possibly infected patients from the clinic to the hospital, to reduce exposure to our staff and public.
- Triage of patients is important as we prepare for our resources to be further limited.
- Increased telehealth clinical visits and telephone consultations will be key to limiting in-person interactions while helping to provide care for vulnerable patients.
- Plans for geographic containment of PUI on the oncology wards are underway.
- Consideration is needed about conditions under which elective surgeries, procedures, and transplants may be canceled.

Ethical Considerations

- Proactive end-of-life and palliative care discussions with cancer patients are imperative, due to poor prognoses of seriously ill and immunosuppressed patients who become infected with SARS-CoV-2.
- Oncologists must also carefully prioritize which treatments are most likely to be beneficial, and who is likely to get the greatest benefit.

On behalf of the Seattle Cancer Care Alliance and Fred Hutchinson Cancer Research Center: Steven A. Pergam MD, MPH, Masumi Ueda, MD, MA, Renato Martin MD, MPH, Paul Hendrie, MD, PhD, Terry McDonnell, DNP, ACNP-BC, Jennie R. Crews, MD, MMM, FACP, Tracy L. Wong, MBA, Brittany McCreery, MD, MBA, Barbara Jagels, RN, MHA, Aaron Crane, MHA, David R. Byrd, MD, Nancy E. Davidson, MD, F. Marc Stewart, MD, Catherine Liu, MD