Reverse-Surge Planning During the COVID-19 Pandemic: A Cautionary Ramp-up for the Otolaryngologist

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Abstract

As the coronavirus disease 2019 (COVID-19) pandemic continues to evolve through the United States and other countries, differing rates of progression and decline are occurring based on varied population densities. While some health systems are reaching a steady state of new patient cases, others are seeing a leveling off or decline, allowing for restoration of normal practices. This "reverse-surge" planning and implementation process is a colossal undertaking for health systems trying to reacquire patient access and financial stability while preserving necessary resources and maintaining precautions for another potential surge. For the otolaryngologist, reverse-surge planning involves additional workflow adjustments in the outpatient and operating room settings given the abundance of COVID-19 virus in the upper aerodigestive tract. As the reverse-surge best practices are still under development, open communication between otolaryngology colleagues and health system leadership is paramount to optimize efficiency and maintain an adequate measure of safety for patients and our health care teams.

Keywords reverse-surge, COVID-19, telehealth, pandemic, aerosol generating procedures, personal protective equipment

Discussion

The coronavirus disease 2019 (COVID-19) pandemic forced a halt in the current system for delivering health care. Given the rapid spread and mortality, hospitals in the United States reallocated resources, converted to telehealth,1 and cancelled elective cases. With time, many regions in the United States experienced a decrease in new COVID-19 cases, leading to easing of state and local government restrictions on social distancing and returning to work to allow for economic and social "recovery."2 This recovery period poses challenges to reestablishing nonurgent health care with a transition from minimal outpatient volume to near-normal levels. Reverse-surge planning involves a slow ramp-up with adjustments in complex operational processes to balance efficiency and access to care with patient and provider safety hopefully reducing the likelihood and severity of another surge.

Efficiency and safety in the outpatient setting are essential in reverse-surge planning. Table 1 lists several approaches to mitigating risk during this period. There is no one best practice because available resources, risks, and patient follow-up vary significantly from office to office and city to city. In fact, operationalizing the reverse-surge plan will likely vary between offices within the same otolaryngology department/practice as the floor plan, patient flow, and available space for social distancing will vary based on the physical footprint. One commonality in reverse-surge planning, however, involves a

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systematic, step-by-step approach, analyzing the moment an outpatient appointment is scheduled to the time a patient leaves the office and undergoes further testing. Overlying principles include minimizing contacts and preserving scarce resources.

The timing for room turnover and need for personal protective equipment (PPE) will vary from institution to institution depending on COVID-19 incidence, test kit availability, sensitivity rates for testing, and air circulation/room particle turnover. Infectious disease, infectious control, and environmental services will be instrumental in accessing these important data and the appropriate measures to minimize risk. Ideally, a room is shut down following an aerosol-generating procedure (AGP) to allow 99% clearance of particles based on the number of air changes an hour.3 Procedures involving mucosal surfaces of the upper aerodigestive tract may trigger the use of powered air-purifying respirators (PAPRs) or N95 masks.4 At some institutions, all patients undergoing planned AGPs are COVID-19 tested 72 hours prior to their appointment and asked to socially isolate until their appointment; patients testing positive are cancelled. In other practices, patients are screened with questionnaires only and temperatures. All health care workers participating in the AGP warrant full airborne precautions to include PAPR/N95, eye protection, gown, and gloves.

Special consideration must be given to known COVID-19–positive patients requiring follow-up and suspected patients who warrant an in-person visit. At a minimum, appropriate PPE must be available, and these high-risk patients cannot expose other patients. Ideally, a “COVID-19” clinic is created either as a specific day/session for a small practice or a larger dedicated space within the hospital that is shared by all specialties.

Reverse-surge planning for the operating room (OR) poses additional challenges. A phased opening is recommended based on resources to include availability of PPE and testing kits as well as COVID-19 case numbers. Table 2 lists various OR modifications implemented by various health systems to mitigate risk during the reverse surge. As mentioned above, there is no one best practice. For example, the timing, numbers, and stages of OR reopening depend on resources. In many hospitals hit hard with COVID-19 patients, nursing and anesthesia were redeployed to intensive care units (ICUs). Similarly, anesthesia machines were moved from ORs to makeshift ICU rooms converted specifically for the surge. Both resources are essential for reopening. Settings with limited COVID-19 exposure such as freestanding ambulatory surgery centers and suburban hospitals have progressed more rapidly toward prior operative volumes, while the academic health/referral centers have maintained a conservative reserve capacity for potential surges in COVID-19 volume with relaxation of state-mandated guidelines. Early in the reverse-surge planning when OR availability remains limited, an approval process involving the department chair, vice chair, OR director, or dedicated committee may be helpful in providing safe and balanced oversight.

Conclusion

Reverse-surge planning is a complex operational process requiring deliberate consideration of multiple logistical issues and the coordination of multiple stakeholders to allow for a gradual ramp-up in patient access. It involves a delicate balance between increasing patient access and implementing appropriate safety measures. Otolaryngologists must continue to communicate effectively with colleagues and

hospital leadership to advocate for the safety of the health care team and patients as we adapt our processes to deal with a rapidly changing environment. Our ability to partner with our colleagues to implement reverse-surge processes will determine our success at improving patient access without compromising safety.

Author Contributions

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Table 1. Considerations for Clinic Modifications to Mitigate COVID-19 Risk During Reverse-Surge Phase.
Telehealth
For all patients not requiring an in-person visit
For new nonurgent consults to begin workup and maximize future in-person visit
Electronic consults
Adjustment of clinic templates to allow social distancing
Minimize ‘‘walk-in’’ patients and over-books to allow social distancing
COVID-19 screening questionnaire at time of patient reminder call
Temperature of all employees and patients upon entering office/hospital
Mask provided to all patients and employees upon entering office/hospital
Hand sanitizer accessible to patients and employees
No visitors with exception of end-of-life patients, pediatric patients, or patients with handicaps requiring assistance (limit to 1 if possible)
Plexiglass at in-take area between staff and patients
Floor markers denoting 6 feet at elevators and reception desk for appropriate physical spacing
Altered waiting room
Preregistration via phone to avoid check-in line
Instruct patients to wait in car until 10 minutes prior to their appointment
Consider seating patient immediately in exam room if possible
Limited in-person contact
Robust prep team to acquire all medical records/scans prior to visit for review
Update of PMH, PSH, allergies, social history, and family history by staff via phone
Medical reconciliation via phone
Majority of office visit dedicated to exam
Aerosol-generating procedures
Require PAPR or N95 along with other airborne precautions
To consider HEPA filters for ENT cart and room
Limit to patient, physician, and trainee if deemed appropriate
Require preprocedure COVID-19 testing
Hands-free checkout; patient phoned with follow-up appointments
Abbreviations: COVID-19, coronavirus disease 2019; HEPA, high-efficiency particulate air; PAPR, powered air-purifying respirator; PMH, past medical history; PSH, past surgical history.

Table 2. Considerations to Mitigate Operating Room COVID-19 Risks.
COVID-19 testing of nonemergent cases Timing of test based on sensitivity Cancellation of COVID-19–positive patients Elimination of waiting room Temperature of all employees and patients upon entering office/hospital Mask provided to all patients and employees upon entering office/hospital Presurgery huddle with surgical team to discuss AGPs and PPE Minimizing number of people in room during intubation/extubation to avoid airborne exposure Close OR to entry for 15 to 20 minutes following intubation and extubation, to allow adequate air exchange/minimize airborne exposure Abbreviations: AGP, aerosol-generating procedure; COVID-19, coronavirus disease 2019; OR, operating room; PPE, personal protective equipment.