Tip Sheet: Application of Telemedicine and Telecritical Care to Emergency Management of COVID-19

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It has become clear that COVID-19-related illness has the potential to overwhelm critical care capacity in many, if not all, regions of the United States and the world. Telemedicine and telehealth are crucial tools in disease mitigation, preservation of medical staff and equipment, extension of limited resources, and expansion of capacity for effective, safe, and efficient healthcare delivery. In the past two weeks, healthcare organizations across the world have rapidly implemented telemedicine solutions in an effort to care for patients at home, reduce traffic in hospitals and waiting rooms, and coordinate with other care providers. The U.S. Centers for Disease Control and Prevention (CDC) has recommended widespread use of telehealth in response to the COVID-19 pandemic.

Many hospitals and health systems have invested heavily in large hub-and-spoke telecritical care systems. These integrated and powerful systems should be used and expanded where they are available. But as system stresses continue to worsen, further expansion and linkage of existing efforts will be required, particularly in the management of the expected surge of critical illness. For organizations without significant existing infrastructure, the Mid-Atlantic Telehealth Resource Center (MATRC) has built a thoughtful and user-friendly guide to telehealth resources for COVID-19. MATRC also provides updated resources on HIPAA compliance and billing standards.

As critical care leaders prepare to confront unprecedented demand for expert intensive care, many organizations will be forced to rapidly move forward into uncharted territory. In this context, the multiprofessional Telecritical Care Committee of the Society for Critical Care Medicine (SCCM) recommends immediate application of the following principles:

<u>Plan and Practice for Specific Contingencies</u>

1. Whether using enterprise or homegrown solutions, the most successful operations will involve planning and practice before scaling.
2. Understand and design solutions for specific uses.
   a. Identify who will use the service now and how it might grow.
   b. Establish what services you will provide.
      i. Teleconferencing with patients or expert consultants:
         1. Synchronous, asynchronous

2. Web portal, device app
3. Legacy modality (eg, telephone, email, fax)
      ii. Remote patient monitoring (useful to protect and decompress nursing staff caring for patients in isolation rooms)
      iii. Application of forecasting and triage tools
      iv. Implementation of severity of illness scores (eg, Acute Physiology and Chronic Health Evaluation [APACHE])
      v. Bedside clinical decision support
      vi. Regional coordination of care: requiring a hierarchy of communication between COVID-19 monitoring centers among various hospitals or healthcare systems
   c. Choose where you will implement your program:
      i. Outward facing: toward the community
      ii. Inward facing: toward units within your own system
      iii. In the homes of patients or healthcare workers
   d. Determine when you will provide care:
      i. What shifts will you cover?
      ii. When will you be ready for rollout and for expansion?
   e. Understand why you are using telemedicine:
      i. Increase capacity
      ii. Extend scarce resources
      iii. Protect vulnerable healthcare workers and patients
      iv. Limit disease transmission
      v. Preserve protective equipment
      vi. Consolidate monitoring capacities
3. Develop these strategies, including a formal communications plan, using the PACE framework (primary → alternate → contingency → emergency). The feasibility and acceptability of various technical solutions may evolve depending on context and levels of resource strain.
4. Widespread adoption of teleconferencing and telemedicine is likely to strain telecommunications infrastructures. Plan and prepare for likely network traffic congestion and possible outages. Build redundancy and fallback communication strategies into every plan.

Minimize Patient and Clinician Exposure

1. Maintenance of a healthy clinical workforce is of paramount importance in maximizing capacity and minimizing system stress.
   a. Prioritize telemedicine whenever possible to limit the frequency and intensity of patient-patient and patient-clinician interactions.
   b. This may include using telemedicine even within wards, such as by using personal devices to communicate across wards and through windows.
   c. Limit direct contact to situations in which it is necessary (eg, invasive procedures) and limit encounters to one clinician whenever possible.

d. Use these techniques to facilitate clustering of care by allowing one clinician in a patient's room to handle multiple functions and to connect the patient with virtual visitors, consultants, and other care team members.

e. If existing systems are available (eg, cameras, monitoring stations, clinical alerts), they can be used by in-house clinicians to facilitate low-contact care.

2. Dedicate some portion of the clinician workforce to telemedicine interactions, thereby establishing a cohort with a lower risk of exposure. Candidates might include clinicians who are:

   a. at high risk themselves (eg, older, chronically ill, immunocompromised)

   b. healthy but under quarantine

Extend Limited Resources

1. Identify all current and available telehealth resources including trained staff and hardware and software options, including those that can be repurposed.

2. Establish routine communication with hospital or system leadership regarding current capabilities and potential for offloading aspects of bedside care to telemedicine support. These opportunities are frequently unrecognized across a large system.

3. Before resource limitations overwhelm capacity, make contingency plans for use of:

   a. Widely available telecommunications options, including cell phone applications

   b. Free or low-cost commercial teleconferencing platforms. These platforms may be subject to legal or policy restrictions in many locations; their use may need to be limited to last resort. Consult system leadership or legal support for guidance.

   c. SMS or other direct messaging platforms that maintain HIPAA compliance. In extreme circumstances, consider using standard SMS services, which are **not** HIPAA compliant. If forced to use non-HIPAA-compliant platforms, refer to patients by descriptive terms or preestablished code names, such as bed number or "Wonder Woman."

   d. HIPAA considerations:

      i. Certain portions of HIPAA enforcement are subject to discretion during the COVID-19 public health emergency. According to the [U.S. Department of Health and Human Services' FAQs on Telehealth and HIPAA During the COVID-19 Nationwide Public Health Emergency](#):

         1. "Covered health care providers will not be subject to penalties for violations of the HIPAA Privacy, Security, and Breach Notification Rules that occur in the good faith provision of telehealth during the COVID-19 nationwide public health emergency."

         2. "If telehealth cannot be provided in a private setting, covered health care providers should continue to implement reasonable HIPAA safeguards to limit incidental uses or disclosures of protected health information (PHI)."

   e. These solutions rarely come with electronic medical record (EMR) support. The primary documentation and data would need to come from an EMR since paper charting would be difficult to maintain in two separate locations.

4. Create a plan to allocate resources to support care at home (ie, remote home monitoring) and ad hoc and temporary hospital care (eg, COVID-19-dedicated wards, isolation spaces, and field hospitals).
    a. Consider repurposing existing carts, applications, and workflows. These can be used for both outpatient- and inpatient-facing priorities.
    b. Plan for patient processing, bed management, and flow needs. Identifying which patients need to be monitored and how they are admitted, discharged, and followed by virtual services is more difficult than identifying hardware and software solutions.
    c. Consider starting with smaller support concepts and then scaling capabilities. For example, isolating 10 patients who are relatively less sick—perhaps who only need supplemental oxygen, assistance with medication administration, and IV fluid administration—can be supported by a bedside aide who has access to remote clinical support from an experienced nurse and physician. This care model could be practiced and then expanded until the remote team can help 3, 5, and then 10 bedside aides, thus expanding the expertise of the experienced nurse and physician from 10-12 and 20-30 patients, respectively, to 50-100 patients.
5. Use telemedicine for load balancing and to offload clinical work from bedside clinicians:
    a. Define level of coverage to be provided by the remote care team (eg, adjunctive vs. complete care, rounding vs. consultation, availability for basic checklists, one-time orders, SOS calls)
    b. Remote clinicians can monitor and round on low- to moderate-risk patients and help triage bedside clinician time and activities.
    c. Trust between the bedside clinical team and the remote clinical team is a fundamental need.
        i. Establish clear communication and handoff of care between bedside and remote teams.
        ii. Establish thresholds for deferred decisions and interventions to the bedside team (eg, the need for interventional radiology or surgical procedures).
        iii. Establish referral patterns for specific levels of care (eg, prone positioning, extracorporeal membrane oxygenation).
        iv. One way to facilitate this trust is to rotate teams from bedside duties to telemedicine duties or to shift infected caregivers toward telemedicine and recovered caregivers toward the bedside to help to reduce transmission.
    d. Having all clinicians participate in some form of telemedicine activity increases their awareness and understanding of telemedicine capabilities and limitations.
6. Use telemedicine for telementoring and provision of scarce expert multiprofessional care.
    a. Create virtual multiprofessional care teams by incorporating remote pharmacists, behavioral health specialists, nutritionists, physical and occupational therapists, chaplains, and palliative care specialists.

      b. Telementoring can assist clinicians who are forced by circumstances to practice outside their typical scope of practice:
           i. Procedural and medical device troubleshooting for those who are out of practice
           ii. Access to clinical expertise not otherwise available for those drafted into unfamiliar roles (eg, an emergency medical technician volunteering as a nurse, a non-ICU physician caring for critically ill patients)

7. Use telemedicine capabilities to facilitate goals-of-care discussions and to enhance virtual family presence at the bedside
8. Use telecritical care clinicians as a force multiplier. Published ratios suggest that one virtual intensivist can monitor and respond to emergencies for 75-125 patients and one nurse can provide virtual monitoring for 30-60 patients.
      a. However, recognize that these numbers represent experienced telecritical care teams usually supporting established systems, not ad hoc solutions.
      b. Expect at least a 50% drop in efficiency when starting a new telemedicine or telecritical care system (30-60 patients for physicians, and 15-30 patients for nurse monitoring and problem triage).
      c. Over time, high-functioning teams will be able to expand their coverage significantly.

Develop Resources, Build Trust, and Establish Standards

1. Design and incorporate tools for user education and training.
      a. Just-in-time training may be necessary to get started.
      b. Provide on-the-job mentoring by experienced users.
      c. Plan for ongoing performance evaluation and feedback mechanisms
2. Build in quality, safety, and process improvement mechanisms from the start, including:
      a. Regular structured case review
      b. Tracking of utilization rates and key performance indicators
      c. Preexisting unit quality initiatives (eg, sepsis performance, ICU Liberation, and progressive mobility)
3. Participate in contingency planning, both internally and in conjunction with covered locations, including:
      a. Triage and allocation of scarce resources (eg, ventilators, dialysis machines, personal protective equipment)
      b. Assessment and implementation of currently available best practices in management of COVID-19-related illness
      c. How care will be handled for non-COVID-19 ICU patients
      d. Risk assessment and potential limitations of care based on survivability or resource scarcity
      e. Thresholds and definitions related to enacting a crisis standard of care

Data Collection, Integration, and Reporting

1. Telecritical care programs are uniquely positioned to provide hospital, system, and even regionwide perspectives on health system stress, treatment experiences, and patient outcomes.
2. Plan ahead to collect data on case load, patient factors, treatment experiences, and patient outcomes that can be rapidly analyzed and shared with the broader critical care community.
3. Communicate with other programs and regions to exchange ideas, link services, and establish critical infrastructure for large-scale coordination of care.
4. Coordinate and collaborate with professional societies such as SCCM and the other members of the Critical Care Societies Collaborative to help our community identify and disseminate best practices in crisis management, disaster medicine, and critical care for all patients.

Resources

- Interim guidance for healthcare facilities: preparing for community transmission of COVID-19 in the United States. https://www.cdc.gov/coronavirus/2019-ncov/healthcare-facilities/guidance-hcf.html
- MATRC Telehealth Resources for COVID-19. https://www.matrc.org/matrc-telehealth-resources-for-covid-19/
- Centers for Medicare and Medicaid Services. Current emergencies. Billing and coding guidance. https://www.cms.gov/About-CMS/Agency-Information/Emergency/EPRO/Current-Emergencies/Current-Emergencies-page
- U.S. Department of Health and Human Services. Office for Civil Rights. FAQs on telehealth and HIPAA during the COVID-19 nationwide public health emergency. https://www.hhs.gov/sites/default/files/telehealth-faqs-508.pdf

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