



COVID-19 Challenge – Scaling ICUs

It is projected that there will not be enough ICU beds to meet the surge of COVID-19 patients requiring intensive care unit (ICU) hospitalization. Given the nature of the virus and the risk of infection for healthcare providers (HCPs), there is also a projected shortage of intensivists and critical care nurses to treat these patients. In a survey conducted by the Society for Critical Care Medicine (SCCM), of more than 4,800 critical care providers surveyed, only 29.5% said their ICU is equipped with a telemedicine system that could be used to manage acute COVID patients.¹

Building capacity for ICU care will be paramount to addressing the current crisis while maintaining standards of care and protecting provider staff. Several organizations have been leveraging telehealth and digital solutions to scale for the upsurge and unique needs of critically ill COVID-19 patients requiring stays in the ICU.

BENEFITS OF VIRTUAL ICUs

Expands ICU bed capacity through virtual care	Enables non-critical care beds to be converted into ICU beds. Creates opportunities for “pop up” ICU beds in other locations. Creates temporary hospital capacity for added support of non-COVID-19 patients (e.g. Javitz Center in NYC turned into a field hospital for overflow patients).
Provides aggregated data in real-time, applying algorithms to aid care teams in clinical decision making	Enables the care team to monitor patients remotely, mitigate risk, provide warnings of potential events or deterioration of a patient's condition based on comprehensive data in ICUs. Leverages AI and predictive analytics for COVID-19 risk scoring, trajectory monitoring, and patient respiratory condition within workflow; reporting for benchmarking; and performance management. Allows for ICU beds to be used most efficiently, as better care reduces time in bed.
Protects provider staff and addresses staff shortages	Leverages telemedicine to reduce bedside contact and centralize tasks such as documentation. Supplements staff by redeploying non-intensivists to virtually monitor ICU patients.
Expands specialist and multi-disciplinary care through telehealth services to mitigate patient risk	Provides flexible views of clinically relevant patient data, to enable specialists to review and monitor patients remotely. Increases access to specialists and maximizes their capacity. Allows for multi-specialty conferences to best address individual patient care.

¹ SCCM ICU Readiness Assessment <https://www.sccm.org/getattachment/Blog/April-2020/ICU-Readiness-Assessment-We-Are-Not-Prepared-for/COVID-19-Readiness-Assessment-Survey-SCCM.pdf?lang=en-US>





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CASE STUDIES – EXCELLENCE IN ACTION

Houston Methodist² - Comprehensive Data Access and Algorithms to Monitor and Alert Staff

- Leverages assistive technologies to allow for continuous monitoring of ICU patients
- Operations center with multiple work stations utilizes computer software to convert clinical patient information into an algorithm, helping prioritize patients who require the most attention from the provider team
- High definition, high-resolution cameras, and monitors allow for two-way communication between the patient bedside and virtual care team
- Zoom-in camera features allow RNs to read prescription labels, check IV bag levels, assess patients; night vision mode for visibility at night
- Alert buttons allow bedside nurses and caregivers to contact virtual intensivists and nurses
- Consultant bridge provides a link for multiple healthcare providers to evaluate patients and determine the care plan

Northwell Health³ - TeleICU Extends Clinical Capacity

- Leverages telemedicine carts in ICU beds outside hard-wired rooms to increase ICU capacity
- Allows for rapid assessment of patients in ICU and other units for triage and potential transfer via centralized virtual ICU model
- Leverages existing resources from multiple facilities to provide specialty services through telemedicine enabling access to services for community hospitals
- Disseminates information on standards of care to all facilities via centralized teleICU
- Provides rapid training to evaluate patients via telemedicine, including ER evaluations, extending the workforce and protecting staff
- Leverages teleICU RNs to provide in-room presence to support bedside caregivers
- Allows teleICU RNs to monitor PPE compliance, educate staff on proper PPE use, provide hourly safety rounds and document care on behalf of bedside staff

Mayo Clinic^{4,5} - Protecting Acute Patients and Staff

- Uses disinfecting robots to sterilize hospital and ICU rooms and other areas,⁶ limiting staff exposure and protecting both staff and patients
- Uses tablets in ICU so patients and in-room staff can interact with specialists remotely

² https://www.linkedin.com/posts/danielwallack_virtualicu-telehealth-remotemonitoring-activity-6648584724996505602-Pu8m/

³ <https://www.youtube.com/NorthwellHealthTelemedExperience>

⁴ <https://newsnetwork.mayoclinic.org/discussion/mayo-clinic-qa-podcast-critical-care-units-prepare-for-covid-19/>

⁵ <https://www.mayoclinic.org/departments-centers/critical-care/resources-medical-professionals/mpc-20399559>

⁶ <https://news.crunchbase.com/news/hospital-disinfecting-robots-xenex-sees-surge-in-orders-as-covid-19-pandemic-escalates/>