

# Modern Healthcare

## Rethinking Quality and Safety in the Age of COVID

By: Jennifer Lubell

Hospital for Special Surgery in New York City is most renowned for orthopedic surgery and rheumatology. When the COVID-19 pandemic hit last March, HSS moved quickly to reinvent itself and support its community. Within 72 hours, the academic medical center transformed into a multispecialty hospital, implementing new quality and safety measures to treat critically ill patients regardless of their COVID status.

Orthopedic operating rooms and a post-anesthesia care unit were converted into critical-care units, expanding the number of beds for ventilator-dependent patients. Caregivers were reassigned, with surgeons, nurses and other clinicians providing specialized care at the bedside. Leadership teams met to ensure staffing was adjusted to meet the round-the-clock needs.

Nurses quickly adapted to new technologies, integrating telemetry alerts to smartphones. HSS projected live views of bedside monitors outside patient rooms, and enhanced storyboards to ensure that all caregivers knew about individual patient COVID-19 status throughout the episodes of care.

COVID-19 units were a short-term solution to address the immediacy of the pandemic, but HSS has every intention of keeping the enhanced safety protocols in place as it continues to encounter patients suffering from the virus' long-term effects.

“COVID provided a catalyst for us,” said Jamie Nelson, senior vice president, chief information officer at HSS. “The collaboration between the teams and the rapid pace of implementing new clinical practices and the supporting technologies to care for critically ill patients was really remarkable.”

For as quickly as health systems reacted though, quality and safety experts have cautioned that the incredible pace of change has opened a door to potential vulnerabilities. For instance, with many infectious-disease specialists being reassigned to respond to COVID-19, concerns have been raised that usual infection surveillance has lessened. Also, CMS postponed routine hospital inspections during the first few months of the pandemic, although some of that decline is related to the pausing of elective procedures and declines in hospital volumes. And then there's the issue front-line staff being overworked and exhausted.

Nonetheless, by scrutinizing their techniques, many health systems discovered weaknesses in old protocols, and found new ways to improve care and infrastructure with lasting impacts beyond the pandemic.

“Our response to COVID has made us a much more data-driven, integrated health system,” said Matt Siegler, senior vice president of managed care and patient growth at NYC Health + Hospitals, which upgraded its data collection and transportation systems to streamline patient care during the pandemic. Spanning 11 hospitals, 60-plus community-based health clinics, and five skilled-nursing facilities, the public health system now has the capacity to look at data across acute, ambulatory, post-acute, and emergency settings, to target needs areas and provide support at different locations, Siegler said.

Similar to HSS, NYC Health + Hospitals took steps to reassign staff during a second wave of COVID to support increasing demands for dialysis treatment and ICU needs. Critical-care physicians received continuous renal replacement therapy credentialing and nurses received competency training in CRRT, a form of dialysis. Ambulatory-care nurses were trained in med-surg competencies and med-surg nurses were trained in ICU competencies. The health system also offers basic and advanced ventilator trainings to hospitalists and emergency doctors, respectively.

The training will likely stay in place indefinitely, said Dr. Laura Iavicoli, director of emergency management at NYC Health + Hospitals.

“With emergency management you have to be ever changing and evolving. As long as you look at your processes and keep up with innovations, you’re one step ahead. I definitely think we’re on that path,” she said.

#### *Optimizing COVID Data*

Early in the pandemic, [CMS suspended quality reporting](#) during the first two quarters of 2020. That will create a gap in data that would normally be available to assess trends in the industry and to spur process improvements.

CMS “is committed to supporting clinicians during this unprecedented pandemic so they can focus on what’s most important—caring for their patients and communities across the country,” an agency spokesperson said.

Hospitals and other health systems have since invented new ways of utilizing patient data.

“Currently, we’re looking at all nationally reported metrics: readmissions, infections, our complications and patient experience data,” said Tami Minnier, chief quality officer of UPMC, affiliated with the University of Pittsburgh Schools of the Health Sciences. UPMC uses a wide variety of internal and external data, including its extensive internal clinical data warehouse, Press Ganey patient surveys, surgical registries for specific specialties, CMS and others.

UPMC is placing a specific focus on quality outcomes related to racial disparities, Minnier continued, saying, “I think this will change our data and analytics going forward. We have looked at every measure we report to our board and have started to overlay a diversity lens on those, to figure out better opportunities to drive clinical outcomes for diverse populations.”

Those challenges are going to live long into the future, beyond COVID, she noted.

Some providers have fine-tuned technology platforms to enhance data collection on COVID patients. NYC Health + Hospitals started to track patients in February 2020, harmonizing its process and making it more granular to create a range of dashboards that provide daily reports with key information on COVID patients system-wide. During the initial COVID-19 surge, the dashboards helped to organize information and allow administrators to make educated, data-based decisions on patient care.

The health system generates real-time data about available beds and ventilators, how much oxygen support patients need at each hospital, and illness acuity.

HCA Healthcare has been repurposing its NATE—Next-Gen Analytics for Treatment and Efficiency—platform to monitor patients at the bedside. NATE uses an algorithmic method based on a patient’s clinical data to assess that person’s needs throughout the day. HCA clinicians can evaluate vitals in real time to assess whether a patient needs a ventilator, proning or more oxygen flow.

This has impacted the treatment of COVID patients in big ways, said Dr. Jonathan Perlin, president of the clinical services group and chief medical officer of the Nashville-based health system.

A COVID patient’s respiratory system is fragile, he emphasized. “The challenge of caring for patients on ventilators is following the patient’s pressure, volume and position to make sure they have optimal care.”

HCA used NATE to track how to best limit COVID exposure in both patients and providers, and advance learning about the disease. These efforts improved survival rates by a third, from the early days of COVID to today. Perlin sees NATE’s uses expanding beyond the pandemic.

“Once we can put COVID behind us, this platform will be phenomenal for optimizing care for every patient on a ventilator,” he said.

HCA is also looking outward, taking steps to mine its large repository of COVID data in the realm of clinical research. To date, it’s captured data from more than 111,000 suspected and positive patients who sought inpatient care in 2020 from its network of 187 hospitals.

A consortium that includes HCA, the federal Agency for Healthcare Research and Quality and academic healthcare organizations will be tapping into the data to advance retrospective clinical trials.

“Not only is this a new paradigm for research, we’re really excited about the tremendous partnership with a number of academic institutions to accelerate learning about COVID and other diseases,” Perlin said.

The consortium plans to explore delirium in COVID ICU patients, COVID outcomes as they relate to age and frailty, resource utilization trends in older and younger patients, gender differences, inflammatory response in children and adults, and risk of blood clots. Other investigations include protecting and improving lung function without using ventilators, and social determinants of health and outcomes on populations of color who experience COVID.

Cleveland Clinic, a 6,026-bed health system in three U.S. states and locations in Abu Dhabi, London and Toronto, has utilized a COVID patient registry to improve care for patients suffering from long-term health effects of the disease.

“We have always been a data-driven organization,” said Dr. Raed Dweik, chairman of the Cleveland Clinic Respiratory Institute. The health system was an early adopter of a registry at the pandemic’s outset, keeping track of all patients admitted with the disease.

Recently, in addition to hospital and ICU patients, the focus has been on patients with “long COVID,” Dweik said. “We’re discovering things with these patients; people having persistent symptoms, muscle aches, fatigue and a variety of multisystem problems.”

Cleveland Clinic, similar to other health systems across the country, has since built a recovery clinic to care for these so-called long-haulers.

“We’ve established a multidisciplinary team of infectious-disease, primary-care physicians, lung, heart, neurology and other specialists to come together” to recognize the undiscovered pieces of long-term COVID recovery, Dweik said. Clinical and research efforts are underway to better understand these patients.

#### *Changes to Infrastructure*

Reconfiguring space to adjust to a COVID world has become a necessity across the industry. NYC Health + Hospitals has made a number of physical changes to its indoor spaces to ensure safety, complementing those efforts with air flow technologies to support and treat patients.

In one of the simplest changes, the health system installed dividers that pull down between beds in EDs, allowing for rapid barrier placement between patients.

“It’s better than rolling dividers because no one’s tripping over equipment in the ground,” Iavicoli said.

System-wide, it also redesigned patient rooms, outfitting them with glass walls and doors to reduce staff exposure to COVID patients, monitoring them at a distance. Some units even have video monitors that feed into a central computer at the nurses’ station.

To reduce COVID circulating in the air, the health system increased the number of negative-pressure rooms on units, and is even converting entire sections of EDs to be negative-pressure.

Relatively simple changes also apply to staff. HSS, for instance, created a tool to streamline audits on hand-washing and the appropriate use of personal protective equipment.

“We’ve increased those audits to ensure a safe environment for our patients, limited visitors, and employees,” said Jennifer O’Neill, HSS’ chief nursing officer and chief operating officer for its main campus.

#### *Oxygenation Overhaul*

UPMC did a full-scale re-examination of its oxygenation procedures to improve upon technique and patient care.

“What we learned in an accelerated way during this period was related to the use of high-flow oxygen in the care of patients in the hospital,” Minnier said.

At the pandemic’s onset, providers were anxious to place patients on ventilators because they thought that was the right thing to do. “We have learned over time through science and our ongoing education that patients respond better using high-flow, higher concentrations of oxygen,” she said.

It’s now the standard of care for COVID patients, and Minnier anticipates that the method will apply to other pulmonary diseases going forward.

This analysis exposed some long-running vulnerabilities in UPMC’s operational structures. “It’s been years since our hospitals were tasked to provide that much oxygen all at once,” Minnier said.

UPMC’s maintenance team flagged the issue.

“They said, ‘Wait a minute, we’ve taken oxygen for granted.’ This is a critical safety resource,” Minnier continued. The health system responded by conducting a proactive, across-the-board inventory of its oxygen resources, following up with intentional strengthening of those resources.

“As our oxygen demand rose to more than 2,000 COVID inpatients at any given time last December, we didn’t miss a beat,” she recalled. The result: a zero-failure rate in caring for these patients.