

Planning for the Pandemic

A Community Hospital Story

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When the Covid 19 pandemic affected New York State, Federal and mostly State, mandates were given to hospitals to prepare for the expected influx of patients. This is a community hospital's planning journey that includes preparing for placing patients, educating caregivers, matching the abilities of the available caregivers with the needs of the patients, securing needed equipment and supplies, and caring for the caregivers. Planning for patient placement resulted in a phased-in guide, accommodating seriously and critically ill affected patients. Education and training were initial and ongoing, rapidly changing as new information became available. Effective care delivery models that focused on team were modified depending on the needs of patients and staff competence. Securing and maintaining equipment and supplies were challenging and caring for the caregivers was a priority. Working as a team, this community hospital developed a road map that was effective in planning for the surge and allowed the hospital to maintain a safe environment for staff and patients who received quality care in difficult time. **Key words:** *community hospital, Covid 19, pandemic, planning*

LONG ISLAND, New York, is an area off the southeastern most part of New York State comprising 2 counties, Nassau that abuts the county of Queens on its western boarder and Suffolk on its eastern end. In an area of 453 square miles, there are 1.358 million people in Nassau County¹ and 1.481 million people in the 2373 square miles that comprises Suffolk County.² Long Island is served by 24 hospitals, 12 in each county.³ Catholic Health Services of Long Island, with 6 of these hospitals, is one of the health care systems that serve Long Island, 3 hospitals in each county.⁴

St Charles Hospital is one of the Suffolk County hospitals of Catholic Health Services of Long Island, a 243-bed general community hospital serving its community since 1907.⁵ Its signature services are obstetrics, orthopedics, and acute rehabilitation.⁶ In the beginning of March 2020, as the United States began to feel the impact of the Covid 19 pandemic and New York City hospitals began to experience increasing numbers of patients with Covid 19, St Charles Hospital began preparations for the care of patients who contracted Covid 19.

PLANNING FOR SURGE: WHERE ARE WE GOING TO PLACE THE PATIENTS?

At the beginning of March 2020, New York State Governor Andrew Cuomo issued an executive order⁷ that all hospitals in the state submit a plan to the State Department of Health that would increase the capacity of each hospital by 50% and to plan for a patient surge to double the capacity of staffed beds.⁸ To accommodate this directive, a 4-phase plan was developed to utilize the space that was available to accommodate a predicted surge of patients (Table 1).

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Table 1. Phases of Bed Expansion to Accommodate Covid 19 Surge

Phase 1	All ICUs and medical/surgical areas
Phase 2	PACUs for ICUs and ASUs for medical/surgical
Phase 3	All areas have the potential for conversion to ICUs, medical/surgical
Phase 4	Alternate, temporary spaces created

Abbreviations: ASUs, ambulatory surgical unit; ICUs, intensive care units; PACUs, postanesthesia care units.

In phase 1, all intensive care units (ICUs) and medical/surgical patient areas would be maximized. Two closed medical/surgical units, totaling 22 beds, would be opened. There are 16 ICU beds, with potential to convert other areas. That was accomplished in phase 2. It was determined that up to 14 critically ill patients could be accommodated in our postanesthesia care unit and another 12 medical/surgical patients in our ambulatory surgical unit.

By phase 3, all hospital areas were surveyed for conversion to ICU and medical/surgical. At this time, a 10-bed telemetry unit was converted to an ICU by retrofitting high efficiency particulate air filtration systems in each of the private rooms of the unit and cutting windows into formerly solid doors to allow for staff observation.

It was not necessary to trigger the phase 4 plan, although extensive discussions took place regarding the possibility of creating of alternate care sites. The plan was to always be able to accommodate emergent or urgent surgical procedures. Therefore, a contingency plan was developed to support the use operating rooms for Covid 19-positive critically ill patients, if no further space was available. Alternatively, a high number of critically ill patients were boarded in the emergency department as all planned options were utilized in phases 1, 2, and 3. One temporary structure that was constructed was a tent for triage of suspected Covid 19 patients that was used during a 10-day period of high activity.

PLANNING FOR SURGE: WHAT EDUCATION WILL BE NEEDED FOR CAREGIVERS?

The next step in our planning process was to determine the educational needs of the caregivers (Table 2). Nurse educators provided basic education about the virus and its systemic effects. Our staff was provided assistance in acquiring knowledge about the virus that was constantly evolving. A daily Covid19 update was uploaded and archived each day on our intranet page for staff reference. Nurse educators became an integral part of the process of keeping the staff up to date on all of the changes that seemed to be occurring at warped speed.

Most Covid 19 patients presented to the emergency department with severe respiratory failure. Proning patients would become one of the few physical treatments that provided these patients some benefit. Proning was provided both prior to and after intubation and mechanical ventilation.⁹⁻¹²

Infection prevention became the cornerstone of caregiver education. Everyone needed a refresher on the proper donning and doffing techniques for personal protective equipment (PPE).¹³ This knowledge was also evolving and eventually included covering of hair and shoes.^{14,15} There was apprehension regarding having enough PPE. With the help of the System Supply Chain and the local office of emergency management, constant levels of all PPE were maintained and those levels were reported out each day at the

Table 2. Educating the Caregivers

The virus and its systemic effects
Proning
Infection prevention
Personal protective equipment
Persons under investigation vs Covid positive
Testing: technique, turnaround time and reporting

Daily Safety Huddle as well as entered into the statewide reporting system.

The Department of Health coined a new acronym: PUI or person under investigation. A PUI was generally waiting for the results of a Covid 19 test. The turnaround time for test results went from days in the beginning to hours as weeks went by, as the Department of Health began to allow local laboratory test results to do the testing where reagents were available. A PUI was considered positive until the test results were available. This created isolation difficulties as the numbers began to mount. It was also determined that not all patients who were Covid 19 positive needed to be admitted and criteria for admission were developed.¹⁶ Patients who tested positive for Covid19 but well enough to be sent home from the emergency department were in need of very specific isolation and quarantine instructions for themselves and their families^{17,18} as entire families were testing positive for the virus.

The nasopharyngeal technique for testing could make a difference in results. Although there is a lot of discussion regarding the causes of false-negative findings,^{19,20} it was determined that, to the extent possible, operator error should be taken out of the myriad of causes. A competency training for our staff was developed on the basis of training materials provided by the Department of Health.²¹

To determine the extent of the pandemic in New York State, there were multiple required elements for reporting that was done each day. The data elements for reporting were also subject to change, and on several occasions, that was dependent upon a question that was posed by the media at the governor's daily briefing. One of the elements added later in the state reporting was pediatric cases, once it was determined that there was a rare but devastating complication of pediatric Covid 19.^{22,23} In addition, to assist with federal reporting requirements, including those to National Health Safety Network, the Centers for Disease Control and Prevention's National Healthcare Safety Network, our system required that report-

ing elements be uploaded to them so that they could report federal reporting metrics as a system.

PLANNING FOR SURGE: WHO WILL BE THE CAREGIVERS?

Part of the governor's executive order to plan to accommodate a surge in patients was also to require cancellation of all elective surgery.⁷ With a 10-day notice, planning began for the staff that would be required to care for incoming Covid 19 patients (Table 3). An administrative decision was made that, within obvious constraints, any staff member who wanted to work would be trained, whether his or her department was closed or there was a curtailment of the department's usual business due to the pandemic. The first objective was to systematically cross-train the perioperative staff based first on their present competencies and then determine the skill group that would require just-in-time training.

While it was assumed that postanesthesia care unit nurses would be the source of critical care nurses, this group would require training on the inpatient module of our electronic health record. The credentialed electronic health record trainer was able to provide the same level of competency in 1 day that was usually provided in 3. To accomplish this, nurse educators teamed with the credentialed trainer. Other nurses in perioperative care were also identified as having recent experience in critical care and were added to the mix of those who were trained. These included nurses working in the operating room,

Table 3. Caregiver Selection

Registered nurses and unlicensed assistive personnel
Non-RN direct care support
Intensivists
Ancillary support departments
Nutritional services
Environmental services
Pharmacy
Respiratory

interventional radiology, and the ambulatory surgical unit. There was also a group of ancillary support staff, including surgical techs and central sterile techs, who were repurposed after having completed just-in-time training. This group provided support to the nursing staff caring for increasing numbers of Covid 19-positive patients. Some of the staff in this group had recent experience in other areas of hospital work such as nutritional and environmental services. Several went back to augment the efforts of those departments.

The usual intensivist coverage needed to be augmented with the appropriate skill level. Using a similar approach as how the critical care nursing group was augmented, it was determined which advanced practice providers already on staff would be able to provide intensivist coverage, based on experience and privileging. Two advanced practice providers from our presurgical testing department were able to be repurposed and trained.

Because of infection prevention considerations, it was determined early on that the preferred group to intubate patients would be the anesthesiologists and they were equipped with specific PPE to safely perform the task. The anesthesiology group also secured the additional intensivist coverage needed for what eventually became 3 different sites for critical care patients, totaling 40 beds. The anesthesia group was able to provide this coverage with group physicians and CRNAs and then put out a nationwide call for other anesthesiologists and CRNAs. They were extraordinarily successful in their recruiting efforts. This enabled us to provide consistent 24 hours a day/7 days-a-week coverage.

The plan was to deliver a type of team nursing.²⁴⁻²⁶ Critical care nurses worked with medical-surgical and telemetry nurses. On a shift-by-shift basis, the best combinations of staff were determined on the basis of their competencies and personal knowledge of the leadership staff. When more than 2 critical care patients were needed to be assigned to a critical care nurse, the critical care nurse was teamed with a telemetry nurse or a medical surgical nurse and, where possible, a surgical tech. At times, it was necessary to have

our CRNAs work as critical care staff nurses and lead a similar team. The necessary level of nursing care that met the needs of the patients was consistently provided.

It was decided to incentivize any staff member who would be working above his or her budgeted position, including overtime. A contract was executed with travel nurses. Although the travel nurses arrived toward the end of the surge, they were able to provide some welcome respite for the staff. At the end, one of the travel nurses was so impressed with the hospital that the nurse relocated and became permanent staff.

Our ancillary departments were critical to successfully meeting the patient needs during this time. Nutritional services provided at least 5 to 6 times the usual amount of tube feeding for our patients. Environmental services provided the cleaning and trash pickup that had also increased exponentially. Pharmacies provided increased amounts of medications, especially those medications used to sedate this patient population, and were in daily negotiations with supply chain to keep up with the demand.

Respiratory services were the most critical component to the care of these seriously ill and critically ill patients, after medical and nursing care. While managing the patients on ventilators was an obvious part of their care, respiratory therapists also helped manage patients on other types of ventilation support and provided crucial respiratory treatments. They were early proponents of switching all Covid 19-positive patients from aerosolizing treatments to metered dose inhalers, a decision that helped us keep staff safe.

PLANNING FOR SURGE: WHAT ADDITIONAL EQUIPMENT AND SUPPLIES WILL BE NEEDED?

Equipment and supplies needed continual attention (Table 4). Personal protective equipment was mandated for all staff caring for Covid 19-positive patients and any PUIs. There were some challenges securing and safeguarding the appropriate supplies at the very beginning. However, the New York

Table 4. Equipment and Supplies

Personal protective equipment Intravenous pumps, tube-feeding pumps Continuous venovenous hemodialysis Ventilators Conventional Bilevel Positive Airway Pressure Anesthesia Bifurcation
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State Office of Emergency Management provided an on-site staff member 7 days a week to assist with any difficulties encountered securing PPE. Guidance was provided on how to use and reuse n95s.²⁷⁻³⁰ In addition to reporting PPE numbers to regulatory agencies as required, numbers were reported at the Daily Safety Huddle. All departments would then report back to their staff at their Department Huddles, keeping them informed to relieve some of their anxiety.

Ongoing evaluation of staff safety was a priority. As information changed, practice changed. It started with n95s and isolation gowns and then shoe covers or dedicated shoes, hospital-provided scrubs, isolation gowns, n95s covered with procedural masks, eye shields, and bouffant caps were eventually added.¹⁴ While n95 masks whose integrity was compromised were replaced, the purchase of an ultraviolet light sanitizing machine allowed safe reuse of n95 masks up to 2 UV treatments per mask. This enabled safe extension of the use of n95s and maintenance of an adequate supply.^{27,28}

Intravenous (IV) pumps and tube feeding pumps became scarce, along with their disposable supplies. Rentals and loans from local nursing schools and nursing homes were sought. Early on, IV tubing that was long enough to enable staff to locate the IV pumps just outside of the patient rooms was secured. This helped limit the number of times that staff needed to enter rooms and thus conserved PPE. The literature supported our change in practice that allowed a longer length of time between changing

peripheral IVs without compromising infection prevention.³¹ Safe, alternate ways to deliver tube feedings to our patients were also reviewed.³²

Many critically ill patients with Covid 19 disease developed acute kidney injury that required dialysis. Dialysis machines and disposable supplies were in short supply. Our patients were safely maintained on dialysis. However, many hospitals in this area maintained their patients requiring dialysis on continuous venovenous hemodialysis.^{33,34} This was yet another competency that would need to be provided to the nursing staff and further increased the complexity of patient care.

The most common reason why patients seek medical help in the setting of Covid 19 is that they are experiencing respiratory distress.^{35,36} In preparation for the predicted influx of patients, the supply of ventilators and disposable supplies was inventoried. Alternatives to providing ventilator support were discussed. It was determined that Bilevel Positive Airway Pressure (BiPAP) machines could provide adequate backup support.³⁷

Part of the preparations for ventilatory support included a discussion with the anesthesia department to determine how anesthesia machines might be used in lieu of ventilators and BiPAP machines if all were in use.³⁸ There was some support in the literature for what could be the very last resort for ventilator support: bifurcating or splitting an anesthesia machine between 2 patients.^{39,40} As part of a system, as well as having the backup of New York State emergency supplies, neither of these last 2 options: anesthesia machines or bifurcation ever became a consideration.

PLANNING FOR SURGE: HOW TO BEST CARE FOR THE CAREGIVERS?

Caring for the caregivers became an essential component of planning for the pandemic surge (Table 5). While planning for the surge of patients, no one could have predicted the incredible stress that staff would experience providing care for these patients. Continual change became the norm. Keeping staff

Table 5. Caring for the Caregivers

Stress
Ethical considerations
Exposure threat
Hospitalization
On-site grocery store
Celebrate victories
Songs for extubation and discharge
Innovations in care

members safe from exposure through appropriate use of PPE proved particularly challenging. Although supply issues were quickly addressed and basic donning and duffing techniques did not change, PPE requirements changed over time and staff needed to be updated accordingly.^{14,15} Knowledge of the disease, the supportive care that we provided, and the newly developing treatments were constantly changing. It began as a seemingly respiratory viral illness that quickly progressed to multiorgan, multisystem involvement in those patients who developed critical illness.¹⁶ Staff education became a continuous process.

Over time, the palliative care team began to play a pivotal role in supporting families, patients, and staff. The team was frequently the conduit to supportive care and communications that often involved end-of-life decisions.⁴¹ Many of the critically ill Covid 19 patients were Spanish-speaking, adding an additional communication challenge when discussing end-of-life decision making. Several times, entire families were ill, adding yet one more difficulty in determining who was the most appropriate legal decision maker.

Staff exposure to contagion was a constant threat. Staff were concerned for themselves and for their families. While scrubs were provided for staff, most staff reported changing their street clothes in their garage and then laundering them immediately in hot water. Despite health care reports of high numbers of frontline workers testing positive for Covid 19, a small number of staff test positive.

Many staff worked beyond their budgeted hours to assist us in providing care for these patients. One of the many unexpected results of this was the inability of staff to obtain basic food and sundries for themselves and their families as many local grocers found themselves in short supply and curtailed their hours of operation. Retail was set up for staff to purchase needed items through the café, stocking such items as eggs, milk, fresh vegetables, fruits, toilet paper, and paper towels. Nearby hospitals reported providing a similar option and added online ordering for their staff members.

One of many lessons learned was that, once suited up in complete PPE, it was difficult to identify the staff member. In addition, there were many staff members who were working in areas different from their usual departments. Labels were made with licensure titles such as RN, MD, respiratory therapist, among others. This identification was crucial in emergent situations to enable immediate identification of each person in the room, improving situational awareness.

Other ways to provide emotional support and find positives in the day-to-day work were established.⁴² A serenity room that was frequented by staff, across all disciplines gave respite. Inspirational stories were shared at the daily safety huddle. A White Board was developed that was mounted in the lobby. It was updated daily with the number of patients who were extubated and the number of patients who were discharged the day before. Staff could see this entering and exiting the hospital. Songs were identified that would play over the hospital public address system with each extubation and with each patient who was discharged. When possible, using PPE and social distancing, a group would assemble in the front lobby to clap and cheer each discharge.

PLANNING FOR SURGE: OTHER CONSIDERATIONS

There were other considerations that emerged (Table 6). As the number of patients

Table 6. Other Considerations

<p>Engineering Environmental services Patient-family communications</p>

requiring critical care increased, there was a need to increase the number of cardiac monitors. All transport monitors were retrofitted to be used on a 10-bed telemetry unit that was converted into the third critical care unit. The engineering department was innovative and worked to create additional negative pressure rooms. The telemetry unit had solid doors. The engineering department quickly cut observation windows into each of these doors to enhance our ability to visualize and monitor these patients, while maintaining the integrity of the door.

The department of environmental services ensured that all areas received recommended cleaning and sanitizing. Patient curtains were eliminated in some areas, thus reducing another surface that could be a source of contamination.

The rehabilitation staff assisted in the physically demanding job of proning patients.⁹ First, the staff learned the physiology and positioning. The schedule was then organized to maximize proning, always reminded that some patients could not tolerate the position due to hemodynamic instability. Skin care was of paramount importance^{43,44} as patients could be left for up to 16 hours prone, as tolerated.

Early in the surge, visitors were limited. Then there were state mandates that provided guidance on visitation.⁴⁵⁻⁴⁹ The need for patient-family communication and the need for physician-family communication were quickly identified. The director of patient experience developed a program that was titled “St Charles Connect.” Utilizing donated iPads, repurposed staff from outpatient areas and therapists who were part of the proning

team completed more than 700 virtual visits. While about 80% were social in nature, 20% of the virtual visits were end-of-life situations in which the family had the opportunity to say their last goodbyes.

CONCLUDING THOUGHTS

New York State was one of the first states to experience a surge of extremely ill Covid-positive patients. Hospitals had approximately 10 days to plan for this influx but much of it was uncharted territory. It was a team effort that would safely guide all of the staff to provide the best possible care and environment for these patients.

The pandemic surge required some planning but mostly flexibility. There were many lessons learned (Table 7), some of them published here and many others published elsewhere. All health care workers who worked during this pandemic, especially frontline and first responders, have been forever changed by their experience. Those of us who led the way in planning and modifying those plans as the situation warranted can only hope that history will judge us fairly and understand that we made the best decisions that we could, with all the available information at that time.

Table 7. Lessons Learned

<p>When expanding bed accommodations, keep staffing in the forefront. Education changes as frequently as the research becomes public. Find work for all staff who wish to contribute: there is plenty to be done. This is collaborative, inter- and intradisciplinary work. There must be continual surveillance of equipment and supplies. Caring for the caregivers cannot be underestimated.</p>
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