Beth Israel Lahey Health
Beth Israel Deaconess Medical Center

Doubling ICU Capacity by Surging onto Med Surg Units during the COVID- 19 Pandemic

Sharon C. O 'Donoghue, DNP, RN, Nurse Specialist, Barbara Donovan, MSN, RN, Nurse Specialist, Joanna Anderson, BSN, RN, CCRN, CNRN, Jane Foley, DNP, RN, Associate Chief Nurse, Jean Gillis, MSN, RN, Nurse Specialist, Kimberly Maloof, MSN, RN, Nurse Specialist, Andrea Milano, MSN, RN, CCRN, CMC, Nurse Specialist, John Whitlock, MS, RN, Nurse Specialist, Susan DeSanto-Madeya, PhD, RN, FAAN; Weyker Chair for Palliative Care/Associate Professor Nurse Scientist

Introduction/Problem

- As COVID-19 was sweeping through the nation, Beth Israel Deaconess Medical Center (BIDMC) in Boston, was preparing for a projected influx of critically ill patients in need of hospitalization
- While it was anticipated that workflow would need to change, the full impact of the pandemic for the medical center was unknown, causing increased uncertainty.
- It rapidly became apparent that a plan for the arrival of highly infectious critically ill patients, as well as a strategy for adequate staffing, protecting employees and assuring the public that this could be managed successfully, was needed.
- A hospital's response to a large-scale event is greatly impacted by the ability to surge, and depending on the type of threat, to maintain a sustained response. Planning for alternate critical care space has many challenges, the need for a hospital to **surge** critically ill patients and care for them outside the ICU footprint is referred to as an ICU surge. To identify surge capacity, an organization must first consider the type of event to appropriately plan resources.
- An epidemic surge drill, conducted at BIDMC in 2012, served as a guide in planning for the COVID-19 pandemic.
- The principles of Crisis Standards of Care and a Hospital Incident Command Structure (HICS) were used to clearly define roles, open lines of communication and inform our surge plan.
- Preparation began by collaborating with multidisciplinary groups to acquire the most appropriate space, adequate supplies, and identify and train staff.

Aim/Goal

- An ICU Surge Planning Committee was convened and served as a subgroup of HICS.
- At the first planning committee meeting, a walkthrough of all units identified as potential surge spaces was completed, and specific units were chosen to best meet the surge needs.
- Issues discussed were unit layout, proximity to existing ICUs, ability to close doors, and ventilator and hemodynamic monitoring capabilities.
- The planning phase began in February, well before it was needed.
- The leadership team was informed by HICS that the trigger to escalate and open the surge areas would be when ICU capacity reached 70 patients.
- Once this occurred, there was a twelve-hour window given to open the surge areas.

The Team

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The Interventions

- Teams were formed to identify the necessary resources to expand the ICU environment quickly and efficiently.
- Educational training was developed for redeployed staff.
- Shadowing experiences prior to the actual surge were extremely valuable.
- Having NS support with Just in Time training and twice daily huddles to update staff on current PPE, any policy or supply updates during this rapidly changing environment were highly valued by the staff.
- ICU surge spaces varied from Post Anesthesia Care Unit (PACU) to 2 Med Surg (MS) Units both RB6 and RB7 .
- 36 bed MS unit was converted to a 36 bed ICU.
- At the surge peak, 34 ICU level patients on RB 7 were being cared for with team nursing with both ICU and MS nurses caring for a patient

Results/Progress to Date

- BIDMC experienced the largest surge of ICU patients within a hospital system in the state of Massachusetts.
- ICU capacity was expanded by 93% from 77 to 149 beds; and the surge was maintained for approximately 9 weeks.
- Planning for the surge of critically ill patients required a thoughtful, collaborative approach. The preparation phase was an important time where teams were formed to identify necessary resources in order to quickly and efficiently expand the ICU environment.
- Educational training including shadow experiences prior to the actual surge were valuable. Ongoing staff support and communication from nursing leadership was necessary to ensure safe, effective care for critically ill patients in a new and dynamic environment.
- MS floors needed to have equipment and supplies for traditional ICU but we quickly learned the Covid patients had specific supply needs such as each patient need 5-6 IV pumps, arterial lines, vents, pillows for proning etc. and we were constantly readjusting our supplies to keep up with the demand

For more information, contact:

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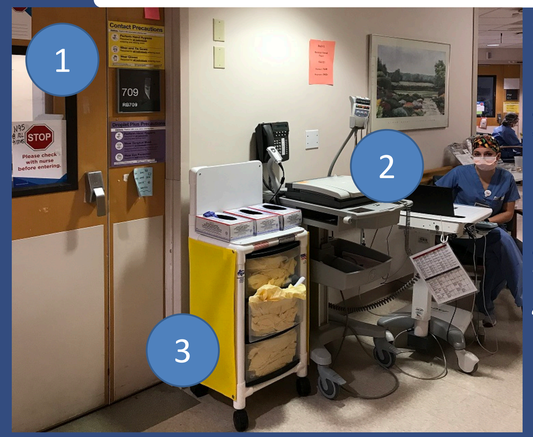
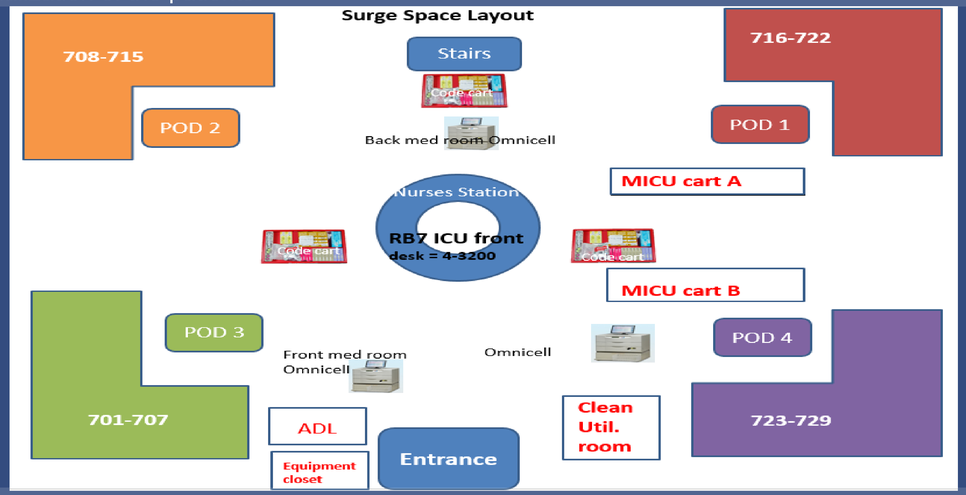
More Results/Progress to Date



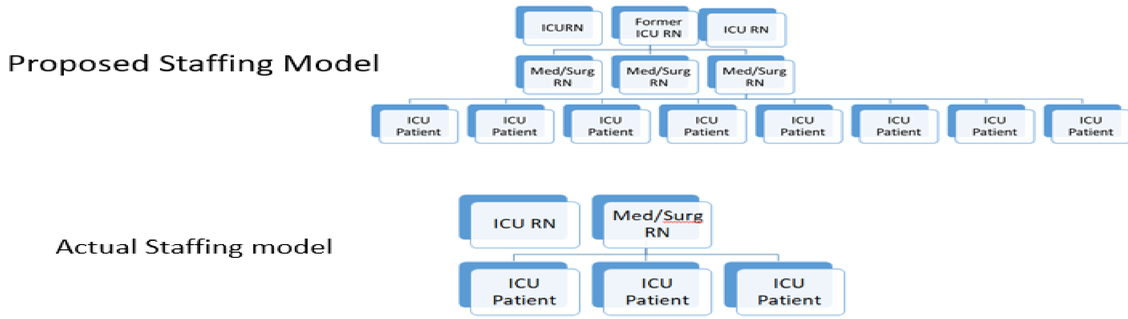
1. Windows were cut into doors to allow better visibility of the patient
2. WOWs downloaded with Metavision™ outside the patient rooms allow a nurse workstation in proximity to the patient room
3. Rolling PPE carts at the doorway
4. IV pumps were moved outside some rooms with IV extension tubing used to run it under the door

Both RB 6 and RB 7 were modified to allow the nurse to have close proximity to the patients and alarms as well as best visualization of the patients



- The MS floor was divided into 4 pods which functioned as 4 ICUs with physician and nurse teams working with RT and pharmacy support to care for these critically ill patients.
- These maps were posted to assist staff to know locations of Omnicells, supplies and emergency equipment

Proposed and Actual BIDMC Surge Staffing Model



The ICU/MS nurse teams cared for 2 or 3 critically ill patients. The 2 nurse to 3 patient ratio was very stressful for the staff as these patients could be critically ill and very unstable. Two resource nurses were staffed to make the assignments, deal with staffing issues and support acuity. Staff was supported by ICU and MS nursing directors, MS and ICU NS and UBEs.

Lessons Learned

- The ICU leadership team carefully chose patients who could transition to the newly built ICUs. Patients chosen were stable on their ventilator settings, as well as pressor and sedation regimes. Initially, the plan was to admit all patients from the Emergency Department (ED) to the original ICU spaces with the goal of stabilizing them before transfer to the newly developed units. This was not always possible and there were times when patients were admitted directly from the ED to the surge units.
- There were several issues with the MS space and steps were taken to improve workflow and the safety of the patients. Of the 36 beds, only 2 rooms had windows built into the doors and the nurses quickly identified this as a safety concern. Within two days, windows were cut into all other doors by the maintenance department which allowed for visualization of the patients

Next Steps

- Unfortunately we had to surge again in the fall of 2020. We recalled the ICU/MS nurse teams who had previous training and were able to use the PACU for Covid negative ICU patients and use RB 7 for Covid positive patients.
- We were very nimble reopening the surge space. We were able to open 2 pods on RB 7 and the PACU in a short amount of time.
- We have learned it is more difficult to close the surge space and maintain our ICU capacity in the original ICU footprint

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