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#moreVentsNOW

#RaisetheBar

**A Call to Action: Preparing for Overwhelmed ICUs in the United States
By Leveraging Existing Operating Rooms, Anesthesia Machines, and
Perioperative Personnel**



An intensive care unit dedicated to treating coronavirus patients in Wuhan, China. Experts say the U.S. would experience significant shortages of medical supplies in plausible worst-case scenarios. Feature China/Barcroft Media via Getty Images

www.nytimes.com/2020/02/29/health/coronavirus-preparation-united-states.html

THE URGENT PROBLEM:

There will be insufficient **critical care beds and ventilators** in the United States healthcare system to account for the tsunami of **critically ill** COVID19 patients who will require **intense, ICU-level** treatment for many days in our hospitals during the upcoming weeks and months. (See the most recent publication from the Society of Critical Care Medicine [here](#).)

While some cities are commendable for setting up patient beds in parking lots, tents, and soccer fields -- **we need NOT JUST BEDS/cots/stretchers** -- there is an urgent need for **critical care** beds that are **equipped** with:

- * **VENTILATOR BREATHING MACHINES** for when patients' lungs are so overwhelmed by infection that they can't breathe on their own (literally life & death situation)
- * **PHYSICIANS & NURSES WITH EXPERIENCE** using these complex vent machines & caring for critically ill patients. (ICU physicians go through at least 12 years of education/training, and then years of providing care to patients with life-threatening conditions)

AVAILABLE RESOURCES:

Excess OR Capacity: Many hospitals, as recommended by the CDC, Surgeon General, and the [American College of Surgeons](#), are canceling all elective surgery until further notice.

Operating Rooms as ICUs: All US-based **hospital operating rooms and ambulatory surgery center (ASC) operating rooms have dedicated anesthesia machines which are capable for use as ventilators** alone, and all the equipment that is necessary to keep critically-ill patients alive is in the operating room:

- Anesthesia machines as ventilators
- Multiple Infusion pumps (sedation, paralytics, analgesia, vasoactive substances, other)
- Invasive and noninvasive monitors
- Equipment for IVs, airways, etc.
- Emergency medications
- Continuous veno-veno hemofiltration (if necessary)
- Equipment for prone positioning in ARDS
- Need in-line suctioning attachments so circuits do not need to be disrupted for decreased aerosolization
- Sequential Compression Devices

Furthermore and more importantly, **the staff in the operating room are exquisitely trained to care for critically ill patients**, with many providing such care daily for surgical operations on critically ill patients. The anesthesiology care is commonly led by an anesthesiologist physician who may be working alone or with physician residents, certified registered nurse anesthetists and/or anesthesiology assistants, an anesthesia technologist, a circulating nurse, and surgical scrub technologist or a surgical nurse. **This team has the skills, expertise, and knowledge to care for critically ill patients in the Operating Room.**

THE CALL TO ACTION -- HOSPITALS & GOVERNMENTS MUST ACT NOW:



(Download the latest version of the graphic: [.JPG](#) & [.PDF](#))

Steps to Convert Operating Rooms to ICUs NOW:

- Affected hospitals should rapidly **identify & gather relevant stakeholders** in the planning and implementation of proposed changes. This can include (not exhaustive list, feel free to add)
 - Intensivist physicians, intensive care physician extenders (NP's, PA's), physicians in training (ICU fellows & medical/surgical residents)
 - ICU nurses
 - Emergency room physicians and physician extenders (NP's, PA's)
 - Emergency room nurses
 - Anesthesiology physicians, Perioperative Medical Director
 - Operating room charge nurse
 - Hospital administrators & C-suite
 - Periop Medical & Nursing Executives

- ii. CMO & physician leaders
 - iii. CNO & nursing leaders; infection control leader; transitions of care / case management leader
 - iv. CFO, finance, reimbursement from insurance & Medicare/Medicaid
 - v. COO, facilities management, systems engineering
 - vi. Legal, risk management, regulatory compliance, quality & safety
 - vii. Medical ethics committee, hospital patient advocate, etc
 - viii. CMIO, CIO & IT for EMR(templates, order sets, menus) & other non-PACU CIS(clinical info systems)
 - ix. Marketing & Internal Communications team, clinical education trainers
 - x. HR & staffing/scheduling management
2. The Operating Room Stakeholders (Charge Anesthesiologist, Charge Nurse and/or Perioperative Medical Director) and COO/Facilities Management should determine appropriate **allocation of operating rooms: which operating rooms & and also an asset inventory of what equipment or capabilities are available in each OR room.** Note that most operating rooms are NOT negative pressure rooms and thus risk the spread of airborne infection, though this is unlikely to be a significant concern given these patients are intubated.
3. Stakeholders should determine collaboratively the **criteria for which patients to triage** to the ORs for medical management. As hospitals exceed capacity, it is possible that many critically ill patients will be boarded in the emergency room. Criteria will need to be established that takes into consideration the different skill sets of the ER, ICU, and OR. Considerations should include:
- a. Should any of the boarded ER patients be sent directly to the Operating Rooms instead of the ICU? This makes the most sense for any patients who may require surgical intervention.
 - b. How close is the Emergency Department and ICU to the Operating Room?
 - c. Which patients are stable for transport?
 - d. If an infected patient is transported, how can providers be protected?
 - e. Can nursing ratios be changed in the ER and ICU safely so that some of the ER and ICU nurses can help with transportation and management in the Operating Rooms?
 - f. Is an ICU-level physician available to help with co-management of patients in the Operating Room?
 - g. Minimize disruption of ETT-Circuits during transport, suctioning, clinical management
4. The Operating Room Charge Staff (Charge Nurse & Physician Anesthesiologist) will have to determine what sort of staffing ratio will be appropriate for the transferred critically-ill patients. Typically anesthesia-level care in the Operating Room requires an anesthesia provider at all times. However, given that this is critical care rather than anesthesia care, it should be possible to staff these patients in similar fashion to the critical care units, with single physician anesthesiologists supervising care in ICU ratios of 10:1 or more patients to physician, while understanding that given these patients may

be among the most critically ill while being cared for in a non ICU setting, situations may require 1:1 staffing of providers and nurses. Centralized data exchange will facilitate care for multiple critically ill patients in the Operating Room. For example:

- a. The circulating nurse could stay in the Operating Room with the patient, checking ABGs and labs, making changes to the ventilator as directed by the supervising anesthesiologist
 - b. The supervising anesthesiologist can monitor multiple patients from a centralized location in the hospital. Residents, CRNAs, and Anesthesiology assistants can provide 1:1 bedside care when it is required.
 - c. Respiratory therapists can also be shared among many operating rooms to aid in suctioning patients and changing positions if it is required (prone positioning for ARDS, etc.)
 - d. Since these patients will require 24 hour care, staff will have to be rotated on an 8 or 12 hour basis, with standard built in breaks to ensure optimal care.
5. Facilities management and other staff need to ready those OR rooms by:
- a. Placing signage in appropriate places that notes patient is a critically ill medical patient
 - b. Making sure the rooms are removed from the OR scheduling system
 - c. Removing the operating room bed from the room and any surgical equipment that can potentially be contaminated
 - d. Finding ICU and/or Med-Surg beds for long term management of ICU patients in the Operating Room
6. Once the above steps have been completed, a single point of contact from the ICU (Likely the Physician Intensivist) and a single point of contact from the Operating Room (Likely the Physician Anesthesiologist) should coordinate the care of the patients being transported from the ER or ICU to the OR.
- a. Clinical handoff/sign out of all relevant info
 - b. Vents/Lines/Tube information should be communicated
 - c. Minimize disruption of ETT-Circuits during transport, suctioning, clinical management
 - d. Do any drips need to be prepared?
 - e. What is the clinical criteria for when a patient receiving ICU-like care in an OR would need to be brought back to the ICU?

What can I do now?

Calls to Action:

- 1) Please share this with your hospital leadership
- 2) Please invite colleagues to add their suggestions and local/facility challenges
- 3) Please reach out to any connections that are stakeholders and add them to the conversation
 - a) Public Health Officials
 - b) Bioethicists
 - c) Local, Regional, and National Politicians

Please include your contact info in a comment if you want to be included in the working group that will start implementing this workflow. We will make changes to this document in real-time.



Photo source: news.sky.com/story/coronavirus-they-call-it-the-apocalypse-inside-italys-hardest-hit-hospital-11960597
In the main hospital in Bergamo, Italy...This isn't really a ward, it's a waiting room, we just have to use every bit of space...
The ICU is full...so we had to reorganise our emergency room and our hospital [to] three levels of intensive care."
https://www.youtube.com/watch?v=_J60fQr0GWO

Dr. Daniele Macchini's observations in Italy:

*"I can also assure you that **when you see young people who end up intubated in the ICU...** all this confidence for your young age goes away... And there are no more surgeons, urologists, orthopedists, **we are only doctors who suddenly become part of a single team** to face this tsunami that has overwhelmed us..."*

Each ventilator is like gold: those in the operating rooms that have now suspended their non-urgent activity are used and the **OR becomes an ICU that did not exist before**. I found it amazing... how it was possible to put in place in such a short time a **deployment and a reorganization of resources** so finely designed to prepare for a disaster of this magnitude. And every **reorganization of beds, wards, staff, work shifts and tasks** is constantly reviewed day after day to try to give everything and even more..."

https://www.reddit.com/r/medicine/comments/ff8hns/testimony_of_a_surgeon_working_in_bergamo_in_th
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