

Institutional Impact: Anesthesiology and the Covid 19 Crisis

Objectives:

- Describe hospital vulnerabilities at the onset of the Covid-19 pandemic
- Outline steps taken to address capacity and resource challenges at one NYC hospital during Covid-19 surge
- Identify the ways anesthesiology departments can have substantive impact in response to hospital crises

Perspective:

- *“The Chinese use two brush strokes to write the word 'crisis.' One brush stroke stands for danger; the other for opportunity. In a crisis, be aware of the danger--but recognize the opportunity.”*
— **John F. Kennedy**

Assessing Vulnerabilities-Tenets of Crisis Resource Management:

- Additional ICU and ED capacity would be necessary
 - Achieved 220% baseline ICU volume
 - ORICU 80 ICU beds for critically ill covid patients
 - 85% total hospital capacity covid positive at peak
- Critical Care clinical skills would be in short supply relative to need
- Possible ventilator and RT shortage
- Probable dialysis machine and staffing shortage
- PPE supply chain would be stressed (4000 → 90,000 masks daily)
- Timely and accurate data and communication systems would be needed (Epic go-live only 4 weeks prior to first admission of covid patients)
- Critical needs not in place at time of surge
 - Dialysate → needed to generate our own
 - IV tubing and IV poles
 - ETCO2 monitoring for pop-up ICUs
 - Centralization and availability of bedside physiologic monitoring for pop-up ICUs
 - Cameras to visualize patients in pop-up ICUs
 - ICU-type beds
 - Domicile and transportation for staff

Building out Critical Capacity:

- Shuttered ORs → multiple ICU beds with anesthesia machine ventilators capable of PCV
 - Reverse positive pressure to create negative pressure relative to cores and corridors
- Create teams with defined competencies to extend constrained resources
 - Intubation
 - Critical care “pyramids”
 - Ventilator management
 - Invasive line placement
 - Renal replacement therapy
 - Bedside Imaging
 - Palliative Care
 - Tracheostomy teams
 - Ethics
 - Clinical Pharmacy services
 - Proning
 - Point of Care testing
 - Family Liaison
- Standardize practice protocols for multidisciplinary teams (airway, chest tube, VTE prophylaxis, vent mgt, shared ventilator, etc.)

Indispensable Anesthesiology Skillset During Crisis:

- Trained in crisis resource management
- Work routinely in high-performing teams
- Expert in myriad critical and acute care skills
 - Anesthesiology intensivists were apex of critical care pyramid teams
 - Ran ORICU and ventilator/infusion/sedation management
 - Led Intubation teams
 - Spearheaded protocol development for enterprise
 - Worked with pharmacy team on drip management and drug substitutions due to shortages
 - Facile with point of care testing
 - Performed bedside ultrasound where portable CXR not accessible/feasible
 - Invasive line placement
 - Critical communication to support families and teams
 - Tracheostomy team

Important Department Considerations:

- Does the department perceive this as opportunity or burden (infectious risk, financial risk, disproportionate share of workload versus vital member of medical community, showcase skills/relevance, regional or national leadership or scholarship for faculty)?
- Is the department prepared to offer broad set of services, ie critical care, ICU vent management, bedside ultrasound, family liaison support, multi-site line placement, eg subclavian, IJ, femoral, PICC, midline?
- What is the relative understanding of the department by hospital administration? Relationship?