

MEDIC COVID-19 Grand Rounds 4.13.2020

Sites & Systems Represented By Call Attendees:

- Henry Ford Health System
- Michigan Medicine
- Detroit Medical Center
- St. Mary Mercy Hospital Livonia
- Holland Hospital
- Mercy Health St. Mary's Hospital Grand Rapids
- St. Joseph Mercy Hospital Ann Arbor
- Munson Medical Center
- Beaumont Health System

MEDIC Coordinating Center Staff Attendees: Keith Kocher, Michele Nypaver, Jason Ham, Michelle Macy, Andy Scott, Alyson Stone, Carrie Smith, Megan Hogikyan, Christie Radden, Joan Kellenberg

DISCUSSION TOPIC: Emergency Department Care of the COVID-19 Patient: Lessons Learned from the Frontlines of Southeast Michigan

Grand Rounds Goals:

- Learn from the clinical experience of emergency department physicians in southeastern Michigan caring for COVID-19 patients
 - MEDIC is in a unique position as a convener and connector of EDs across the state of Michigan
 - We are, at our core, a learning collaborative
 - This grand rounds grew out of a perceived need for the opportunity for all of us to share and learn from each other during this moment of crisis, and especially as relates to ED care and operations
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Grand Rounds Format:

1. **Context: COVID-19 in Michigan**
2. **SE Michigan Health Systems Present ED Experience**
 - a. **Henry Ford Health System**
 - b. **Detroit Medical Center**
 - c. **Michigan Medicine**
3. **Questions & Answers**

Context: COVID-19 in Michigan

- MEDIC has hosted multiple town halls on the COVID-19 response among emergency departments within our network
- Goal for this Grand Rounds is to draw on lessons being learned from health systems in southeast Michigan counties that are most impacted by COVID-19
- Michigan is hit hard by the COVID-19 pandemic when compared nationally and even internationally

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- Even focused at county level, Wayne county in particular is an epicenter for this pandemic
- Disclaimers:
 - “There is no U.S. Food and Drug Administration (FDA) approved product available to treat COVID-19.” (*Fact Sheet For Health Care Providers Emergency Use Authorization (EUA) Of Hydroxychloroquine Sulfate Supplied From The Strategic National Stockpile For Treatment Of COVID-19 In Certain Hospitalized Patients, version date 4/3/2020.*)
 - “The U.S. Food and Drug Administration (FDA) has issued an Emergency Use Authorization (EUA) to permit the emergency use of hydroxychloroquine sulfate supplied from the Strategic National Stockpile to treat adults and adolescents who weight 50 kg or more and are hospitalized with COVID-19 for whom a clinical trial is not available, nor participation is not feasible.” *Fact Sheet For Patients And Parent/Caregivers Emergency Use Authorization (EUA) Of Hydroxychloroquine Sulfate For Treatment Of COVID-19 In Certain Hospitalized Patients, version date 3/28/2020.*

Health System Presentations – each presenting site reviewed the following for their ED:

- *High level debrief of site ED pandemic experience to date*
- *Remarks addressing some of the following:*
- *Playbook for Respiratory Support*
 - *Proning of the awake, non-intubated patient*
 - *Permissive hypoxia of the non-intubated patient*
 - *Indications for use of heated high flow & non-invasive ventilator support*
 - *Timing of escalating to intubation/mechanical ventilation*
- *Risk Stratification*
 - *Use of biomarkers to predict disease severity & progression*
 - *Risk stratification for COVID patient discharge*
 - *Novel approaches to follow-up care*
- *Workforce Safety & Equipment*
 - *Approach to workforce deployment during surge*
 - *Maintaining staff safety*
 - *Approach to ventilator conservation*

Henry Ford Health System

- *Early response planning and quick adaptation are key*
 - *Focused early preparation on trying to anticipate how to help the walk-in worried well, EMS traffic, and particularly an anticipated surge in the number of critically ill patients being seen*
- *Early responses involved:*
 - *Highly-involved leadership team*
 - *Operations team focused on setting up a tent outside the ED*
 - *Anticipating walk-in needs, separating COVID-suspected versus non-COVID-suspected patients*

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- EMS colleagues worked with local EMS providers to plan the ambulance-bay flow, synchronizing those systems with the emergency department systems
- Partnering with facilities at a health system level to understand location of negative pressure rooms was important as well as which rooms could be converted into negative air flow spaces
- Limiting PPE usage by having specific providers
- Important to keep critical care and emergency medicine part of the conversation throughout hospital surge capacity planning
- Developed a guideline recommending safe alternative oxygenation tactics before patient surge to help mitigate possible future ventilator-shortage
 - Guideline recommended optimizing safe alternative oxygenation therapies prior to intubation
- All patients with high flow nasal cannula at >15 liters or BiPAP support were cohorted into negative pressure rooms in the department
 - All providers entering negative pressure rooms were mandated to wear full PPE
- Proning was considered in non-intubated as well as intubated patients in a standard manner
 - Patients who could self-prone were asked to do so
 - Had a proning team to help assist with intubated patients
 - Proned patients daily in the ED at the height of cases
- Recommended early goals of care conversations with patients and families during initial encounter when appropriate, and especially when oxygen requirements escalated and ventilator assistance was anticipated in the future
 - Palliative care assisted in the ED with complex conversations
- Early on patients were being sent home because of the surge, but 2-3 days later were readmitted and intubated took steps to streamline and organize the admission process to help mitigate this issue and ensure consistent practice

Detroit Medical Center (Sinai-Grace Hospital, Detroit Receiving Hospital)

- Sinai-Grace Hospital doesn't have an ICU fellowship or easily accessible palliative care, those services were stretched very thin
- Started using PPE early, even before they started seeing a significant number of COVID patients
 - To see any patients, providers needed a face shield or goggles, an N95, gloves, and gowns if COVID patient
 - Wore full PPE to evaluate every patient
 - Standardized PPE use across job families: N95 or reusable respirators, gowns, hair bonnets, face shields to protect employees
- If patient could self-prone, encouraged them to do that
 - No formal proning teams early on, eventually arranged for proning teams in the ICU
- Early discussions with family about end of life goals was important
 - Challenge having 14 nursing homes in catchment area of SGH, many of these patients have a legal guardian who was not always easy to get in touch with legal guardians to discuss patient end of life goals

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- Challenge of trying to update code status when you have to establish a relationship with a legal guardian or family member over the phone when they cannot see the patient
- COVID patients noted to be hypercoagulable
 - Started measuring d-dimer in patients routinely about 1.5 weeks ago, incredibly high results
 - Seeing large numbers of saddle emboli
- Had to admit a lot of patients because they required a couple hours of oxygen and had no prior oxygen requirements at home so did not have any tanks at home
 - In some cases they were able to send these patients home with a tank directly from the emergency department
- Hospital has just 4 isolation rooms
 - Tried to maintain patients in closed rooms, many closed off with curtains, some with doors
- Ventilation system for the department/hospital is not able to be isolated
 - Made patient management difficult relative to aerosolizing procedures
- Surge in (persons under investigation) PUIs over a couple days, the hospital started operationalizing psychiatry area adjacent to the ED to evaluate PUIs
- Flexed staff in order to accommodate what they were seeing
 - Gave senior physicians choices of where to work
- Keeping up to date on information coming through is almost a full time job
 - Monitoring everything from social media to publications
 - Recommendations are consistently changing and evolving, trying to determine underlying science and best practice
 - Value in having at least one team member to sort through much of this information as it comes out

Michigan Medicine

- Fewer and delayed local cases seen in Ann Arbor when compared with the Detroit area gave Michigan Medicine some time to prepare
 - Mostly geared up for transfers of patients from Detroit-area health systems
 - Taken over 200 transfers out of three major SE MI health systems from ED and ICU
 - ICUs are twice as full as they usually are
 - Leveraged and converted non-traditional space into ICU care spaces
 - PACU, traditional floor units
 - Regional Infection Containment Unit (RICU), 32 bed negative pressure ICU was flexed up fairly quickly, utilized heavily
 - Worked with state and federal government to stand up a large field hospital on campus, has been ready to go but not used yet
- Initial experience was taking cases from other hospitals, with some de novo diagnoses
- Leveraged negative pressure rooms in the ED, EC3 (Emergency Critical Care Center), made them aerosol generating procedure rooms

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- Designed protocols for emergency medicine and the institution related to airway management, cardiac arrest management and some of the early proning protocols in COVID patients
- Working on a biomarker strategy to risk-stratify patients
- Staff safety
 - Baby monitors to communicate in aerosol-generating procedure rooms used to limit number of times staff enter/exit
 - Recently started sterilizing N95s for reuse to conserve PPE
 - Working on innovations for aerosolizing treatments
 - PPE for patients – placing the patient in a mask goes a long way toward minimizing droplet dispersion for different interventions
- In some patients, seeing rapid, dramatic progression within a few hours requiring escalating care

Key Lessons from the Speakers During the Call:

“Our biggest advice would be to be open to adaptation as we learn more about the illness. COVID-19 certainly from a critical illness perspective seems to be primarily attacking the lungs. It is an inflammatory cascade response. As we move forward I think we will see different presentations. We’re already starting to see a second wave where it seems like the myocarditis, pericarditis may be starting to play into it. So knowing the physiological principles of why we have ARDS protocols and septic shock protocols and the willingness to adapt as you see different physiologies.” - Namita Jayaprakash, MB BcH BAO, MRCEM, Department of Emergency Medicine, Division of Pulmonary Critical Care Medicine, Henry Ford Hospital

“I would say something important that we’ve learned because we did this very early is making sure everyone was wearing full PPE for their shift...none of the attending physicians have gotten sick. And also making sure there’s a clear line of communication from the people who are making decisions in terms of guidelines for management and treatment so that people are practicing medicine as uniformly as we can...especially as new information comes out there should be a central person that’s responsible for disseminating that.” – Anne Messman, MD, Department of Emergency Medicine, Sinai-Grace & Detroit Receiving Hospitals, Vice Chair of Education, Wayne State University

“10 days ago or two weeks ago we wrote the critical care consensus recommendations for the health system and some of those things are already outdated because it’s moving so quickly. So just staying flexible. I think this forum is fantastic and I would encourage people to continue to use this forum to gain experience and best practices, as this disease is only a couple months old, from other health systems in the state as we all experience the rapidly evolving pathophysiology of it to see what other people are seeing and use this forum to communicate. The other thing I’ve been really pleasantly surprised by, if there is a silver lining to all of this, is really what is possible when everyone unites around a singular goal and the way we’re able to rapidly shift our operations, our patient care abilities, to collaborate across southeastern Michigan. To really start spinning into the innovation space and coming up with just-in-time solutions for some of the challenges we’ve been facing has really been quite remarkable and so I think there is some silver lining that has come out of this. And I would

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encourage people to just stay the course and continue to share as much information as they can so we can all benefit.” – Ben Bassin, MD, Department of Emergency Medicine, Division of Emergency Critical Care, Director of Emergency Critical Care Center, Michigan Medicine

Key Lessons from Speakers Solicited via Email Post-Call:

“In the ED work flow, we need to try to prevent readmissions of COVID-19 pts after being sent incorrectly. The pts who have the symptom of exertional dyspnea but normal resting pulse oximetry, frequently come back a few days later with worsening lung infiltrates and end up in ICU quickly with intubation and mechanical ventilation.

In Henry Ford, we changed the ED workflow minimally without introducing onerous testing to solve the readmission problem. In triage, we added the following questions, time to onset of symptoms (>7 days may likely benefit from admission), exertion dyspnea (marker of entry to ICU in near future) and co-morbid conditions particularly, obesity. Also, all pts get ambulatory pulse oximetry to show that their SaO2 does not drop below 92% (if this happens, pt likely needs further testing and admission). The testing we do would be NP swab for COVID-19, CXR (looking for bilateral ground glass opacities) and CBC with diff (looking for absolute lymphopenia < 800) and CRP elevated to > 3. This clinical and lab pattern recognition will result is hospitalization.” - Mayur S Ramesh, MD, Senior Staff Physician, Transplant Infectious Diseases and Immunotherapy, Henry Ford Hospital

“It is critical to encourage your institution to develop guidelines and recommendations for the emergency management of these patients, specifically focusing on intubation, resuscitation, additional staffing during surges and resource shortages. Remember that you don't have to intubate every hypoxic patient, maximize your noninvasive ventilation strategies when possible and consider early awake proning when patients are able. Most of all, collaborate with your colleagues in the Intensive Care Units of your institutions because as the beds upstairs fill, many of us will end up boarding these patients, and knowing the protocols upstairs can optimize the management in the ED.” - Jacqueline Pflaum-Carlson, MD, Staff Physician, Department of Emergency Medicine, Division of Critical Care Medicine, Henry Ford Hospital

“During an emergency, whether pandemic or other, always think outside the box and be flexible. Many times, such as with COVID-19, the participants are rapidly bombarded with information some of it useful, some dangerous. The clinician needs to evaluate, reflect and implement based on the science. Finally, protect oneself as well as others, follow best practices.” -Marc S Rosenthal, PhD, DO, FACEP, FAEMS, Emergency/EMS Physician, Medical Physicist, Attending Physician, Sinai-Grace Hospital/DMC, Medical Director, Emergency Management and EMS, SGH/DMC, Supervisory Medical Officer, DHHS/ASPR/EMMO/NDMS/DMAT MI-1, Assoc. Program Director, Wayne State EMS Fellowship, Deputy Medical Director, Detroit East Medical Control Authority