



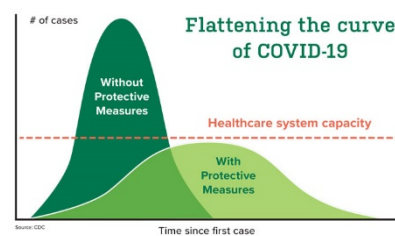
Thoughts about EMS during COVID

Contributors

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Introduction:

The Coronavirus 2019, also known as COVID-19, SARS-CoV-2, and 2019-nCoV, has affected the world since the first cases were reported in China in December 2019. Since then, healthcare systems across the globe braced for what rapidly evolved into an inevitable global pandemic. National health officials' early plans were to delay the virus from spreading to ensure that medical facilities had time to optimize the tools to manage what was planned as the worst-case scenario. Reducing the stress on healthcare systems was known as "flattening the curve" by executives, scientists, and national leaders¹ (Figure 1). Ten months into the outbreak, the curve has flattened, but the virus continued to impact healthcare systems around the world. These healthcare systems were managing, but barely. With the flu season upon approaching this fall and the concerns about another COVID wave, the healthcare systems are bracing for more challenging times ahead.



uab.edu/coronavirus LBS MEDICINE
Figure 1: Flattening the curve

The strategy of containing the virus quickly became obsolete once uncontrolled community spread began. By necessity, the containment strategy evolved into one of community mitigation.

The community mitigation strategy is dependent on front-line responders, particularly those who are the initial contacts for those in the community. These personnel are arguably not in the hospitals but are the men and women first to be exposed to the virus first while providing care-- the emergency medical technicians (E.M.T.), paramedics, firefighters and police. Emergency Medical Services (EMS) has adapted and evolved since the outbreak began in order to protect the responders, provide optimal patient care to the public under crisis conditions, and to help preserve the functioning of the overall healthcare system.

¹ Hidalgo, Bertha, University of Alabama defines "flattening the curve" as the need "to spread out the rate of infection so as to not overwhelm our health care system and infrastructure" (<https://www.uab.edu/news/youcanuse/item/11268-what-exactly-does-it-mean-to-flatten-the-curve-uab-expert-defines-coronavirus-terminology-for-everyday-life>)

A close look at how these dedicated individuals and EMS systems accomplished their patient care mission across a wide range of settings will add to the knowledge base and hopefully, improve the response to a resurgence or future public health emergencies.

Background:

The United States (US) and Israel collaborated on a project to openly share experiences and perspectives, both good and bad, impacting their respective EMS communities during COVID-19. Subject matter experts (SME) from the US and Israel held a series of video calls from July to October 2020.

In Israel, EMS is a national system run by Magen David Adom (MDA). MDA partners and works in coordination with other emergency authorities such as Ministry of Health (MOH) and other health authorities, Israeli police, fire fighters, and the Israeli Defense Force (IDF). As the number of EMS “regular” responses² continued throughout COVID, the implemented pandemic safety procedures increased the ambulance turn over time (time that a unit takes to return to service) dramatically due to transfer of patients to hospitals outside the area of service. Additionally, the extended Emergency Department (ED) Triage time, combined with the need to properly don and doff PPE, disinfecting the ambulances, extremely prolonged waiting time at ED gate, and additional tasks added to the “regular activities”, significantly impacted Israel’s EMS system throughout the pandemic response.

For the United States, the Office of the Assistant Secretary for Preparedness and Response (ASPR) from the U.S. Department of Health and Human Services (HHS) facilitated participation from the U.S. SMEs. These SMEs represented EMS systems in New York City, Albany, NY, Chicago, IL, and Washington, DC as well as a national organization, the International Association of Fire Chiefs (IAFC), and the National Association of State EMS Officials (NASEMSO).

EMS by the Numbers in the U.S.

- More than 18,200 local EMS agencies respond to 911 calls for medical emergencies and injuries, utilizing nearly 73,500 ground vehicles such as ambulances and fire engines.
- Local EMS agencies respond to nearly 28.5 million 911 dispatches every year in 41 states.
- More than 1.03 million personnel are licensed as emergency medical technicians, paramedics, and other levels of EMS patient care capability within all 50 states, the District of Columbia, Puerto Rico and American Samoa.

Additional support and contributions were provided by the Director of Strategic Cooperation and Assistance Division from the Israel National Emergency Management Authority within the Israel Ministry of Defense, and their U.S. counterpart, the Federal Emergency Management Agency’s (FEMA) Senior International Affairs Advisor.

Methodology:

The experts from both nations met weekly from July to October using Zoom conferencing. For the purposes of focused discussions, the experts initially formed into three working groups: Clinical/Medical Oversight, Education and Training, and Operations/logistics. These groups eventually settled into two work groups—Clinical/Medical Oversight and Operations/Training.

The primary objective of the discussions was to create an open forum to facilitate information sharing between Israel and US SMEs in EMS and Emergency Management. The desired end state of this bilateral

² Typically, there are approximately 2,000 daily responses for a population of 9.3 million inhabitants in Israel.

collaboration is to share best practices/lessons learned particularly in this COVID environment. During the discussions, common themes and topics were identified and shared. The following is a summary of those topics.

Discussion Topics:

Use of pulse oximetry by E.M.T.s: EMS has seen an increase of calls and transports during COVID. Many of the EMS responses have been for those that are in clinical distress and those who are worried-well. The increase number of calls have caused EMS to look for opportunities to innovate to reduce stress to the system. Effective rapid triage is seen as one option. It appears an effective tool to aid in rapid triage of COVID calls is the routine use of pulse oximetry (SpO₂) for E.M.T.s in the field. While most think the existence of co-morbid conditions is a key determinant for transfer, it appears that age and SpO₂ are better trends to monitor. SMEs commented that the SpO₂ is more valuable with this population than the stethoscope and is a better indicator than temperature checks. They noted that individuals with COVID-like symptoms³, specifically shortness of breath as one of the chief complaints. Individuals with an oxygen saturation above 94% typically do not need transport. New York City has introduced SpO₂ as a psychomotor skill set for E.M.T.s, Advanced E.M.T.s, and Paramedics.⁴ It was noted that the use of a smartphone app could be helpful in recording oxygen saturation and notification of worsening conditions. The group confirmed that E.M.T.s require appropriate education to effectively use this as a tool for E.M.T.s for COVID triage. Considerations for cold weather and those well individuals who live day-to-day with hypoxia but utilizing symptoms may help to clarify their clinical status and need for emergent care and transport.

Mitigating overuse of Emergency Departments (ED) and EMS by the public: With COVID, the increased number of EMS calls has resulted in many examples of overwhelmed ED and overuse of EMS ambulances. In many instances, EMS calls resulted in individuals who refused to go to hospitals out of fear of contracting COVID at a hospital that is treating COVID. In these cases, EMS personnel contacted on or off-line medical control to inform them of the position to decide to transport or treat. Prior to COVID, EMS personnel's decision tree would be to error on the side of caution and transport. During the COVID environment, transporting to an already stress ED had to be weighed against leaving the patient at home. Leaving a patient and not transporting them stretched E.M.T.s scope of practice, now having to rely on their triage skills to determine the true need to transport.

There was attempt to preserve the EMS system, and consequently the supported EDs, but ultimately this was not possible for the following reasons:

1. Challenges distributing of patients – initially, EMS used the pre-COVID method of distributing patients to EDs using established protocols. However, this proved to be inadequate and new processes, procedures and protocols has to be set up to allow for moving patients to atypical locations, at times outside of the normal radius of the EMS system.

³ Fever, shortness of breath or difficulty breathing, cough, fatigue, headache, muscle/body aches, sore throat, new loss, congestion or runny nose, nausea/vomiting, diarrhea (<https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html>)

⁴ Listed as a minimum psychomotor skill at the BLS/E.M.T. level (<https://www.ems.gov/education/EMSScope.pdf>)

2. Lack of a financial model of EMS – reimbursement of EMS calls was not always clear or provided— if the EMS unit did not transfer the patient, they didn’t receive reimbursement.
3. Increase use of telemedicine by EMS – injecting telemedicine with EMS units was not mature. Regulations and processes had trouble keeping pace, and the application/scope of care of using telemedicine in the field was not well established.

Many states, as well as many other regional and local EMS offices, implemented an EMS Triage Protocol to determine if an individual meets criteria for “non-transport and/or treatment in place”.⁵ For Israel, another phenomenon noted when a COVID-related call came into EMS, long waiting times at the ED impact decision making and work conditions. These include E.M.T.s/paramedics being in PPE for long periods of time, ambulances running out of oxygen, and having to hold patients for long periods of time. The group discussed a higher degree of the refusal to transport when the called to respond to a COVID case at the end of a shift. This is directly related to the exponential increase wait times seen at EDs. There were many reports of EMS units having to hold patients inside their vehicles/ambulances for hours waiting for space in EDs. As EDs exceeded their surge capacity and became overwhelmed, EMS units were forced to hold patients longer. If that hold time bled into the next shift, holding over EMS units past their assigned shift, there was a tendency is to refuse to transport. This quickly became circular in the Work Group’s discussion—change the field Triage and Treatment, to reduce medically unnecessary (or futile) transport, to reducing ED wait times to allow the EDs to reduce their overwhelmed status.

Increase cardiac arrest and possible stroke: The Clinical Working Group discussed a potential trend of an increased number of out-of-hospital cardiac arrests and possible stroke during COVID. New York City, for example has seen a significant increase (e.g. in the borough of the Bronx, from 4-5 cases in one shift/tour to 15-20 cases). In the case of cardiac arrest, the standard of care is traditionally to initiate CPR and full resuscitative attempts and transport to the closest appropriate ED. During the peak of the COVID pandemic, this was changed to 20 minutes of attempts at resuscitation and then if there was no return of spontaneous circulation or other improvement, the disposition to the medical examiner⁶. This paradigm change created stress among EMS providers, as they are used to “rescue” (do the outmost until patient arrives at the hospital).

Monitoring hospital transfers and “Load Balancing”: The monitoring of hospital transfers was identified as more of a challenge in the US than in Israel. As a consequence of long wait times, monitoring transfers and balancing patients to available beds is needed in the COVID environment. In the US, *EMResource*⁷ is a commonly used system to track healthcare resources, to include monitoring ED status. However, *EMResource* is not universal. There are several reasons for this, but a major reason noted was due to an unwillingness to share bed status between competitive medical facilities. The inability to monitor bed status impacts the ability to manage transfers effectively. One concept called “load balancing” is intended to move less acute patients to where capacity exists, even if that location is outside the typical geographic area of the healthcare system or the EMS coverage. However, the inability to see where those empty beds exist limits the ability to load balance. This also has an effect of EMS driving much greater distances until a bed is found. They use the term “turn-around times” to explain the amount of time it takes to drop a patient off at a facility. With COVID, drop times have increase significantly. It should be noted that load balancing was seen as a potential solution to relieve stress on overwhelmed treatment facilities.

⁵ NYS COVID Triage Protocol - <https://health.ny.gov/professionals/ems/pdf/20-06.pdf>

⁶ Termination of resuscitation procedures/Standard procedure or protocol for MDA

⁷ <https://www.juvare.com/emresource/>

assessing longer travel times versus closest ED patient transfer (from EMS care to hospital care) times. In Israel, the Ministry of Health, under the powers of the “Health Emergency Situation” monitors hospital capacity, providing a daily distribution plan for COVID patients (suspected and confirmed), solving real time issues (day and night), and dealing real time with ICU beds availability and necessary transfers. All these factors resulted in EMS mental and emotional fatigue and sadly in provider suicides. The mental health issues must be addressed, and active monitoring of all EMS providers is critical.

EMS training and scope of practice: EMS training has long depended on trainees classroom didactic and demonstrating skill proficiency on a one to one basis with instructors. This is generally done through hands-on skills training and observing live patient interactions during triage, assessments, and treatment. COVID has curtailed much of the traditional training, all but eliminating hands-on training. E.M.T. courses were being conducted virtually. Allowing for 100% simulation in place of hands-on training was felt inadequate by Medical Directors, students and instructors. It was noted that those trained solely with simulation struggled with hands-on training. Some students graduated while never touching a patient. When in-person hands-on classroom training cannot be performed, some trainees were left to pick up these skills through “just-in-time” (JIT) training in the field. Israel is attempting to push as much to the virtual setting as possible, but have found that many lessons have to be repeated to ensure content is adequately absorbed.

Some training cannot be supplanted virtually, like training students how to don and doff personal protective equipment (PPE), as well as patient interview skills. One expert from the group noted that as the outbreak continues, EMS crews were noted as cutting corners on PPE donning and doffing, causing many mistakes with PPE protocols. While not ideal, training became very challenging for the EMS community and altered, to an extent, the scope of practice of E.M.T.s and Paramedics. Another expert from the group noted that they were not offering ride-along time to E.M.T. students or hospital clinical rotations, further effecting skill verification. In the United States, the inability to deliver hands-on training and skill validation translated to individuals receiving a provisional certification from the National Registry of E.M.T.s.

Feedback from students was that they felt they were not as skilled as those who had hands-on training. The group talked about seeing an increase in patient complaints, which can be directly associated with new E.M.T.s not having that hands-on training. A possible work around for the lack of hands-on training was to pair the inexperienced provider with a more seasoned provider during shift assignments.

ED overload: A discussion about community paramedicine programs was held given its potential to reduce the stress on the healthcare system⁸. Incorporating this capability into the healthcare system will need to be incorporated into the healthcare system. Pushing for “Community Response/Paramedic” will require additional training of E.M.T.s and Paramedics in order to support the Community Paramedic.

Concern of the life of the equipment. Concerns were expressed about equipment degrading because of the frequent decontamination. The shortened lifecycle of the equipment will place a greater strain on EMS units to purchase replacement equipment. With the shrinking budgets of EMS units, this will further strain their ability to keep EMS units operational and in the field. New decontamination solutions not widely available may extend the lifecycle of the equipment, but more work is needed in this area.

⁸ <https://emsa.ca.gov/wp-content/uploads/sites/71/2017/11/2019-Public-Report-on-California-Community-Paramedicine-Project-2.27.19.pdf>

Vaccination Planning: There are many factors that are influencing vaccination planning, like availability of vaccine, cold storage requirements, distribution plans, and prioritizations. Compounding the planning was the challenges in risk communication. The public health messaging and the medical necessity messaging are not necessarily in sync. Public health policies have not changed as much as the medical necessity messaging (who is managing quarantines and contact tracing). The EMS Medical Director was routinely overruled by Public/Occupational Health Directors, which impacted operations and the psyche of responders. EMS demands for public health information was different than for that of the general public. A different approach was needed to support the EMS community. Vaccine distribution and prioritizations are not a uniform approach. Large portions of populations that will not get the vaccine due to the lack of trust in the vaccine and the national/federal government's approach, both of which goes back to not having a synchronized public messaging campaign. Israel plans to lean on EMS E.M.T.s to vaccinate their population. At present, the US does not have a similar plan.

The group had a short discussion about vaccine mandates. Generally, there will be no public mandate, however, it is expected certain populations may be required to vaccinate, including healthcare workers, educators, and airlines. Israel does not mandate healthcare workers to be vaccinated for the annual influenza season (and sees low levels of compliance with the recommendation to get the vaccine)⁹. It is expected this will apply to COVID as well, and likely for any possible booster vaccine recommendations.

Reimbursement issues: As noted earlier in this paper, reimbursement at large has been a challenge. EMS personnel do not diagnose according to diagnostic codes. In the US, diagnostic codes in hospital settings directly impact the reimbursement rates. Instead, EMS personnel assess based on presented symptoms and make the decisions to transport based on the severity of those symptoms. Compounding the problem has been the unresolved issues of reimbursement using telemedicine for non-transport and for treatment at home. In Israel, none of the transport policies have a significant financial impact, as they are funded for patients transported. However, a lack of reimbursement for treatment is a concern. Both systems live under the false premise that only transports should be financed and that not any non-transport prehospital care (a full cardiac arrest effort without successful resuscitation is not reimbursable).

Conclusions:

An overarching finding that real time information and medical intelligence sharing is a critical to EMS operations and front line providers. EMS needs to refine risk stratification processes to determine best practice and patient delivery.

The collaboration between Israel and the U.S. EMS experts generated lively discussions. While the group was able to frame many of the problems facing EMS, the ability to share current practice and potential best practices was the true success of this engagement. This engagement was a shining example of how EMS communities, spanning great distances, can learn from each other real-time, during a crisis, rather than having to wait until after the incident, reading after action reports. As this is an evolving response to COVID, the ability to continue sharing information was and is equally as important. The group plans to continue to meet regularly (monthly) to discuss relevant topics affecting EMS in both countries. The importance of establishing this SME exchange will not only benefit the current COVID response but will

⁹ Annual vaccine rates in Israel is for influenza vaccine is approximately 35-40%.

also benefit future public health and medical crises. The group was fortunate to connect professionally and on a personal level. No doubt these relationships and friendships will endure beyond this crisis.



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Resources/References:

During the course of the discussions, the work groups identified references that supported the discussions. They are listed here:

- Community Paramedic: http://www.naE.M.T..org/docs/default-source/2017-publication-docs/mih-cp-survey-2018-04-12-2018-web-links-1.pdf?Status=Temp&sfvrsn=a741cb92_2
https://nasemsso.org/wp-content/uploads/CP_State_Status_Board_CURRENT.pdf
<https://emsa.ca.gov/wp-content/uploads/sites/71/2017/11/2019-Public-Report-on-California-Community-Paramedicine-Project-2.27.19.pdf>
- Ensuring PPE is certified to be used: <https://www.fda.gov/industry/importing-covid-19-supplies/information-filing-personal-protective-equipment-and-medical-devices-during-covid-19>
- NYS COVID Triage Protocol - <https://health.ny.gov/professionals/ems/pdf/20-06.pdf>
- Listed as a minimum psychomotor skill at the BLS/E.M.T. level
<https://www.ems.gov/education/EMSScope.pdf>
- Reimbursement: <https://innovation.cms.gov/innovation-models/et3>