

Coronavirus SARS-CoV-2, the cause of the disease known as COVID-19, has rapidly become a major problem world-wide. It is having a major impact on the operation of all hospitals.

This newsletter is dedicated to pointing you to existing resources with helpful information on your hospital, your trauma center, and your practice. I will also share some of the changes that I have proposed in trauma-related processes at my hospital. Hopefully you can review, modify, and adopt as needed.

Guidance From The American College of Surgeons

A number of organizations such as the CDC have begun to provide some guidance for managing this crisis. The American College of Surgeons (ACS) has created a special page that consolidates information specific to surgeons and trauma centers. It can be found at:

www.facs.org/about-acs/covid-19

The ACS is urging the trauma program leadership at hospitals to plan ahead for the situation in which the where number of COVID-19 patients begins to impact the safety of critically injured trauma patients.

Trauma medical directors (TMD) and trauma program managers (TPM) are encouraged to work with regional authorities (health departments and local health care coalitions) to develop plans for regional ICU triage, resource allocation, and crisis standards of care. The ACS also recommends that TMDs and TPMs ensure

SPEAKING ENGAGEMENTS & MEETINGS

NEARLY ALL NATIONAL AND INTERNATIONAL TRAUMA CONFERENCES HAVE BEEN CANCELLED OR RESCHEDULED. THIS FEATURE WILL RESUME AT SOME POINT WHEN THINGS RETURN TO NORMAL.

that their hospital has a plan for preserving trauma capacity despite an onslaught of COVID-19 patients.

The entire spectrum of care will be impacted, so plans should be made that include prehospital care, aeromedical transport, in-hospital care, as well as discharge planning and placement. The latter may be extremely difficult in patients who are known to be infected.

The ACS recommends that the TMD and TPM be part of the hospital incident command structure, where they can serve as subject experts on the needs of trauma patients. Hospitals should develop a triage and resource prioritization process for ICU admission, ventilator allocation, and other resource-limited interventions. They should also develop plans to secure necessary supplies such as PPE and ventilators, and for actions needed when local supplies are depleted.

COVID-19 And The Trauma Surgeon

Trauma surgeons are a scarce resource in trauma centers. There are typically only a handful, and other surgeons do not have the skill set to manage acute trauma. For that reason, they must be protected from exposure as much as that is possible.

Here are my recommendations:

- **Save your trauma surgeons for things only they can do.** Many hospitals have general surgeons on staff in addition to their trauma/critical care surgeons. **Remove the trauma surgeons from emergency general surgery / acute care surgery services** and concentrate them

INSIDE THIS ISSUE

- 1 **Guidance from the ACS**
- 1 **COVID-19 And The Trauma Surgeon**
- 2 **COVID-19 And The Trauma Team**
- 3 **COVID-19 And The Trauma Service**
- 3 **COVID-19 And CT Scan**
- 4 **COVID-19 And Your MTP**

on the trauma and critical care services. Have the general surgeons cover the other services and send all idle trauma surgeons home where it is safer. Rotate them through the trauma and critical care services only, on a regular basis. Imagine what will happen if you lose 2 or 3 of your trauma surgeons at the same time; don't let it happen to you!

- **Don't congregate with other providers unnecessarily.** This means outside your office, in the lounge, or in the lunchroom. The usual social norms need to take a back burner to your own safety and health.

COVID-19 And The Trauma Team

As mentioned in the previous section, trauma professionals are a scarce resource in the first place, and I'm speaking of those in all disciplines from prehospital through rehab. And since the SARS-CoV-2 virus seems to be so widespread and our testing abilities remain limited, it is a challenge to protect ourselves from contracting it. Given how scarce we are, losing even a few to self-imposed quarantine (or worse) would be very disruptive to the health care of the trauma patients we normally take care of.

The key is to try to limit exposure to the Coronavirus as much as possible. Hospitals are now very diligent about screening patients and their families as they enter the hospital. However, **the trauma activation patient is a potential wild card.**

What can be done to protect the trauma professionals assembling to take care of a trauma activation patient, who should probably be considered infected until proven otherwise? The most obvious answer is to escalate the normal personal protective measures to include the same garb worn for treating patients with known or suspected infection. This includes N95 masks and full-face shields.

Unfortunately, this is not practical due to the extreme shortages of this equipment. But what we can do is optimize our trauma team and provide a more informed and graduated response.

Here are my recommendations:

- **Drastically reduce overtriage.** Most busy trauma centers have overtriage rates (trauma activation for patients with low acuity and/or do not meet

activation criteria) around 50%, and sometimes higher. Frequently, these are patients who did not really need to be met by the full trauma team. How can you accomplish this?

- **Eliminate superfluous activation criteria; keep only your physiologic and anatomic ones.** These generally correlate with Steps 1 and 2 of the CDC triage criteria for transfer to a trauma center used by your EMS providers. **Eliminate all mechanism of injury criteria except for penetrating injury.** This includes falls, pedestrian struck, vehicle intrusions, etc. Then eliminate anything else that doesn't fall into these categories. You are essentially converting to a bare bones single-tier activation system.
- **Eliminate the ability of prehospital providers to call a field activation on anything other than your activation criteria (or Step 1 and Step 2 CDC criteria.** This may be difficult or confusing if they service several centers that have different criteria. The person taking the radio/phone call and initiating the team page should not activate the team unless one of the physiologic or anatomic criteria are specifically mentioned. All other transports should be met by an emergency physician who will then use their clinical judgement to activate the full team.
- **Eliminate superfluous trauma team members.** This includes students, shadowing providers, observers, extra residents, and anyone else who does not have an essential role in the room.
- **Call the entire team, but only use who you need.** Determine the makeup of your core team. One physician, two nurses, a tech, and a scribe? This will vary by center. They should don protective gear that is as effective (and available) as possible. (This may not be face shields and N95 masks if you are a busy center and don't have many in stock.) The others should remain available outside the room to dress and be called in only if necessary (pharmacist, respiratory therapy, additional physicians or APPs, etc). All other normal team personnel can then be dismissed and disperse.

- **Release active team members who are no longer needed.** As the resuscitation winds down and team members complete their tasks, send them away.
- **Reduce the post-resuscitation transport team to the minimum necessary.** This will depend on the patient's condition. Are they stable, awake, and alert? Or intubated and traveling with a rapid infuser? Assign personnel appropriately.

COVID-19 And The Trauma Service

In the previous section, I made some suggestions on how to modify the trauma activation process to better protect your team members from exposure to the Coronavirus. In this section, I'll discuss some things you can do to reduce the exposure of your in-house team that provides care for patients.

First off, I'm not going to discuss the obvious things like personal protective equipment, or what to do when performing risky procedures such as intubation or extubation. Those have been covered elsewhere and each hospital has adopted its own standards.

I will be discussing more general concepts that help limit team member exposure to possible contamination or infected individuals.

Here are my recommendations:

- **Make sure your hospital conserves the resources it needs to be a trauma center.** A certain number of ICUs, operating rooms, and floor beds must be reserved for trauma patients. Your hospital should make contingency plans such that if COVID-19 patients are getting close to taking too many beds or other resources, there is an escape valve so they can be diverted or transferred to other non-trauma hospitals.
- **Eliminate non-essential meetings and conferences.** This includes morbidity and mortality conferences, journal clubs, and all educational conferences. These things have to go on the back burner for now and can be re-instituted once things return to normal.
- **Practice social distancing at essential meetings.** Certain gatherings are unavoidable, such as care handoffs ("morning report," and "afternoon check-out"). Reduce the attendees to only those whose input is critical. If needed, they can

gather information from other small groups of providers to prepare for the essential meeting. But no more crowded rooms, please.

- **Use telephone conferencing as much as possible.** You will be surprised at how many of these less-than-essential meetings can be handled virtually or eliminated. One tip, though: print a copy of the agenda for reference. It seems to be more difficult to follow the flow of the meeting (and take/make notes) if you don't have something you can visually refer to.
- **Redesign your care team.** Do you really need your entire team (APPs, residents, nurses) hanging around all day like they usually do? The reality is that the bulk of the work on any trauma service generally takes place in the morning. The rest of the day is spent waiting for incoming trauma patients. Calculate the optimal number of providers based on your service census. Do the morning work, go on rounds (smaller groups, please), finish any post-rounds chores, then send the extras home. And rotate those providers on a regular basis so that some can spend time less exposed at home while the others are in-house.
- **Reduce the number of people involved in multidisciplinary rounds.** And space them out for social distancing.
- **Use residents and advanced practice providers (APP) wisely if you have them.** They are part of your care team, too, so be sure to minimize their exposure. The previous tip on redesigning the care team applies to them, too. And frequently, they rotate through several hospitals, many of which are not doing elective surgery. So some may not have a lot to do. Work with the residency program director to see if you can temporarily add them to the trauma center coverage pool. This allows you to keep a larger number of residents at home while maintaining a reasonable number for your care team.

COVID-19 And CT Scan

The CT scan suite is another hospital area that demands special attention when planning for COVID-19. Each hospital has a small and finite number of CT techs. If a group of them are sidelined due to virus exposure, trauma operations can be significantly affected. My recommendations recognize highest level and

intermediate level activations. The latter are generally not very sick patients and are frequently accompanied to CT only by a nurse. For these patients, I recommend that the nurse continue to accompany the patient, maintain basic PPE from the trauma activation (gown, mask, eye shield, gloves) and maintain social distancing while in the CT area.

Here are my recommendations for highest level activations:

- **Only the nurse and trauma surgeon may enter the control room.** If the patient is intubated, a respiratory therapist should be present as well. These personnel should maintain basic PPE as listed above and maintain social distancing from the CT techs. Residents, APPs, or other providers should not enter the area.
- **There is no role for a radiologist in the CT control room.** In some centers, a radiologist is present for immediate reads. This should be discouraged for their protection. The radiologist should call the preliminary read to the trauma surgeon immediately.
- **Do not delay in getting the patient off the CT table and on to the next phase of care.** Trauma patients rarely need delayed imaging, so get the patient out of there to minimize risk to the CT team. Do not hold them on the table pending the read by the radiologist.
- **Be prepared to change things up during unusual circumstances.** In the event of multiple trauma activations or if the trauma surgeon is called away to another emergency, one other person (resident, APP) may take their place.

COVID-19 And The Massive Transfusion Protocol

Every trauma center has a massive transfusion protocol (MTP). The MTP is designed to reliably deliver large quantities of blood products to a specific hospital area to treat patients who are suffering from significant blood loss.

Unfortunately, with statewide lockdowns and social distancing in place, the supply of blood has dried up. All blood banks are now faced with dwindling supplies. The impact on elective surgery is somewhat mitigated by

the fact that **there is no elective surgery going on.**

But the shrinking supply is also having a devastating effect on availability for MTP. If a surgeon persists in giving large quantities of blood to one patient, there may be less available for the next since supplies are not as readily replenished.

Unfortunately, the only way to conserve blood is decrease the amount used during MTP, or not use it at all. Easier said than done. The criteria for initiating transfusion in an acute trauma patient won't change. Known or suspected blood loss with hypotension will always be a rock-solid indication. But there is also some room for judgement.

Here are my recommendations:

- **First, find out exactly how much blood your blood bank has on hand.** And more importantly, ask how much is O- and O+. Also find out where your blood bank obtains its supply, and how well stocked it is. How much product does the local or regional supply have, and how long does it take to get more stock to your hospital? Availability must factor into how long you persist in a trauma operation and how you determine salvageability.
- **Don't waste blood!** Everybody in the chain from picking up the blood, administering it, and taking unused product back to blood bank has some responsibility here. It's a crime to waste blood products due to carelessness.
- **Use plasma expanders judiciously.** You may be able to stretch your blood supply by a small amount. But remember, these do not contain clotting factors and may contribute to coagulopathy.
- **Be prepared to make the difficult decision to stop transfusions.** The literature provides some support that once a certain threshold of units of red blood cells is reached, there is no survival. Unfortunately, medicine is not that precise. Different papers have shown that the maximum survivable transfusion is 40 or 68. And of course, there are always anecdotal reports of survivors who had even more. But they are very rare. Unfortunately, the trauma surgeon will have to make the hard choice to terminate resuscitation in order to give the next patient a better shot at survival based on their assessment at the OR table.



www.TheTraumaPro.com



[@regionstrauma](https://twitter.com/@regionstrauma)



[www.Linkedin.com/in/MichaelMcGonigal](https://www.linkedin.com/in/MichaelMcGonigal)



[Michael.D.McGonigal](https://www.skype.com/people/Michael.D.McGonigal)