

PODCAST 278:

LEAN IN FIREFIGHTING AND EMS

By Mark Graban



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Tom Bouthillet is a Fire Captain / Paramedic for the Hilton Head Island Fire Rescue where he is the Cardiac Care Program Manager (STEMI and CARES Site Coordinator) for his department, among many other activities.

My guest for the 278th episode of the Lean Blog Podcast was Tom Bouthillet, a Fire Captain/Paramedic in Hilton Head Island, South Carolina where he is the Cardiac Care Program Manager (STEMI and CARES Site Coordinator) for his department.

Tom is also the Editor-in-Chief of several websites devoted to emergency cardiovascular care, and has taught nationally in the Critical Care Transport (CCEMT-P) program out of UMBC. He is also the lead organizer of the South Carolina Resuscitation Academy.

This might seem like a long list of things to be involved in but, as Tom explained, he has been around healthcare his entire life. Prior to beginning his now 20-year career as a paramedic and firefighter, he worked in the admitting department at a hospital, and acted as a cardiac monitoring technician during paramedic school. Tom is married to a dual boarded advance practice nurse, and even his father is a retired hospital CEO.

In Hilton Head Island, there is a strong overlap between the responsibilities of the fire

department and the Emergency Medical Services (EMS) departments, Tom explained.

“I’ll say of the fire service what Leo Strauss said of democracy, ‘because I am a friend of fire-based EMS, I cannot afford to be a flatterer of fire-based EMS.’ ”

“In a large portion of the United States, Emergency Medical Services are run by the fire

department. Not everyone thinks that's a good idea, but it works pretty well on Hilton Head Island," Tom said. "We're a dual-service organization, so we do fire suppression and everything under that umbrella (which would be special operations, hazardous materials, urban search and rescue – that sort of thing) and then we also do Emergency Medical Services, including transporting patients to the hospital. There are fire departments that provide what's called 'first response,' and then they have either a private ambulance company, or they have a municipal or county-based EMS system, but we do it all."

Under this model, fire captains are responsible for on-scene management of any emergency that is not related to law enforcement, Tom explained. This includes fire and medical incidents, as well as the upkeep of the captain's assigned fire station and equipment.

"But in reality, what I've come to understand is what we really do is manage people," Tom added.

The Appeal of Lean

Though he doesn't remember when he was first exposed to Lean and process improvement, Tom explained that for those interested in quality and researching the topic, an understanding of the central role of culture in an organization starts to take hold.

In his research of the topic, Tom became familiar with the work of Dr. W. Edwards Deming, one of the world's foremost experts on quality improvement, in addition to Lean and process improvement, which he has related to his work as a fire captain and paramedic. Though he didn't immediately

find all of Deming's 14 points for management applicable at first, the emphasis on building quality into the product upfront and being less reliant on inspection after the fact spoke to him.

"It's too late to help that patient, that call's over, and we can nit-pick what the opportunities for improvement were, but on some level you think, 'Well, maybe our time would have been better spent perfecting our craft and training to the point where our on-scene performance is much, much better,'" Tom explained. "We have a very finite amount of time that we can get the guys together for not actually running calls, either to do training or to do post-event review, which we consider training."

"What I like to say is, 'There may be one finger pointed at you but there's three more fingers pointed back at me.'"

Tom also half-jokingly admitted that he likes watching online videos of Deming, who was a very entertaining, cantankerous, old man.

"I can't get enough of it when he loves to remind us that 94 percent of problems in an organization are system problems. And systems are the purview of management. Clearly, it is human nature to assign blame and it's completely ineffective," Tom said. "Conducting a post-event review is a skill, and it requires a lot of diplomacy. I would not encourage someone who hasn't thought long and hard about it from rushing headlong into it because post-event critiques can do more harm than good if they devolve into finger-pointing."

As Tom said, it's important to recognize there are nascent causes of failure that had lay dormant for a long time. While it's easy to fixate on the last domino that fell, as Tom put it, and assign blame to the person on the front line, upon further reflection, there's almost always underlying system factors that allowed the opportunity for the error to occur.

"Almost always." Tom said. "These things are complicated, and, if you have a culture of blame, no one is going to report problems to you. They're going to hide them, and then you're never going to improve. I think they need to know that you're there to help support them because you can get compliance with a whip, but you can't get quality."

Despite the clear applicability of these principles to EMS and fire departments, Tom explained that adoption is still not widespread, as the patient safety movement that is arriving late to EMS.

Working With Other Healthcare Providers

On Hilton Head Island, some larger patient flow improvement work, done in conjunction with hospitals, has taken place already.

"When we first started to really improve heart attack care and sudden cardiac arrest, we did form a multidisciplinary committee to discuss it. I think that was the first time ever on Hilton Island that EMS sat down with nursing, emergency medicine, and cardiology to discuss, 'how are we going to navigate this patient all the way from collapsing on the living room floor to discharged, neurologically intact,'" Tom explained. "On occasion, we've even done simulations using

mannequins, where we've moved a patient from unit to unit. Now, a cynic would say, 'well, maybe they just did that because they were going after chest pain accreditation or some other thing.' That may be partially true but I think it benefits us when we model the expected behaviors and I will tell you that when you simulate things you do find problems that you didn't think about."

Standardized Vehicles

Recalling my last interview with a first responder, a two-part interview with retired Lt. Randy Russell of the Jacksonville Sheriff's Office in episodes 51 and 60, I asked Tom about connecting purpose and safety in things like standardizing vehicles.

"When I first started with Hilton Head Fire rescue back in 1997, it seemed like every fire station had a completely different make of fire engine," Tom said. "They had different hose-loads and the equipment was stowed in different compartments. And sometimes we have newer firefighters, who are some of the least experienced guys, that are expected to know where all this equipment is and what line needs to be stretched with what type of nozzle and things like that. I'm sure it was very confusing for them. Now, we have a completely standardized fleet. There's only slight variation because two of our trucks are what are called a quint, they have big ladders on top."

Learning From Aviation

Variation may be important for safety in some circumstances however. Tom brought up how the field of aviation has come to understand that to err is human, and highlighted one example

he had come across of frontline improvement work.

"One of the stories I love from aviation is in World War II, when some of their fighter airplanes would taxi after a battle. There were two levers – one was for flaps, and one was to retract the landing gear. The two levers were side-by-side and looked identical. If you pulled the wrong one when you were trying to put the flaps back to neutral, you would drop the landing gear and drop the plane on its belly and it would damage the propeller. You're out in the middle of the Pacific and that's an aircraft that's not combat effective anymore, not because it was shot down but because the pilot had a 50-50 chance of pulling the wrong lever," Tom explained. "On their own, the pilots mocked up a little wheel and put it on top of the one for the landing gear, and a little triangle for the one for the flaps to make it more difficult for them to get confused. So, when you think about things like that, there are a lot of engineering solutions to help limit, or at least modify the effect of human error."

Today, the field of aviation generally understands pilots are going to be tired, have personal issues, etc., which mean they are going to pull the wrong knob, so they've designed systems to catch mistakes before it causes a catastrophic accident.

I asked Tom about checklists, and if they were something that is something that EMS and fire services personnel are embracing, and he said yes.

"I think checklists are being adopted more so, or at least more rapidly, than anything that they're consciously calling Lean, Tom said. "Definitely, we've embraced

checklists, and I think there's a growing awareness that they have real value in medicine."

Cath Lab Reporting

To wrap up, I asked Tom to comment on an exchange we'd had on Twitter. In response to one of my tweets, Tom raised a disturbing scenario involving EMS taking a patient to the hospital with a suspected STEMI heart attack and a cardiologist possibly refusing to bring a patient back to the catheterization laboratory (or cath lab. As Tom explained, this situation arises in scenarios where patients who have suffered a cardiac arrest pre-hospital and have been successfully resuscitated.

"There are ways for them to justify not taking patients to the cardiac cath lab [based on literature with published criteria], but I'm not entirely persuaded that those are all patient-centered."

"It's well known in emergency medicine that many invasive cardiologists are reluctant to take cardiac arrest patients to the cardiac cath lab, even when they may benefit from intervention in the lab," Tom said. "These patients have already been in cardiac arrest, so they're very sick and so they have a very high mortality rate, if they take these patients to the cardiac cath lab, which could be lifesaving in some circumstances, if that patient goes on to have a bad outcome, for example if they die, that death is then considered a complication of PCI (Percutaneous Coronary Intervention). So basically, it makes it look like the cardiologist

killed this person in the cardiac cath lab. And that creates a real disincentive for patients to receive this therapy. It's definitely a problem that, at least in my judgement, is something that needs to change. It creates risk-adverse behavior on the part of our cardiology community."

This risk-adverse behavior coupled with the final say on whether or not they will care for a patient creates a strange catch-22, Tom explained.

"There are ways for them to justify not taking patients to the cardiac cath lab [based on literature with published criteria], but I'm not entirely persuaded that those are all patient-centered. I think they're basically saying they think the patient has a poor prognosis, therefore they don't want to take the patient to the cardiac cath lab. But, in my humble opinion, the root problem is that they're being punished in their reporting of their data," Tom said. "Maybe

they have a bad outcome because they're not going to the cath lab, or we're not being as aggressive as we might be. But at the same time, it is also a fact that if you were a surgeon, if you were being told that a patient died due to a complication due to surgery,

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and you vehemently disagreed with that fact, it's fundamentally unsound. And this is a solvable problem by the way, and this happens everywhere."

Tom isn't sure what the repercussions of a high-patient mortality rate are in terms of reimbursement, but believes the issue of public reputation may be involved. Tom said that

while, the majority of the time, paramedic transport patients to the closest appropriate facility, it is indeed true that sometimes patient or family of patients have preferences on where take patient because the hospital recommended by someone in family, possibly with ties to the medical profession.

"I honestly think that, by and large, people are the same, meaning that there's not anything uniquely wrong with these surgeons. I think the reality is if you or I were in their same circumstances, we would have the same apprehensions. I think the reality is we need to get it right, if we're going to do public reporting, we have got to get it right."

Tom provided me with a few articles that discuss this topic, which are available at leanblog.org/278. There you will also find links to Tom's many projects and links to get in touch with him.



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