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From Operational Awareness to Situational Awareness: How a Combat Zone Helped Influence Preparation and Perception in the Operating Room

I had the honor of serving my country on a tour to Iraq in 2018 in support of Operation Inherent Resolve. In preparation for this assignment, our group had to undergo several training modules, simulations, and skills challenges to acclimate ourselves to the different scenarios we may face in an operational environment. This is comparable to what we train for every day as perfusion students. Our classes, bioskills labs, and simulation training, all prepare us for the day we walk into the OR for the first time and begin our hands-on training.

You can never fully grasp the gravity of a situation unless you have a true understanding of what is happening. Situational awareness is a detrimental skill to possess, whether you are leaving the base to go on patrol or crashing on bypass during an aortic dissection. Each moment is crucial towards the success and survival of your team or your patients. Situational awareness can be defined as a “quality or state of being aware; having the knowledge and understanding that something is happening or exists” (Merriam-Webster). This skill and mindset has been linked to effective combat decision making in a tactical environment as well as effective communication and coordination in the operating room.

Two phrases that I learned during my time in the service that I apply every day in the OR are “See Something, Say Something” and “Keep Your Head on a Swivel.” These phrases directly apply to the method of situational awareness because of their ability to keep your team informed and possibly save someone’s life. As I contemplated an article, I couldn’t help but link my past with my present. Life has a way of preparing each of us and placing us where we need to be. There are countless situations that occurred while I was deployed that could have been avoided by someone having the moral courage to speak up. The borders of our base were patrolled on a daily basis; checking for problems in the structure or anything out of the ordinary. The previous night our base had a severe storm that caused a small break in the fence. The hole was not big and so it was not brought to anyone’s attention. This small example of “See Something, Say Something” could have saved us all from a situation that happened later that night. A local Iraqi man was able to slip onto our base through that exact hole and made his way down to where we all slept. One soldier, who was out working, was paying attention to their surroundings and had a gut feeling that something was off. They “kept their head on a swivel” and continuously scanned their surroundings to make sure there was nothing wrong. They noticed this man approaching from the high grass field and was able to alert others and subdue the intruder before anything could happen. This soldier could have possibly saved dozens of lives that night by their quick thinking and action to-

wards the situation. One thing is certain, you never want the loss of someone else's life to be on your conscience because of your failure to say something. This rings true in the OR from the moment the patient enters the room until they leave to go to the CTICU. Their life is as much your responsibility as it is the surgeon who operates on them and the nurse who assists during the case. Each person has a different level of situational awareness in that room that creates a cohesive picture of what is going on through assimilation and communication of the known data.

There are multiple levels to understand in the situational awareness model that will lead to effective decision making and expedient action in response to that decision. The three levels include perception of the elements, comprehension of the situation, and projection of future status (Pew & Mavor, 2003). The aforementioned permeates our lives in the operating room.

Level one of the situational awareness model, perception of the elements, is comprised of discerning the elements within your environment that are relevant to your task. Recognizing the relevant items and monitoring them continuously is important since items in your environment can change overtime. Level two involves comprehension of the entire situation. This involves incorporating all elements from level one, in order to fully comprehend the significance of the elements and events that are occurring. Finally, level three is the projection of future status of all elements involved. Knowing how all elements interact dynamically while combining levels one and two, create a well-rounded approach to situational awareness in the field or in the operating room (Pew & Mavor, 2003).

For example, one of the most crucial moments in cardiac surgery, between the surgeon and the perfusionist, is the application of the aortic cross clamp and delivery of cardioplegia. It is our job to maintain a level of situational awareness of what is happening at the field, based on commands and actions by the surgeon. The moment you hear "cross clamp" should trigger a level of recognition as to where you are at in the surgery.

Throughout the majority of the procedure, the surgeon is primarily focused on manual manipulations of the patient's chest and heart, while the perfusionist is primarily focused on the functioning of the heart-lung machine. Each has access to information that the other does not: the surgeon has visual access to the surgical field, and tactile information about the temperature and compliance of cardiac tissue, while the perfusionist has visual access to the various displays and controls of the heart-lung machine, as well as other displays and equipment not visible or accessible to the surgeon. Successful execution of the cardioplegia initiation and management tasks requires effective integration of this information (Hazlehurst, McMullen, & Gorman, 2007).

It is the perfusionist's responsibility during this portion of the surgery, to maintain awareness of all elements involved with cardioplegia



delivery/myocardial protection and communicate those elements to the surgeon. From my experience, this is where “keeping your head on a swivel” has helped me tremendously. I always maintain eyes on the elements that are being effected by the delivery of cardioplegia to the patient. Announcing delivery flow, line pressures, amount delivered, and myocardial temperatures will provide key information to the surgeon on the effectiveness of the cardioplegia being delivered. If the myocardial temperature isn’t dropping or the electrocardiogram isn’t widening, slowing, or flattening out, it will indicate there is a problem with the delivery method. This communication and awareness by all staff members, can make the difference between a well-protected heart and one that slowly becomes ischemic and has a hard time recovering.



Situational awareness is not a skill you are born with, but one that needs to be molded and perfected over time. Being deployed to an operational environment has provided a level of perception in the OR during my time as a perfusion student. Constantly monitoring patient pressures, flows, line pressures, and the surgeon’s actions in a systematic loop, has allowed me to maintain a higher level of awareness in the OR so I can speak up when something is wrong. Closed loop communication and the moral courage to speak up is both essential in the operative setting and the military. I have known many soldiers who regret not speaking up about something they have seen that was deemed out of the ordinary; whether it’s a local watching too closely, or carefully placed garbage on the side of the road. This lack of communication and coordination has led to lives lost and crippling guilt because speaking up could have saved a life. We owe it to our patients, and their families, to develop a high level of awareness in the operating room in order to assimilate the data, communicate effectively, and execute a well-rounded approach to cardiac surgery. I appreciate the opportunity to share my experience. Good luck and stay alert.

References

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