

An ACC Accredited Medical Center Tackles Cardiac Arrest Survival Rates

Challenge

Prior to pursuing Chest Pain Center Accreditation, the professionals at Pulton Medical Center¹ realized that only 31% of the out-of-hospital cardiac arrest patients who were admitted actually survived to hospital discharge, a figure that is significantly lower than the national average of 56%.

Based on the framework established by ACC, hospital professionals identified the issues associated with these outcomes in an effort to determine why they were falling short of the national average. They recognized that much of the problem stemmed from the care surrounding hypothermia management. Therapeutic hypothermia protocol that is both underused and poorly executed leads to increased patient morbidity, mortality and less desirable neurologic outcomes. In fact, a delay in initiating the cooling process or maintaining a specific therapeutic range can do more harm than good.

The benefits of therapeutic hypothermia were already well known. Every one-hour delay results in a 20% increase in mortality. And, 63% of patients are less likely to survive to discharge if the return of spontaneous circulation (ROSC) to application of cooling device is greater than two and a half hours. Factors contributing to the problem included lack of team collaboration; identifying which patients to cool; an inability to maintain the target temperature; and the delayed induction of therapeutic hypothermia.

At the same time, the importance of bystander CPR education had up until this point been overlooked. Community outreach efforts related to bystander CPR needed to be implemented to improve the survival rate. In the end, the hope for improvement rested on a carefully orchestrated chain of events that starts with bystander CPR and continues with full cooperation from pre-hospital professionals and the quick and efficient implementation of therapeutic hypothermia.

Solution

Based on ACC recommendations, a committee was formed to examine the benefits of early initiation of hypothermia in cardiac arrest patients, and the hospital made it a priority to devise a system-wide process that would provide appropriate treatment. Among other things, it included input from professionals in other areas of the hospital, including ICU physicians, neurologists and pulmonologists. It quickly grew into a larger collaborative process involving a broader set of disciplines. These individuals met regularly, reviewed multiple cases and redesigned hospital processes, protocols, and policies. "The biggest change in this patient population was always considered cardiac, but when we added in neurology and pulmonology as partners, that's when we saw a lot of these patients surviving," said the hospital's supervisor of Cardiovascular Specialty Services.

While working closely with ACC, the hospital team looked at guidelines and procedures and implemented case studies to determine the causes behind the mortality rate. They uncovered a delay in the activation of hypothermia protocol, a process that had not been revised since 2008. In fact, 45% of the patients failed to reach the cool zone within six hours, and 88% of patients failed to maintain the optimal range of 32- to 34-degrees Celsius for 24 hours.

The hospital also engaged with pre-hospital professionals. These relationships proved to be instrumental for promoting good will and collaboration but also because it empowered these professionals to be part of the team. "We all had to admit that we were not doing a good job," the supervisor said. "Everyone got really engaged to work as a team to fix it. We grew with each meeting, and everyone was accountable for their role."

At the same time, they implemented daily bedside check-ins, and new equipment was purchased to support the therapeutic hypothermia technology. In terms of determining which patients to cool, they carefully and specifically defined the criteria of inclusion and exclusion. By increasing awareness, creating nurse-driven protocols and using new technology, they were able to improve the start times for therapeutic hypothermia.

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Supervisor of Cardiovascular
Specialty Services
Pulton Medical Center¹



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None of this would have been possible, however, without constant input and support from ACC. “The goal of ACC is to get you to be a center of excellence, so they really work with you to help you improve your processes,” the supervisor said. “When you think of other accreditation bodies, they come in to find things that are wrong. But ACC is looking for the good, and they want you to improve and make it better. They challenge you on each step, and they become part of your support system to help you do that.”

Results

Thanks to the ACC accreditation team, the hospital was able to successfully realize several successful outcomes. The survival to discharge rate jumped from 31% in 2013 to 74% in 2014, 63% in 2015 and 64% so far in 2016. This exceeds the best practice rate of 56% for the second year in a row. This marked improvement is clearly the result of several factors: better collaboration; community education effort; updated equipment; and improved therapeutic hypothermia protocols that include, among other things, working with EMS professionals and referring critical access hospitals to help with pre-hospital cooling.

“We learned that you have to focus and be excellent in all aspects, regardless of the patient’s acuity and regardless of the scenario,” the supervisor said. “You need to have a process for each pathway.” ACC not only helped to ensure that those processes were implemented, but they also challenged the hospital professionals to achieve a best practice model.

As part of that model, bystander CPR education also emerged as a community priority. In 2016, the hospital has already hosted eight community events for teaching hands-on bystander CPR and the warning signs and symptoms of a heart attack. The results speak for themselves. Today more members of the community are calling 911 rather than driving to the hospital. In 2014, when the hospital first started to monitor the number of cardiac arrest patients who received bystander CPR prior to arrival, there was only one community education event. The following year they increased the number of outreach events to six, and the percentage of people who received bystander CPR jumped from 53% to 59%. Similarly, a PulsePoint app was created to track the location of all automatic external defibrillators (AED) in the community. Heat mapping was used to identify areas with high-volume cardiac arrest and the greatest need for AED accessibility.

“This is a heterogeneous patient population. As a provider, although I am glad our numbers are better, my expectation is not that we hit some specific benchmark. We want to be the destination for these patients with the understanding that there will be a reasonable number of them who are not going to survive. In our hospital, every “i” is going to be dotted and every “t” crossed to optimize patient outcomes,” said the medical director of Interventional Cardiology and Chest Pain Center. “I’m not looking to save lives with a quality of life that has no good brain function. We are trying to educate our pre-hospital professionals to do everything possible to get the patients to us quickly. The longer the time they are down, the likelihood of a meaningful recovery is poor.”

Chest Pain Accreditation tools served as the roadmap for making change happen. “Working with the ACC is great because they are the experts, and you are the expert in your facility. It’s great to have a network of people you can turn to for assistance and questions,” the supervisor said. “They are outside your hospital walls, but they are on your team, and they are truly an extension of it.”

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