In the vernacular of a cardiologist, when a patient enters the emergency department (ED) with chest pain, “time is muscle.” During each moment of a heart attack, or myocardial infarction, heart muscle may be dying.

In the case of an ST-elevation myocardial infarction (STEMI), guidelines call for a tiny catheter to break through the blockage in the blood vessel within 90 minutes of the patient arriving in the ED. This procedure, percutaneous coronary intervention (PCI), is sometimes called balloon angioplasty.

Several respected medical organizations recommend the 90-minute “door-to-balloon” guideline. Health care agrees that the guideline is a good idea and that clinical information supports it. The practice of consistently putting the guideline into action poses the greatest challenge.

Bringing in the necessary expertise

One of Oklahoma’s largest health care facilities decided to adopt Lean methods throughout its hospital network. To accomplish this, the organization hired Vizient. Our team of health care consultants with numerous years of combined health care experience proved to be the wealth of knowledge the health system needed.

This particular ED averages 6,500 visits per month—the highest ED volume in the state. Achieving 90-minute door-to-balloon times in this fast-paced and complex environment would require exactly the kind of help that Lean is known to provide. The predisposition toward efficiency of the private physician group in the ED created a fertile environment for Lean improvements.

An enlightening drill reveals glitches

Observing the process is the first task in any Lean implementation. Because observing a real patient walking into the ED experiencing a STEMI wasn’t possible, the team conducted an authentic simulation as a drill.

Outcomes

Door-to-balloon times have improved from 50 percent to more than 70 percent. Suspicion is that the number is even higher, and that improved documentation of patients exempt from the 90-minute requirement—another Lean project—will reflect even greater improvement.

1 Organizations recommending this guideline include the American College of Cardiology (ACC) and the American Heart Association (AHA). A door-to-balloon time of 90 minutes is also a core measure of The Joint Commission.
With the Vizient consultant as the “patient,” the drill uncovered glitches in the system. Staff couldn’t quickly locate wheelchairs, the electrocardiogram (EKG) monitor or the ultrasound machine. Without a checklist, efforts weren’t as coordinated as the staff would have wished.

Trying to do her best for the “patient,” a short-statured nurse removed a monitor from high on a wall, only to have it fall to the ground. This event was captured on video and later used in a five-day kaizen learning session. Employees contemplated how they would have felt had the nurse been injured, had the delay impeded patient care, or less significantly, had the expensive machine been damaged. They brainstormed solutions to ensure that no nurse would ever go through that frustrating and potentially dangerous experience again—and that each patient would have the monitor available when and where needed.

Facing change head-on
During a five-day kaizen event, staff members confronted the problems that impeded them during the drill.

The team’s solutions included:

• Creating a parking space labeled for a wheelchair and designated only for chest pain patients. This includes a sign on the wall and tape on the floor to mark the spot
• Designating labeled and taped parking spaces for EKG and ultrasound machines
• Installing monitors in each room, and keep one transportable monitor in a labeled parking space
• Creating a door-to-balloon tracking tool and checklist, including a method to document patients excluded from the 90-minute requirement for clinical reasons

Because front-line staff devised the changes after thorough analysis and deliberation, and because their changes now make it easier for staff to do the right things, the organization has sustained and continues to build on the improvements.

Major areas of time savings

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<thead>
<tr>
<th></th>
<th>Current</th>
<th>Future</th>
<th>Difference</th>
<th>Percent</th>
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<tbody>
<tr>
<td>Door to EKG</td>
<td>10</td>
<td>8</td>
<td>-2</td>
<td>-20%</td>
</tr>
<tr>
<td>Cath lab setup and transport</td>
<td>21</td>
<td>10</td>
<td>-11</td>
<td>-52%</td>
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As the nation’s largest member-owned health care services company, Vizient provides network-powered insights in the critical areas of clinical, operational, and supply chain performance and empowers members to deliver exceptional, cost-effective care.