

Lakeland Improves Heart Attack Outcomes with D2B Initiative

Patient outcomes following an ST-segment myocardial infarction (MI), the most time-sensitive heart attack, requires a quick and coordinated effort among various teams—from the emergency care to the cardiologist and catheterization lab.

The Door-to-Balloon (D2B) campaign was started by the American College of Cardiology Foundation, who led a voluntary initiative to reduce the time of diagnosis of ST-segment MI to placement of stent. Various studies indicated that timely treatment significantly reduced associated morbidity and mortality. The earlier percutaneous catheterization intervention (PCI) is provided, the more it is effective. According to the American College of Cardiology, patients who received angioplasty within 90 minutes of hospital arrival had a 3% mortality rate, as compared with a 7.4% mortality rate for patients who waited longer than three hours for treatment.

The D2B campaign reduced the time from the previous standard of 120 minutes to 90 minutes.

Implementation of this initiative at Lakeland reduced the median time from 136 minutes in the Oct-Dec 2006 period to 84 minutes in the period from Jan-March 2007.

"When the patient checks into triage, the clock starts ticking," said **Carolyn Burger, RN, CPHQ**, and Lakeland's Clinical Performance Coordinator. "The clock continues to click until the device is deployed and the artery is unblocked."

The goal was to reduce the response time to 90 minutes or less; however, process improvement was seen in other areas related to cardiac care. "For the first quarter of 2007, the AMI mortality rate was 0," said Burger. (Table 1)



Table 1
Lakeland's Time to PCI and AMI Mortality Rates 2006 & Q1 2007

	July - Sept. 2006		Oct.- Dec. 2006		Jan.- March 2007	
	Cases	Minutes	Cases	Minutes	Cases	Minutes
Time to PCI	9	99	10	136	9	84
Inpatient Mortality, all AMI	2/91	Rate 2%	3/95	Rate 3%	0/102	Rate 0%

Burger attributes the implementation of six key strategies at Lakeland to the substantial improvement of time from diagnosis to PCI. These include:

- 1. Senior leadership involvement**
- 2. Change of roles for authorizing the cath lab from cardiologist to ER physician**
- 3. Cath lab readiness in 20 to 30 minutes**
- 4. Prompt data feedback**
- 5. Team-based approach**
- 6. Acting on pre-hospital EKG when appropriate**

Change of Authorization for Cath Lab from Cardiologist to ER Physician

Previously, the angiogram lab responded to a cardiologist's request after his or her evaluation of the patient. In order to successfully reach the time-sensitive goals, the emergency room physician was given the authority and responsibility to trigger the entire cath lab, angiogram staff and cardiologist. This required senior leadership involvement, since several departments were involved.

In the first step, the patient receives a diagnosis of ST-segment MI within 10 minutes from the emergency room physician.

In the second step, the emergency room physician activates the cath lab within the next five minutes, and contacts a cardiologist. The cath lab is required to be ready within 20 to 30 minutes.

The third step lasts 50 to 60 minutes. The patient is stabilized in the emergency room while the cath lab team and cardiologist prepare. Then the patient is transported to the procedure room for placement of the stent.

This total process comes to 75 minutes.

Burger notes that the team-based approach has led them to successfully coordinate prompt data feedback, including acting on the ambulance EKG when appropriate.

Additional Quality Measures Tracked

The process improvement initiative, D2B, tracks one core measure—PCI. In addition to the core measure, Lakeland has quality initiatives in place to provide evidence-based practices to improve cardiac care. These include the 21 practices listed in Table 2. They include treatment for myocardial infarction, heart failure and pneumonia. "These best practice guidelines were developed from a collaborative effort from the Joint Commission Association of Hospital Organizations and the Center for Medicare and Medicaid," continued Burger.

**Table 2
Lakeland Inpatient Core Measures**

Acute Myocardial Infarction	Heart Failure	Pneumonia
Aspirin at arrival	Discharge instructions	Oxygenation assessment
Aspirin prescribed at discharge	LVEF Assessment	Pneumococcal vaccination
Smoking cessation counseling	ACEI or ARB at discharge	Blood cultures
Beta blocker at arrival	Smoking cessation counseling	Smoking cessation counseling
Beta blocker at discharge		Antibiotic within 4 hours
Time to thrombolysis		Initial antibiotic selection (ICU)
Time to PCI		Initial antibiotic selection (non-ICU)
PCI at arrival		Influenza Vaccination
Inpatient Mortality		

"Several years ago they came up with quality best practice indicators based on best practice guidelines from each specialty. They looked to the American College of Cardiologists as the expert in cardiac care, acute myocardial infarction, and congestive heart failure, as well as the American College of Chest Physicians for pneumonia, and the CDC as infectious disease specialists."

Discharge Tracking

Upon admission for AMI, the patient is checked for beta blockers or aspirin therapy. For left ventricular systolic dysfunction, the patient is checked for ACE inhibitor use or ARBs. If the patient is not using these medications, he or she is discharged with them.

The patient is also assessed for heart function, which is measured as an ejection fraction of less than 40% for dysfunction. If the patient is a smoker, smoking

cessation therapy is counseled. "Each patient is evaluated individually," Burger said.

Patients with heart failure will be evaluated for heart function and if appropriate, counseled for smoking cessation, diet restrictions and certain activities.

Patients with pneumonia receive flu shots; blood cultures are performed.

Burger's team has studied the factors that could cause fluctuations in cardiac cases. "We try to correlate what causes the variations. Naturally, people shovel snow, but heat can also affect those at risk. We speculate on the perceived holiday factor as well."

For hospital performance across the nation, reimbursement is affected by quality of care provided.

Best practice guidelines come from the ACC each year. Performing these core measures earns Blue Cross incentive payments as well.

"Naturally, we want to receive the incentive payments," Burger commented, "But that's not why we're doing this. We want to deliver the best quality care—for our neighbors, our co-workers and our loved ones. That's our real bottom line."

Correction: *Lakeland's Hospice has been licensed to provide hospice services in Michigan. In the May 2007 issue of **Physicians Practice**, an article reported that Lakeland's program was the only Joint Commission accredited hospice program in Berrien County. This is an error; Lakeland has applied for the Joint Commission accreditation but the survey has not yet been performed nor the accreditation received. We regret the error.*
