

Clinical Summary

12-Lead ECG Training Solution for the RACE Program

Introduction

In 2005, a consortium of North Carolina health care providers and Blue Cross and Blue Shield of North Carolina (BCBSNC) announced a collaborative project to improve the survival of patients suffering acute myocardial infarction (MI). The consortium, which includes physicians, hospitals and emergency medical services professionals, called its new effort Reperfusion of Acute MI in Carolina Emergency departments (RACE). Recommendations resulting from this project were based upon established guidelines, published data, and the knowledge and experience of numerous individuals specializing in acute myocardial infarction care.

The next phase expanded the acronym to RACEER and added participation of all acute care emergency departments and emergency medical services (EMS) serving North Carolina in partnership with the AHA initiative Mission: Lifeline. Other partners in the project include the Duke Clinical Research Institute of Duke University Medical Center and the North Carolina chapter of the American College of Cardiology.

The goal of RACE-ER (Emergency Response) is to provide timely coronary reperfusion for all eligible patients identified as suffering an ST-segment elevation myocardial infarction (STEMI), who could be treated using reperfusion therapies that involve either fibrinolytics or angioplasty. Both treatments are only effective when performed within a very limited time frame. According to the guidelines from the American College of Cardiology/American Heart Association, STEMI patients must receive either fibrinolytic therapy within 30 minutes from door-to-needle or primary PCI within 90 minutes from door-to-balloon.

Using the trauma system model, teams of physicians, nurses, technicians, administrators, and public officials at hospitals and emergency medical service agencies race against the clock to rapidly diagnose, transport and treat patients with occluded coronary arteries.

One of the keys to optimizing door-to-balloon time, and ultimately outcomes for STEMI patients rests on the ability of prehospital providers to correctly identify patients presenting with an ST-elevation, activate the cath lab and transport the patient to the appropriate hospital to receive definitive care.

Training the prehospital providers is essential to improving time to reperfusion, and therefore patient outcomes. If a paramedic incorrectly identifies a patient with an ST-elevation and inappropriately activates the cath lab, the hospital loses money and the program loses credibility. Not only does the process have to work correctly, it has to work correctly every single time.

The challenge RACE regional coordinators faced was to find a way to train responders in five regions centered in Greenville, Chapel Hill/Durham, Greensboro/Winston-Salem, Charlotte and Asheville. To further complicate matters, each region consists of networks of emergency medicine ambulance systems, smaller hospitals and referral hospitals.

RACE coordinators had to find an effective and efficient way to train not only prehospital providers across a wide geographical area, but include emergency department and cath lab personnel as well. The following is a summary of their efforts.

1. Online training would be the most practical, cost effective and convenient

RACE coordinators determined that providing a Web-based, online training option would address the issues of geographical coverage and the diverse levels of training and experience among the various providers.

“The concept of doing live training isn’t practical for everyone,” said North Carolina EMS Medical Director Greg Mears, MD. “An online package allows [personnel] to take the course at their own pace in their own time.”

Such courses allowed for a consistent message to be delivered and could accommodate differing skill levels.

An online program would also be cost efficient. “The overtime cost to [emergency medical service] agencies is much less,” Mears said. While live training pulls paramedics off the street or requires that they come in during their off-hours, providing the training online allows them to complete the training while they are on duty.

Additionally, students can use the program for review, allowing students to gain confidence and maintain skills they may not use frequently.

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2. Identify a qualified, respected and experienced instructor

After evaluating all of their options, RACE officials chose Tim Phalen, a nationally recognized speaker and author of 12-lead ECG textbooks.

RACE coordinators determined that the new online instructional program, “12-leads Made Easy”, was a perfect fit for their needs.

James Jollis, MD, director, Cardiac Diagnostic Center, Duke University Medical Center and Co-PI for the RACE Project said that previous instructors, who were often cardiologists, spoke from a cardiologists point of view. Phalen uses his experience as a long-time paramedic to address the issues and concerns that are unique to prehospital providers.

“He is really a gifted teacher,” Jollis said. “He understands his audience, focuses on what they need to know and getting right to the point. The best part of the teaching tool is Tim.”

3. The course should include a unique format that keeps students engaged

RACE Regional Coordinator Claire M. Corbett, MMS, NREMT-P, of the New Hanover Regional Medical Center, notes that the online program, “12-leads Made Easy”, uses a clever combination of online animation and graphics with the personalization of the classroom setting, creating a particularly interactive experience. “Tim is talking directly to you,” she said. “Both the format and content makes it easier to learn than just sitting in a classroom.”

RACE-ER Project Lead West Lisa Monk, MSN, RN, CPHQ, of the Forsyth Medical Center agrees. “Tim has always had this wonderful ability to connect the crowd,” she said. “He is able to carry that personality and ability to the online program.”

Keeping students entertained and engaged while learning is important to helping them retain the skills they learn. “With this program, I can go online and be entertained the third or fourth time I take it,” Monk said.

Like most training programs, the “12-leads Made Easy” program builds step-by-step from the basic to the more advanced concepts. The unique format provides immediate feedback for the students. They only move on to the next module when they feel they have mastered each concept. Mini quizzes at the end of each session not only keep students engaged, but also help them to determine when they are ready to move on.

The further advantage of an online program, notes Monk, is that it is easily updated as guidelines and practices change. “As there is strong evidence to support a change in practice, the program can be immediately updated,” she said.

Officials overseeing the RACE program recognized the advantages of an online program and even considered developing one on their own. But, after seeing the “12-leads Made Easy” program, they decided that it was superior to anything they could create.

“As a cardiologist, I have seen many electronic tools for teaching ECGs, but I have never seen anything like this,” Jollis said. “This program gives the paramedics a level of confidence so they can activate the system.”

4. The course should apply to everyone from seasoned paramedic to recent graduate; EMT to ED RN

Director, Coronary Care Unit, Duke University Medical Center, Co-PI for the RACE Project Christopher Granger, MD; Executive Director, the RACE Project Mayme Lou Roettig, RN, MSN; and Jollis have been working on the Heart-to-Care system since 2005. Their challenge was to train a large and diverse group consisting of emergency department physicians, nurses and administrators at 120 hospitals and prehospital providers in more than 500 systems scattered across three states.

Using a single program to train everyone who will be involved in the identification of a possible STEMI patient helps to maintain a standardization of care and significantly reduce costs. “We can conduct a huge amount of education through one tool,” Corbett said.

They chose the “12-leads Made Easy” program because it provides instruction about site preparation and correlates each lead to an anatomic region of the heart. It addresses considerations, such as patient comfort and modesty. Most importantly, it helps students learn when a ST-elevation is not an ST-elevation. According to Corbett, learning to correctly identify STEMI imposters is a critical aspect of prehospital training that is not often taught in paramedic class.

5. Tracking feature should be included to help administrators monitor student progress

Administrators are using the data obtained from the tracking feature in the “12-leads Made Easy” program in conjunction with the electronic medical system document quality management on an agency level. Mears said the RACE program is able to track the students who take the course by having them log in using their state identification number.

Currently, officials are evaluating any difference in care between those who have completed the course and those who have not. Mears said they hope that the more comfortable the paramedics feel about recognizing a STEMI, the more likely the patient will get the appropriate care and transportation to the correct facility.

6. Once competency is achieved, the program should be used to maintain skills

Once learned, it is imperative for all the students to maintain their skills. "The key after the training is keeping up with their education. The "12-leads Made Easy" program allows for that by providing hundreds of actual ECG waveforms to use as practice.

The diversity of the agencies involved in the RACE project extends to the number of ECGs a paramedic performs. "Some do ten ECGs in a day and some do one in a week," Underwood said. "It depends on the area and the level of provider." Using the "12-leads Made Easy" program allows those who do not get a chance to interpret ECGs as often to practice their skills.

7. Maximize training opportunity when used in conjunction with live training

For Duke University-based Jenny C. Underwood, RN, BSN, CCRN, the use of both online and live training (blended learning) maximizes desired results. "The combination of the two is what is helping my paramedics," she said. In fact, the EMS county medical director and training officer have made it mandatory for all students to follow up live training with the online program.

Summary

Of the approximately 2,000 paramedics who require the training, more than half have completed the "12-leads Made Easy" course as of March, 2009. So far, the RACE coordinators are pleased with the results. "The program has met our needs and it's been well received by those who have taken the program," Mears said.

Update

After the RACE program implemented the 12-leads Made Easy online program it was purchased by Physio-Control of Redmond, Washington. ECG Solutions continues to provide instructor led workshops to all audiences and markets the online product to individual healthcare providers and Paramedic schools. Physio-Control markets the online program directly to Hospitals and EMS agencies.

For more information about RACE-ER, visit www.race-er.org.

For information about the “12-leads Made Easy” program, go to www.ecgsolutions.com or [www.physio-control.com/products/training-products/ 12-Leads Made Easy Web-Based 12-Lead ECG Training Course](http://www.physio-control.com/products/training-products/12-Leads%20Made%20Easy%20Web-Based%2012-Lead%20ECG%20Training%20Course).



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