Managing acute cardiac patients in and out of the hospital setting

M Willoughby, J Williams, D Proctor, J Lovley, M Hall, R Shaw, C Nyman, AM Davies, H Hassan, J Boulton, D Read, M Collins, L Hill

INTRODUCTION

The *National Service Framework* (NSF) *for Coronary Heart Disease* (CHD) (Department of Health, 2003) sets the standard of treating eligible acute myocardial infarction (AMI) patients within 60 minutes of a call for help in order to improve survival rates and long-term quality-of-life for heart-attack patients.

In the 3 years before the tightened NSF for CHD governance on call-to-needle (CTN) times, few AMI patients at Pilgrim Hospital were being thrombolysed in the recommended times. With integrated team work and protocol initiatives, the emergency medicine, nursing and cardiology staff at Pilgrim Hospital and Lincolnshire Ambulance Service's (LAS) Skegness teams have significantly improved their CTN and door-to-needle (DTN) treatment times.

In recognition of the achievement, the cardiac assessment team, who have thrombolysed 95% of patients within the 30-minute DTN time, have been awarded the Best Practice in Integrated Cardiac Care (BPICC) Award for 2004 by Roche Products Ltd. The national award recognizes the Lincolnshire thrombolysis team for their training and communication initiatives and exemplary team work, which has helped them to achieve better care for AMI patients.

Ms Maria Willoughby, Mr Jason Williams, Ms Donna Proctor and Ms Janine Lovley are all Cardiac Assessment Nurses, Pilgrim Hospital; **Mr Mark Hall** is a Paramedic, Lincolnshire ambulance service, Skegnes; Lincolnshire Ambulance Service Paramedics, Technicians and Training School; Lincolnshire Early Thrombolysis Group **Ms Rebecca Shaw**, Sister, Coronary Care Unit, Pilgrim Hospital; Coronary Care Unit Nurses and Night Sisters, Pilgrim Hospital; **Dr Cyril Nyman** and **Dr Adrian Morley Davies** are Consultant Cardiologists, Pilgrim Hospital; **Dr Hussain Hassan** is Consultant A&E, Pilgrim Hospital; **Mr John Boulton**, Matron for Emergency Medicine, Pilgrim Hospital; **Ms Donna Read** is Directorate General Manager, Pilgrim Hospital; **Sister Margaret Collins**, Sister A&E, Pilgrim Hospital, and **Sister Linda Hill**, Sister, Skegness A&E Department

Correspondence to: M Willoughby, Cardiac Assessment Nurse, Coronary Care Unit, Pilgrim Hospital, Sibsey Road, Boston PE21 9QS

BACKGROUND

Between 2001 and 2004, the Lincolnshire thrombolysis team have had to overcome many obstacles in the pursuit of integrated cardiac care. First, the layout of Pilgrim hospital meant there was a long distance from accident and emergency (A&E) to the cardiac care unit (CCU). Upon hospital admission, all patients would wait for a medical doctor to see them in addition to assessment by an A&E doctor. Clerking took place in the A&E where treatments were prescribed, and the patient was then transferred to CCU. There was no direct admissions to CCU because there were only four beds.

Second, communication was not as strong as it could have been. There was no pre-alert system for nurses to expect incoming patients from paramedics.

Third, few paramedics had been given training on electrocardiogram (ECG) lead placement or ECG reading. They were also using basic cardiac monitors with three leads only for rhythm recognition.

Fourth, patients who would attend A&E at Skegness (a small cottage hospital with an A&E department) and would be seen as an AMI, were then transferred to Pilgrim (30 minutes away). On arrival at Pilgrim, patients would then go through the admission. This added critical time.

With a dedicated team looking to improve patient care and hospital facilitation, the Lincolnshire team introduced initiatives to strive to provide best patient care. These initiatives were:

- LAS's Skegness pilot scheme
- Four cardiac assessment nurses employed at Pilgrim hospital
- Pilgrim hospital cardiology nurses trained to support the medical team
- Skegness A&E developed a thrombolysis service
- A fully integrated communication network development between all facilities.

AIMS

By employing the cardiac assessment nurse team, Pilgrim Hospital set objectives to work towards achieving the NSF targets and improving patient care. These were:

- To improve the patient's journey, making it quicker and more effective while offering constant care
- To increase the use of pre-hospital thrombolysis for quicker and more effective AMI treatment
- To continually provide a supportive and complete communication network between ambulance and hospital staff
- To risk assess all patients to identify AMI immediately and provide maximum pain relief
- To work in a close support network of medical doctors, paramedics and nurses (including primary care trusts) to deliver standardized care wherever an AMI patient lives.

FROM POINT OF PATIENT CALL

A pilot scheme was developed by the LAS in Skegness with the goals of improving the patient journey and providing quicker AMI assessment while in transit. The LAS fitted all ambulances with Life Pac-12 machines and provides paramedics with training on 12-lead ECG placement, result interpretation skills and thrombolysis

training. Critical information is provided to the cardiac assessment nurse or doctor at Pilgrim Hospital using built-in fax facilities and mobile phones allowing the paramedic to initiate thrombolysis. In addition to the LAS road fleet, a Life Pac-12 machine has been installed in an LAS air ambulance enabling them to extend their ability to thrombolyse AMI patients as well.

Paramedics are also now encouraged to pre-alert the cardiac assessment team of an incoming patient and give the patient's name details, to enable the nurse team to access patient records and compare previous ECGs.

A patient database was collected for patients with left bundle branch block to reduce the chances of inappropriate thrombolysis. This cooperative network is supported by all teams because paramedics and nurses familiarize themselves with each others' working environment by completing a 'job shadow', allowing them to understand the working conditions and challenges each team faces.

All teams also contribute case studies to their intranet with the support of IT to provide a platform for further learning on all patients presenting with acute coronary syndromes.

AT THE HOSPITAL DOOR

The cardiac assessment team are at the centre of all these developments and provide an excellent service to their own patients plus a sound communication network to others involved with these patients. The cardiac assessment team have achieved outstanding results and promoting paramedic thrombolysis to further improve the outcome for the patient.

The cardiac assessment team was put in place 3 years ago and is continuously monitoring the service's performance against targets. It aims to provide education, support and reassurance to all cardiac-care disciplines, working closely with paramedics and other CCU, medical and A&E staff to drive thrombolysis forward.

Patient group directions (PGDs) are used to supply thrombolytics, analgesics, aspirin, cardiac arrest and other drugs. Some PGDs developed include: reteplase for the second bolus after a first pre-hospital bolus, heparin infusion to complete thrombolysis and naloxone and clopidogrel as an alternative to aspirin when contraindicated. The team is developing more PGDs in an effort to keep up to date on current best practice. As well as upcoming training on heart sounds, the cardiac assessment team has developed in-house training on assessing lung sounds and now requests chest X-rays and interprets them.

DEVELOPING THE CARDIAC STRATEGY

Since 2001, Skegness paramedics have been trained with the LAS training centre on ECG reading and chest pain recognition skills, and thrombolsis administration with retaplase, to allow an easier pre-hospital to A&E transfer after the first non-weighted bolus. The Skegness paramedics receive ongoing support and feedback from the LAS and the cardiac assessment team.

As in all hospitals, bleep response services are important. The bleep service at Pilgrim Hospital is taken over at night by the CCU staff who are based in CCU, but away from the A&E. CCU staff, however, see the same type of patients as the cardiac assessment team, but without the PGDs, and have set up a central tracking and monitoring index of patients presenting to track their progress and improvement.

In the event of an incoming AMI patient, the CCU staff alert the on-call medical doctor who then prescribes thrombolysis as needed. The cardiac assessment team has trained the CCU staff to identify high-risk patients and has gradually trained all the night sisters and the CCU staff to thrombolyze the patient in A&E and support the medical staff. With all staff trained to perform an ECG when needed, this has caused a gradual improvement in the DTN times providing a quicker patient service and a 24-hour service for continuity. CCU has moved closer to A&E and increased its establishment and staffing levels to take on this nighttime role. These developments have been helped by support from the Matrons for Medicine and Emergency Care in Lincolnshire.

THE RESULTS

Three years ago, no patients in the Pilgrim thrombolysis team's region were receiving thrombolysis in less than 30 minutes. Since the cardiac assessment team's implementation and the LAS training and equipment initiatives, 95% of AMI patients (181 patients) seen by the cardiac assessment team have received thrombolysis in less than 30 minutes. Since April 2003, 80% (71 patients) of AMI patients were thrombolysed in less than 20 minutes.

THREE YEARS ON...

The Lincolnshire thrombolysis team has not inappropriately thrombolysed a patient during this 3-year improvement period. In fact, the new systems have caught more AMIs because of repeat ECGs and ongoing cardiac assessment. The night service continues to develop and is achieving targets as staff become more experienced.

The cardiac assessment team sees all patients admitted with chest pain, acute left ventricular failure (LVF) and cardiac arrhythmias and manages these patients until stabilized using PGDs, assessment skills and alerting the medical team. There was an immediate 50% reduction in cardiac arrests in the associated patients on admission as a result of prompt thrombolysis and adequate analgesia.

In Skegness, the LAS Life-Pac 12 pilot scheme and training initiatives are being extended through the rest of Lincolnshire, and the air ambulance paramedics are now being trained in pre-hospital thrombolysis. Good communications systems are now in place and all Skegness paramedic teams are given ongoing support and evaluation.

The staff at the thrombolysis service developed at Skegness and Pilgrim Hospital have found it to be a positive experience and are confident of their improving cardiac skills and improved outcomes for the patients. HM

Department of Health (2003) *National Service Framework for Coronary Heart Disease*. Department of Health, London