Improving Care Processes for Patients with Possible Acute Coronary Syndrome (ICARE-ACS)

Abstract

Background
Patients with chest pain or other symptoms suggestive of a heart attack are encouraged to seek medical attention urgently. Consequently, they are amongst the most common patient groups presenting to the emergency department (ED) ~6,500 to Christchurch ED annually. The traditional process to rule-out heart attack – also called Acute Myocardial Infarction (AMI) - has required admission for up to 90% of these patients. This is despite only about 10-15% ultimately being diagnosed with AMI. This exposes many patients to unnecessary risk through invasive testing and represents a large burden to the health system.

The ICARE-ACS team recognised this problem could be solved using an accelerated diagnostic pathway (ADP) that enabled the decision to rule-out AMI to be made much earlier (in the ED) rather than - usually the next day- in a ward. At the time there was limited evidence as to what the components of an ADP would be.

Process
We initiated a project to (i) collect the evidence, (ii) translate the evidence into a pragmatic pathway, (iii) test, validate and implement a pathway, and (iv) incrementally improve the pathway to rule-out within the ED as greater a proportion of patients without AMI as was safe.

This process follows the principle of the PDSA (Plan Do Study Act) cycle. It began with a careful review of the literature (a systematic review), was then followed by three observational studies and two randomised controlled trials (RCTs) run within the Christchurch ED. Each study has involved multiple CDHB services including the ED, Cardiology, General Medicine, Canterbury Health Laboratories, Planning and Funding, Decision Support and, more recently, General Practice, The 24 hour Surgery, Acute Demand and Health Connect South. The observational studies provided data to change the practice of performing many different blood tests for detecting AMI and replace this with a blood test for a single biomarker (cardiac troponin). This data also informed the development and predicted the likely efficacy of a future ADP.

Outcome
The first RCT provided the evidence to enable immediate implementation of an ADP within the ED which nearly doubled the proportion of chest pain patients who could be sent home from the ED within 6 hours. Christchurch became the first ED within New Zealand and possibly the world to make a chest pain ADP standard practice. A second RCT then demonstrated improved the identification of low risk patients. Early rule out of AMI is now possible in approximately four times more patients than before the project began.

Ultimately, the project has resulted in safe and earlier discharge back to primary care for many more patients, reduced patient anxiety, mitigated ED overcrowding, and reduced unnecessary admissions and healthcare spending. The success of the Christchurch experience led to a Ministry of Health (MoH) initiative to implement an ADP for suspected ischemic heart disease into the Regional Service Frameworks. The ICARE-ACS team have been involved supporting and monitoring ADP implementation throughout the country and are currently planning the next iteration of the ADP within Christchurch and for regional hospitals.

Conclusion
The ADP developed by the ICARE-ACS team has proven safe and effective at expediting the investigation of patients with possible heart attacks. The process has become well embedded locally with further implementation across New Zealand and internationally.