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

Version: 1.0
Date: 28 July 2014.
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NOTE: Elements of the protocol most relevant to individual sites are highlighted by this coloured text.

Lay Summary

This study is designed to support and monitor Ministry of Health initiative to implement an accelerated assessment pathway for suspected acute ischaemic heart disease into the Regional Service Frameworks. The study will pilot implementation of a new accelerated diagnostic pathway/protocol for suspected acute coronary syndromes cross New Zealand district health boards. The pathway was developed in New Zealand and Australia and has undergone successful observational and randomised controlled trials published in international journals. Of the thousands of patients who present to NZ emergency departments every year with suspected cardiac chest pain, approximately 20% could be discharged early. Large volumes of patients who do not have cardiac chest pain will be sent home early, reducing patient worry, increasing clinician availability to acutely ill patients, reducing emergency department overcrowding, reducing unnecessary inpatient admissions, and thereby reducing unnecessary healthcare costs.

Investigators

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Summary of research proposal

Rationale for research

Ischaemic heart disease (IHD) is a major health system burden that affects about 200,000 New Zealanders. On presentation to the Emergency Department (ED) there are many more patients with symptoms suggestive of acute ischaemic heart disease (Acute Coronary Syndrome or ACS) than are subsequently found to have the disease. Extensive investigation of patients at low-risk of ACS uses valuable resources better devoted to those patients who do have ACS. The research proposed is a direct continuation of previous New Zealand-led research on accelerated diagnostic pathways (ADPs) for patients with suspected acute IHD (1-3). This research included an HRC funded randomised controlled trial [HRC grant 10/439] the results from which have recently been published (4). An ADP was successfully trialled within Christchurch Hospital and hospitals in Australia and Hong Kong, during 2011-2013 (5-6). This proposed research is the logical next step in sequence of research conducted because it will help complete research translation into clinical practice by testing the real life introduction and sustainability of this accelerated diagnostic pathway into standard care in NZ district health boards.

The proposed research aligns directly with a Ministry of Health (MOH) plan to introduce 'accelerated chest pain pathways' for suspected acute ischaemic heart disease (IHD) into the Regional Service Frameworks. It is highly relevant to the RFP because it will both inform the National Health Committee (NHC) about (i) the effectiveness and cost-effectiveness of ADPs and also (ii) identify knowledge translation strategies needed to support implementation of findings. The experiences of the group will be used to help design clinical pathways at other hospitals that maximise the likelihood that more patients will be successfully discharged in a shorter time period, thus reducing the number and costs of hospitalisations. Furthermore, by involving multiple District Health Boards (DHBs) with diverse demographics we will be able to evaluate the benefits, in terms of DALYs, for Maori who are currently have a much higher IHD burden than non-Maori.

Aims
(a)   To facilitate introduction of an ACS assessment framework incorporating an ADP and measure its impact on ED length of stay and other key outcomes for patients in a wide variety of DHBs.
(b)   To identify optimal knowledge translation strategies needed to support implementation of findings

Research design and methods
The intervention will involve structurally integrating existing practice with an ADP for assessment of patients with possible ACS. A stepped-wedge introduction design will be used. This is a one-way crossover cluster trial where all the sites will receive the intervention. The clusters (hospital sites) crossover from control to intervention at 1-month intervals. This design is appropriate because equipoise no longer exists between clinical management options. The design ensures that all study sites will eventually receive the intervention, but also allows for refinements in the delivery of the intervention between steps in order to optimise the final implementation strategies.

Knowledge Translation Plan
This project presents ideal circumstances for knowledge translation because the 'decision makers' (clinical, funders, managers and key clinical advisors at the Ministry of Health) are all part of the research team. An important need for clinical change has been identified and this

project is specifically designed to facilitate achievement of this change. The research will support research knowledge translation by utilising the Institute for Health Improvement's Plan-Do-Study-Act (PDSA) cycle model to facilitate introduction and learn from changes in real-time clinical practice. The study findings and lessons learned about implementation strategies will be shared through the New Zealand faculties of the specialist college bodies for Biochemistry, Cardiology, General Medicine and Emergency Medicine. Our partners from DHB management will present this to relevant forums such as District Health Boards NZ, Heath Round Table. Further dissemination of the results, and implementation of the pathway in New Zealand hospitals, will be through the 'Shorter Stays in the ED' working group in the Ministry of Health and the cardiac network.

Methods

Hypothesis:
That the introduction of ACS clinical assessment framework incorporating an Accelerated Diagnostic Pathway (ADP) will increase the proportion of patients safely discharged home within 6 hours of presentation to ED.

Aims:
(a)   To demonstrate that a phased implementation of a clinical framework across 8 separate and diverse hospital settings improves compliance with key clinical standards, utilisation of health system resources, and patient outcomes. The specific primary objective will be to increase the rate of discharge of low-risk patients within 6 hours of emergency department attendance. Secondary measures will assess impact on patient flow, cardiovascular outcomes, clinical practice consistency and health economic benefit.
(b)   To identify optimal knowledge translation strategies needed to support implementation of findings

Participants
All people presenting to the Emergency Departments (EDs) of 8 participating hospitals and with symptoms of recent onset due to possible but not proven acute coronary syndrome (ACS) in whom serial cardiac troponin's (cTn) are being used to rule in or rule out acute myocardial infarctions (AMI). Since serial troponins are part of standard practice of assessing Chest Pain, the inclusion criteria of serial cardiac troponins (cTn) will be used to identify patients.

Inclusion criteria
- Adults (≥18 years of age).
- Serial troponin testing for possible cardiac disease as indicated by a cardiac troponin test performed during initial assessment in the ED with a 2nd test performed within 24 hours of attendance.

Exclusion criteria
- A clear non-coronary cause of chest pain.
- Domiciled overseas.

Setting
8 Acute hospitals ranging from small to large size and with varied population demographics. Patients presenting from the community to the ED with chest pain do so mainly by self-presentation but there are also many referrals from General Practitioners. Initial medical assessment is usually performed by ED senior house officers or registrars but may be performed by one or more of any of the available ED doctors. The clinical experience of the doctors available ranges from intern through to consultant specialists. Medical assessment may also be performed by interns, and registrars from the cardiology and internal medicine services.

Table 1: Study sites:

Site (Hospital)	DHB	ED presentations p.a.	% Maori in catchment population	Troponin assay
Wellington	Capital and Coast	53,000	13%	hsTnT (Roche)
Middlemore	Counties Manukau	101,293	15%	hsTnI (Abbott)
Rotorua	Lakes District	30,321	34%	TnI (Beckman)
Timaru	South Canterbury	17,400	6%	hsTnT (Roche)
Waikato	Waikato	65,223	22%	hsTnT (Roche)
Wairarapa	Wairarapa	15,000	14%	TnI (Abbott)
North Shore	Waitemata	66,194	8%	TnI (Siemens)
Waitakare	Waitemata	44,198	17%	TnI (Siemens)

hsTnT – high sensitivity troponin T, hsTnI – high sensitivity troponin I, TnI- non-high sensitive troponin I

Troponin assays at study sites

The troponin assays used by the study sites are collectively representative of almost all troponin usage in New Zealand both in terms of patient numbers and different hospital settings. The high sensitivity TnT assay (which is exclusive to Roche) is the only laboratory troponin T assay in use in New Zealand having completely replaced non-high sensitivity TnT. There is currently only one high sensitivity TnI assay in clinical use worldwide (manufactured by Abbott). This assay has mostly replaced other TNI assays manufactured by Abbott in New Zealand. The only other commonly used non-high sensitivity troponins in use in New Zealand are the Beckman and Siemens TnI assays. There is good evidence showing the safety and effectiveness of using hsTnT, hsTnI and non-high sensitivity TnI with an accelerated diagnostic protocols for chest pain [1, 3-6,11] Since all the study hospitals have on-site laboratory facilities point of care troponin assays would not be used in the study, however, there is also good evidence for the efficacy and safety of their use in conjunction with chest pain pathways.[2,12]

Study Design

A stepped wedge introduction design will be used involving 8 hospitals sites (Figure 1). This is a crossover cluster trial where all the sites will receive the intervention preceded by a control period. There will be a minimum 6 month control period of usual care at each site followed by a site-specific intervention period. The intervention period will comprise a 4-month implementation phase followed by an ADP continuance phase. The minimum intervention period will be 4-months, the maximum 11-months (average 7.5 months). The sites will crossover from control to intervention at one-month intervals. A stepped wedge design is particularly useful for evaluating the population-level impact of an intervention that has been shown to be effective in an individually randomised trial when equipoise no longer exists between clinical management options. Effectiveness of an accelerated diagnostic pathway has already been proven in a pragmatic RCT which showed an 8.3% absolute increase in discharge from hospital at 6 hours after arrival between the accelerated arm (19.3%) and the usual care arm (11%)(p=0.008) (3). The stepped wedge design also deliberately allows for refinements in the delivery of the intervention between steps to optimise the final intervention strategy.

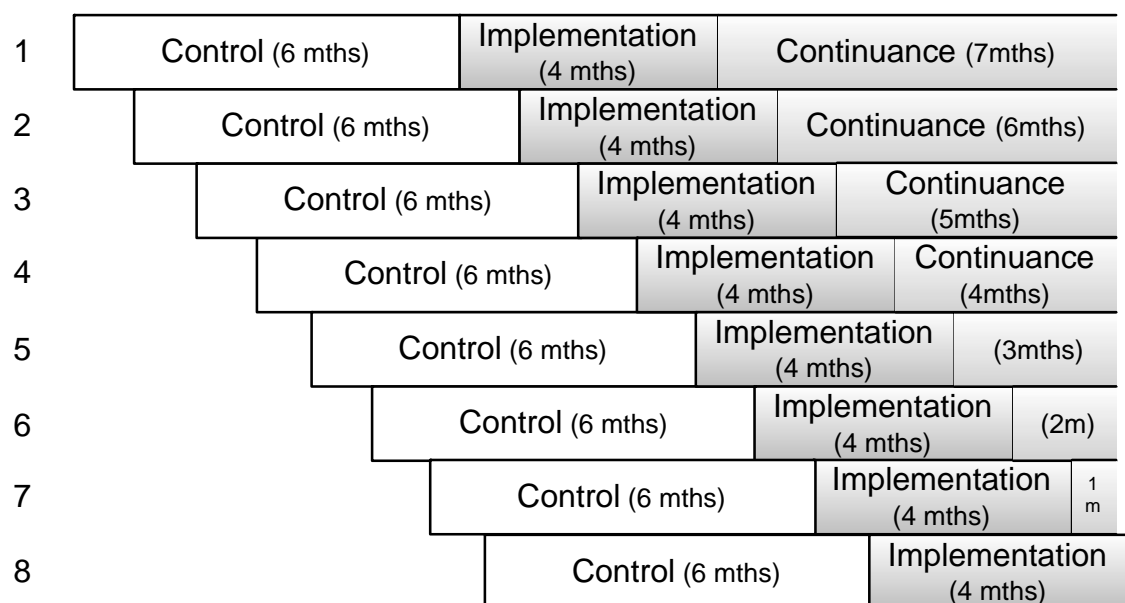| 1 | Control (6 mths) | Implementation (4 mths) | Continuance (7mths) |
2	Control (6 mths)	Implementation (4 mths)	Continuance (6mths)
3	Control (6 mths)	Implementation (4 mths)	Continuance (5mths)
4	Control (6 mths)	Implementation (4 mths)	Continuance (4mths)
5	Control (6 mths)	Implementation (4 mths)	(3mths)
6	Control (6 mths)	Implementation (4 mths)	(2m)
7	Control (6 mths)	Implementation (4 mths)	1m
8	Control (6 mths)	Implementation (4 mths)	

Figure 1: Stepped wedge study design: A 6-month control period for each site followed by an intervention phase comprising a 4-month implementation phase and ADP continuance phase. Study End is at the completion of the final implementation phase and follow-up data is collected on the final patients for 30-days

Control Period (Usual Care)

Each site will have a minimum 6-month control period prior to the intervention phase. Usual care (the control arm) is defined as the 'existing daily practice of the attending clinical staff to diagnose a patient with chest pain.' During the Usual care period clinicians will assess the patients using the methodology currently employed in their hospital with no study invoked changes. Assessment will typically involve serial cTn measurements, ECG, heart rate, blood pressure, and assessment of risk factors through a patient history. The patient group comprising the control cohort will be all eligible patients within 6-months of the planned beginning of the intervention. Follow-up data on control patient will be collected at each site until 30-days following the final control patient at each site. The 6-month control period is possible because all the data is routinely prospectively collected data available stored in health databases (see below).

"Intervention"

The intervention is a change in clinical practice mandated by the Ministry of Health. Specifically, this will involve structurally integrating existing practice with an ACS clinical assessment framework incorporating an ADP. It will use a framework based on a model of standardized operational metrics and criteria for accreditation developed by the Society of Cardiovascular Patient Care (SCPC - formerly Society of Chest Pain Centers; www.scpc.org). Such frameworks are used in over 1000 hospitals worldwide (principally in the USA). We have been liaising with the SCPC to develop a framework tailored for the New Zealand environment. The intervention phase will comprise a four month implementation phase during which the ACS clinical assessment framework and ADP is first implemented, embedded, and monitored as outlined below. There will be a monthly implementation reviews and reporting during the implementation phase. Although the clinical assessment framework will be based on the SCPC model each hospital will be encouraged to develop a site-specific framework which reflects New Zealand and local practice and which also incorporates lessons learned from other DHBs about optimal implementation strategies (from focus groups, consultations with key stakeholders etc). The study end will be at the end

of the 4-month implementation phase of the final study site. Follow-up data will be collected at all sites for 30-days. The duration of the study is 21 months with the final patients being followed for an additional 30 days. However, because control data can be collected retrospectively only 16 months will be needed to bring the implement the ADP in all sites and complete the follow-up. It is intended that successful implementation strategies will remain in place at each site.

Key components of an ACS clinical assessment framework incorporating an ADP will include:

1. A clear clinical pathway documentation process.
2. A structured and reproducible process of ACS risk stratification (e.g. a clinical score).
3. Guidance for consistency of sampling time-points for performing cTn and ECG testing (e.g. on arrival and after a further specified timepoint(s)).
4. Guidance about how to combine clinical risk stratification, and ECG and troponin testing with a structure on how to guide patient management (accelerated discharge using ADP, discharge, admission and further investigations).
5. Guidance and timeframes for performing follow-up testing; e.g. stress testing.
6. Guidance for selection of patients for telemetry and removal from telemetry (e.g. nurse initiated removal from telemetry for symptom free, non-high risk patients following initially normal vital signs, ECG and troponin).
7. A clear pathway for further investigations and interventions for patients at high clinical risk and with positive investigation results.
8. Clear discharge planning, which includes patient education and lifestyle modification advice.

Chest pain pathway paperwork/template

Following the completion of the HRC randomised controlled trial [HRC 10/439] dedicated chest pain pathway paperwork was developed and has been in use in Canterbury since August 2012. Since its initial introduction stakeholder feedback has been used to make multiple refinements of the pathway and its documentation. This pathway will be used as a template that can be adapted to the local needs and preferences of the study site. The local guidance will then be that all patients being investigated for suspected ACS should have their medical record documented using this template.

Study Communication and document management

We will use Basecamp, a project management web-portal which enables control over access to documents, and coordinates communication and deadlines and which has been utilised to manage the running of previous HRC funded research involving 43 different organisations [Earthquake Database Establishment and Analysis - HRC grant 12/745]. This exchange of information is expected to pre-empt issues arising in one site being repeated in another. The Study Coordinator under guidance of the PI will collate all weekly reports and any formal review reports and disseminate them to all sites on a weekly basis. Details of all issues encountered and solutions provided alongside all site specific documentation will be made available to all study sites on Basecamp (https://basecamp.com).

Outcomes and analysis

The Primary Outcome

The proportion of patients "successfully" discharged home within 6 hours of ED arrival. A successful discharge is one with no major adverse cardiac event (MACE) during the following 30 days (see below for definition of MACE).

Secondary outcomes
(i)   MACE (see below).
(ii)   Non-trauma, hospital re-attendance, unstable angina and urgent revascularisation at 30 days.
(iii)   Other cardiovascular and key non-cardiovascular outcomes e.g. Pulmonary Embolism, Aortic Dissection, Bowel Perforation.
(iv)   Length of stay in hospital, and the ED (if admitted to hospital).
(v)   Ethnicity and socio-economic representation.

Subgroup analyses
(i)   Ethnic group.
(ii)   Socioeconomic group.
(iii)   Site.

MACE definition: any one of:
(1)   death (unless clearly non-cardiac),
(2)   cardiac arrest,
(3)   emergency revascularization procedure,
(4)   cardio-genic shock,
(5)   ventricular arrhythmia needing intervention,
(6)   high-degree atrioventricular block needing intervention, or
(7)   acute myocardial infarction.

Additional analysis
A secondary analysis will be conducted to assess if there is any variation in safe discharge rates from early implementation (1st two months of intervention at each study site) to late implementation (final two months of intervention at each study site).

A cost-benefit analysis will be conducted utilising data on length of stay, and details of 30-day readmissions. A separate analysis will be conducted for low-risk and non-low risk patients.

Core Data Collection
Data regarding troponin ordering, length of stay in ED (and hospital), national patient health events and ICD-10 codes for in-patients are already recorded for all patients and can be collected locally from existing data sources outside a dedicated research setting.
We have chosen these parameters as a pragmatic and sustainable minimum data collection model that will maximise the number of hospitals that can participate in this study with the funding available. All data has been prospectively collected and we believe there will be no bias or decline in data quality because we will access this data retrospectively. This will enable other hospitals to be part of the process improvement monitoring and also mean that such data collection can be sustainable without dedicated research funding. This will allow further service development and monitoring after the end of this study.

Patients will be identified automatically through the electronic laboratory database of troponin assay results for each site (some sites use the same data base). The algorithm will identify all patients with a troponin request from the Emergency Department within the six month Usual care study period and, separately, the four month Intervention study period. The primary study set will comprise all patients with two troponin tests within 24 hours where the first test was in the Emergency Department. The NHIs will be retrieved, and ICD-10 codes for the index event and any readmissions within 30 days of the first presentation, and death data (retrieved from the national mortality dataset) within 30 days will be retrieved. MACE events will be identified using ICD-10 codes of readmissions over 30 days following the presentation. Since these are major cardiac events requiring specialist in acute intervention they are likely to result in treatment within the public hospital system even if the patient has private medical insurance. They are also events which require ongoing specialist follow-up in the public hospital system so that if patients who are normally domiciled in New

Zealand were to have a major event while travelling overseas then this would still be detectable from the follow-up care within New Zealand. In order to maximise the probability of catching all relevant events we will deliberately search for follow-up care within the public hospital system for the following 1 month. Where a search indicates that a possible prior cardiac event may have occurred then contact will be made with the patient's GP and if necessary the patient themselves in order to determine if this is true. We expect this to be a rare occurrence.

Data protection
All retrieved data with NHI numbers will be securely stored in password-protected databases. Once all relevant data has been retrieved, all participants will be given a unique study ID, the NHI will be removed and all data analysis will be done using de-identified data files.

Added value: Extended data collection and linkage to the All New Zealand ACS Quality Improvement (ANZACS-QI) registry
Co-investigators Andrew Kerr and Gerard Devlin have been heavily involved with the creation of ANZACS-QI and we will be developing methods by which the core data set can be linked to ANZACS-QI. Through the use of the chest pain pathway templates described it will be possible to collect additional key data elements, such as those required for the GRACE cardiovascular risk score. This is made possible through specialist software called Abbyy (www.abbyy.com). By creating a pathway in PDF (portable digital format) with Abby that has very precisely located on each page each tick box and free text box a scanner is able to be used to read the data from the pathway document directly into appropriate fields in a database. We now have a multiple user license for Abby and over 3 years of experience with it. We have found that it markedly reduces transcription errors. It is intended that the site-specific documentation for each study site will be developed using the Abby software. Wellington Hospital uses fully electronic medical records and we will be working to develop an electronic version of the template.

Statistical analysis
Successful discharge (without the occurrence of MACE) will be compared between control and intervention arms using a Mantel-Haenszel test for stratified data. Given 5-10% of ED presentations are for Chest Pain, and an annual ED presentation of over 360,000 patients (Table 1), we expect between 9,000 and 18,000 patients in the control arm and 11,000 to 22,000 in the intervention arm (average duration of intervention is 7.5 months). In the Christchurch randomised control trial of a Modified TIMI score successful discharge occurred in 19.3% compared with 11% in the control pathway (8.3% absolute difference). If we assume a similar control group rate of successful early discharge (11%), then, conservatively, 9,000 patients in the control arm and 11,000 in the intervention arm will allow detection of an absolute difference of 1.5% at an alpha of 0.05 and with 90% power. We expect even such a small difference will have beneficial health outcomes and economic effects. Given the experience of the Christchurch study we anticipate a greater absolute difference.

Economic evaluation:
A formal cost analysis will be conducted to compare cost per patient between pathways. Separate analyses will be made for low-risk and for non-low risk patients. Resource use data will be collected for all patients covering the length of time in the ED, the use of diagnostic tests, admissions, readmissions, outpatient reviews, and cardiac procedures. Total cost up to 30-days after initial attendance will then be determined. Canterbury DHB has a contracted health economist to assist with this.

Change management of intervention and identification of barriers

The management of change at each study site will be based on the principles set out by the Plan-Do-Study-Act (PDSA) cycle model for improvement developed by the Institute for Healthcare Improvement (IHI) and championed by Donald Berwick (http://www.ihi.org/knowledge/Pages/HowtoImprove/ScienceofImprovementTestingChanges.

aspx). It is a simple yet powerful tool for accelerating quality improvement. Once a team has set an aim, established its membership, and developed measures to determine whether a change leads to an improvement, the next step is to test a change in the real work setting. The PDSA cycle is shorthand for testing a change—by planning it, trying it, observing the results, and acting on what is learned. This is the scientific method used for action-oriented learning.

The steps in the PDSA cycle are shown below:
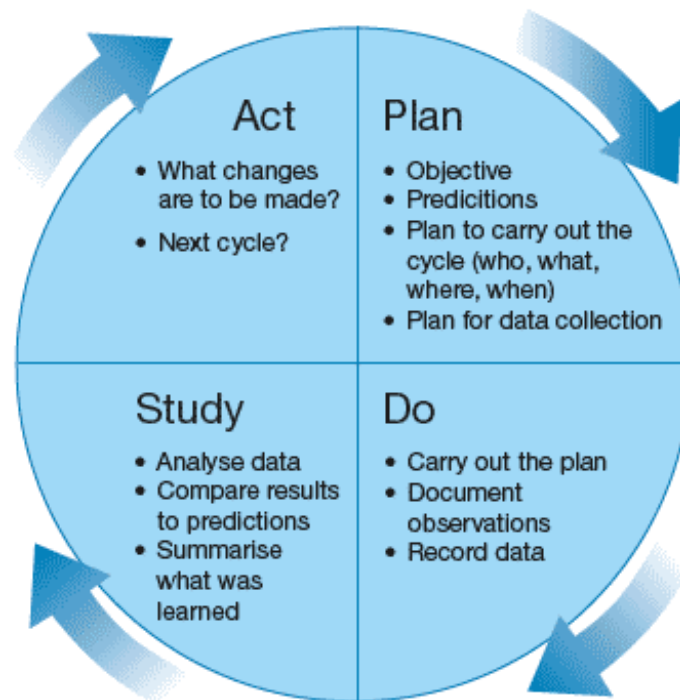
Facilitators at each site will use a toolkit for change management based upon the PDSA cycle and the principles set out by the Institute for Healthcare Improvement. Additional support and mentoring on change management will be provided by the New Zealand Health Innovation hub. As each site moves through each phase of the PDSA cycle information on issues encountered and solutions found will collated and fed back into the PDSA cycle of following sites.

Prior to the implementation period at each site local clinicians (Emergency doctors, Cardiologists, General Medicine doctors, Nurses) will agree on the adoption of an ADP based on the best available evidence. Sites may choose to adopt troponin+ECG+Modified TIMI score ADP currently in use in Christchurch hospital but do not have to choose this ADP. Other options include using the HEART score, the Vancouver chest pain rule, GRACE score, the North American chest pain rule and the new Australasian Emergency Department assessment of chest pain score.

The process will involve:
1. Attend a workshop hosted by PI Martin Than and NI Sally Aldous two months prior to the first site implementing their new ADP.
2. Conduct an analysis of gaps in current processes.
3. Identify process deficiencies
4. Target areas for improvement.
5. Align resources including:
    a. Choice of ADP
    b. A clear site-specific clinical pathway
    c. Documentation

      d. Identify training needs and fulfil them
6. Implement the new ADP.
7. Review procedures and documentation
      a. During the four month implementation phase the research nurse will facilitate a monthly internal review of ADP adoption and practice and report the results to the Study coordinator
      b. Ad-hoc reporting of issues encountered and local solutions provided will be reported by the research on weekly basis to the Study coordinator.

The identification of potential barriers to change is an integral part of this process. As an example, early discussions with stakeholders at Waitemata DHB have identified the following potential barriers for which discussions will occur regarding solutions:

EXAMPLES OF POTENTIAL BARRIERS (Identified at North Shore Hospital)

"money - failure to agree between study+DHB"
"timeframes - inadequate planning and elbow room"
"inadequate time - no extra time allocated to local participants"
"bringing dr colleagues on board = convince via data, concepts, research, personal touch, MoH "target, money, time"
"bringing nurse colleagues on board - need nurse champions (above research nurse)"
"changing clinical cultures"
"reassuring pts and staff"
"administrative issues - printing forms, collecting forms, altering forms"
"lab engagement - not relying on single person"
"short term work creation vs long term work improvement"
"to isolate study as 'lone event' vs incorporate into widespread change picture"
"language issues - we use interpreters daily"
"knee jerk reactions"
"driving demand vs reducing demand - no resource to do more?!"

Role of local facilitator

The role of this position is to act as local Clinical Project Faciltator and to be the principal contact between the Christchurch project management team (PI Than and NI Pickering). The duties of this position will be:

- To coordinate meetings between clinical specialities (ED, Cardiology, General Medicine, Laboratory, Nursing)
- To liaise with local IT services to ensure appropriate data is made available
- To create Standard Operating Procedures for each staff
- To organise and participate in the training of medical staff during the implementation phase
- To trouble shoot local issues during the implementation of the ADP and to report those to the Project Manager
- To provide accurate and timely data reports to the Project Management
- To organise and record the findings of focus group meetings as part of feedback to other study sites.

It is expected that this position will require some intensive input during the 3 months leading up to implementation and over the first two months of implementation as the processes are bedded down. For the following four months the task will be primarily to be

available 5 days a week as a trouble shooter. The final task will be collating implementation lessons, data and documentation following the implementation phase. We have budgeted for nurses at the experience level of Registered Nurse Step 5 (DHBs/NZNO Nursing and Midwifery Multi-employer collective agreement 1 March 2012 - 28 February 2015). This level of experience is needed because of (i) the clinical understanding and experience for working through change processes, (ii) the need to communicate well on clinical matters with a wide variety of clinical stageholders, and (iii) the high risk nature of the patients a high level of experience is required of the nursing staff to understand and communicate with clinical staff about any issues related to safety. We acknowledge that some sites may wish to reorganise the budget to suit their own needs. For example, they may employ an administration assistant for some of the paper work, while retaining the nurse on a slightly lower FTE. What we will ensure is that there is a plan in place for each step of the project at each site and that the people involved have appropriate skills.

Knowledge Translation Plan

Our project presents ideal circumstances for knowledge translation because the 'decision makers' (clinical, funders, managers and key clinical advisors at the Ministry of Health are part of the researcher team. A clear and important need for clinical change has been identified and this project is specifically designed to facilitate achievement of this change. Positive results from this trial will create innovative and workable change to the clinical service delivery for patients presenting to EDs with possible acute coronary syndrome. The research will support research knowledge translation by utilising the Institute for Health Improvement's Plan-Do-Study-Act (PDSA) cycle model to facilitate introduction of changes into real-time clinical practice.

Local knowledge translation and end user engagement at study sites

There is a desire and commitment from all clinical, managerial and funding stakeholders for permanent integration into clinical practice (and written evidence of this commitment is attached in section 4H). The local study site teams will involve a partnership of clinicians from Cardiology, Biochemistry, Emergency, General Medicine, and management that will ensure a clinically integrated uptake approach. There will be wider project teams involving stakeholder input at multiple levels of the study sites. Planning meetings will be scheduled with clinical leaders from nursing, cardiology, laboratory technology, primary care, finance, and management to help implementation.

National and International Knowledge translation

National –The findings will be shared through the New Zealand faculties of the specialist college bodies for Biochemistry, Cardiology, General Medicine and Emergency Medicine. Our partners from DHB management will present this to relevant forums such as District Health Boards NZ, Heath Round Table. If the study shows that the 'accelerated pathway' will decrease ED length of stay, and help DHBs achieve their 6 hour 'Shorter Stays in the ED', target then a further method of dissemination of the results, and implementation of the pathway in New Zealand hospitals, will be through the 'Shorter Stays in the ED' working group in the Ministry of Health. This group, led by Professor Ardagh, shares initiatives among New Zealand DHBs through DHB visits, newsletters, meetings, and a web-based 'clearing house'.

This trial has the explicit support of the key clinical directors, management and leaders at multiple levels and there is a commitment to make appropriate changes. Written evidence of this is provided, see Section 4H.There is also a clear and well thought out wider validation and dissemination plan.

Australasia – Presentation will occur at the scientific meetings of the clinical specialities above. Dr Louise Cullen (an ED specialist in Brisbane) is a collaborator who has and will continue to work with us on this project (there is an extensive co-publication history). With our support, Dr Cullen is working directly with the Director General of Health for Queensland to implement state-wide strategy for chest pain assessment.

International – In addition to peer reviewed publication, Prof Peacock is Past-President and a key clinical policy advisor to the Society of Cardiovascular Patient Care. He and Prof Jaffe are members of key policy/task force groups in this field and plan dissemination of positive results through these forums.

Responsiveness to Māori

Maori and Pacific peoples are at greater and increasing risk of harm from coronary disease compared to other New Zealanders. They are also less likely to seek conventional medical help when needed, especially if this may lead to hospital admission. Clinicians have also noted that a small number of all patient groups are reluctant to be admitted into hospital and may self-discharge against medical advice to avoid this. Patients are more likely to accept medical investigation that does not involve admission because it is less likely to impact upon work, personal, and in particular, family commitments.

ACS is increasing more rapidly in Maori and Pacific Island groups than in other New Zealanders. Between 1995/96 and 2000/2001, acute coronary syndromes overall increased by 15% per year in Maori (15% in men and women), and 5% per year in other New Zealanders (4.1% in men and 6.4% in women). In 1995/96, 5.5% of all New Zealanders discharged with ACS were Maori, this increased to 7.2% in 2000/01. Discharge after treatment for AMI increased by 14% per year in Maori (17% in men and 13% in women and 4% in other New Zealanders. In 1995/96, 5.5% of AMI were in Maori; this increased to 6.7% in 2000/01.[28] Local iwi, will be asked to give feedback on this project and amendments will be made accordingly. Dr Sue Crengle is a specialist Maori researcher who has begun liaison with local iwi, and Maori stakeholders regarding this proposal.

Since the research is not specifically focused on Maori, but rather deals with a disease that has particular prominence in the Maori population, there is no specific cultural training of staff planned in relation to this research. Usual DHB practices will be utilised for those who wish to speak in Te Reo.

A full report of the research findings will be given to appropriate Maori representatives upon the completion of the study.

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