Minimum Standards for Chest Pain Evaluation

Implementation Support Guide
Consultation Edition (October 2011)
Contact details
NSW DEPARTMENT OF HEALTH
73 Miller Street
NORTH SYDNEY NSW 2060

Tel. (02) 9391 9000
Fax. (02) 9391 9101
www.health.nsw.gov.au

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   Email. HSPIB@doh.health.nsw.gov.au

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Foreword

The NSW Health system is highly complex, relying on the expertise of 100,000+ employees to provide quality health care services to the citizens of NSW.

A significant wealth of experience exists in specialised management for patients presenting with symptoms of chest pain. A number of chest pain pathways already exist to guide the safety and quality of care provided to patients. However, there is inconsistency in the content and use of these pathways within and between hospitals across NSW.

Root Cause Analysis and Coronial investigations demonstrate that significant adverse events continue to occur, due to inconsistencies in the practice of the minimum standards for chest pain evaluation.

Responding to this need, the State-wide Cardiology Project developed the Chest Pain Pathway working group to work with clinicians and health service teams to redesign better patient journeys for patients presenting to hospitals for chest pain evaluation. The work of this group links into broader improvement strategies for adult patients with Acute Coronary Syndrome.

It is critical to note that these minimum standards have been developed by the working party, comprising multi-disciplinary staff from across NSW health facilities.

The Chest Pain Pathway working group should be acknowledged for their focus on the importance of early and sustained key stakeholder engagement. The minimum standards for chest pain evaluation has included consultation with Local Health District representatives, including Cardiology, Emergency Department, frontline clinicians, Patient Flow Management Team, and Clinical Redesign Unit staff, as well as Ambulance NSW, the Clinical Excellence Commission, the Agency for Clinical Innovation Cardiac Network, the Critical Care Taskforce, Rural Critical Care and consumer representatives.

The minimum standards also align with the National Heart Foundation of Australia and Cardiac Society of Australia and New Zealand Guidelines for the management of Acute Coronary Syndrome.

The recently issued Policy Directive (CPD2011_037) for the minimum standards for chest pain evaluation will assist clinicians to provide evidence based care to a high risk group of patients who frequently present to our Emergency Departments.

This implementation support guide complements the Policy Directive and aims to assist managers and clinicians to meet the minimum standards outlined in the policy. I commend this resource to you and hope that it assists you and your teams to improve the management of chest pain, every patient, every time.

Mr Mike Wallace
A/Deputy Director-General, System Purchasing and Performance Division
NSW Health
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Executive Summary

Objectives
To improve patient safety by implementing minimum standards for chest pain evaluation in NSW Public Hospitals, for every patient, every time.

Background
There is a significant wealth of experience in care for patients presenting with chest pain to hospitals. A number of chest pain pathways already exist; however, there is inconsistency in the use of pathways within and between hospitals across NSW.

The minimum standards for chest pain evaluation and Chest Pain Pathway were developed in response to significant adverse events in NSW that required investigation and attention to preventative measures.

After a review of Incident Information Management System data, the Clinical Excellence Commission prepared two Clinical Focus reports on Acute Coronary Syndrome, delivered to the Clinical Risk Review Committee (CRRC). The CRRC then determined that the Health Services Performance Improvement Branch of the NSW Department of Health be charged with addressing issues identified in the reports.

The Chest Pain Patient Journey Steering Committee (see page 44) began this process and included Senior doctors and nurses representing Emergency and Cardiology Departments, Ambulance Service of NSW, the Australian Heart Foundation, the Agency for Clinical Innovation, Clinical Safety, Quality and Governance, rural and metropolitan stakeholders.

After significant consultation and discussion the steering committee endorsed a chest pain pathway that is applicable to both Primary Percutaneous Coronary Intervention (PCI) sites and non-Primary PCI sites.

Mandatory Requirements
1. All facilities with Emergency Departments must have and use a pathway that meets the following minimum standards for chest pain patients:
   • Assigns triage category 2
   • ECGs are taken and reviewed by someone competent in ECG interpretation
   • Includes risk stratification
   • Troponin levels are taken and reviewed
   • Vital signs are taken and documented
   • Critical times are documented (symptom onset, presentation)
   • Aspirin is given, unless contraindicated
   • A Senior Medical Officer is assigned to provide advice and support on chest pain assessment and initial management, 24/7
   • A nominated Cardiologist is assigned to provide advice on further management 24/7
   • The pathway gives instruction regarding atypical chest pain presentations
   • High risk alternate diagnosis listed for consideration e.g. Aortic Dissection, Pulmonary Embolism & Pericarditis.

For further explanation of the minimum standards, see page 14 in this guide.
Executive Summary

For more information on the differences between Primary and non-Primary PCI sites, see: page 18

A template is available to evaluate your current position and guide implementation: page 32

Key questions to guide implementation

Monitoring the minimum standards for chest pain evaluation should form an ongoing part of the local quality and safety program. There are three basic questions to answer to determine the current state of your hospital against the minimum standards and guide your implementation focus:

1. **Does our hospital have a Chest Pain Pathway?**
   - If no – implement the generic NSW Chest Pain Pathway appropriate to your hospital
   - → Then – monitor the pathway to ensure that it is used (every patient, every time)

2. **Does our existing pathway meet the minimum standards?**
   - If no – either amend the existing pathway to meet the minimum standards or implement the appropriate generic pathway.
   - → Then – monitor the pathway to ensure that it is used (every patient, every time)

3. **Is our existing pathway used (every patient, every time)?**
   - If no – understand why the existing pathway is not being used consistently and develop a plan to improve compliance
   - → Then – monitor the pathway to ensure that it is used (every patient, every time)

Key messages for clinicians and managers

Patients presenting with chest pain for evaluation in NSW EDs are suffering significant adverse events due to inconsistencies in the practice of minimum standards for chest pain evaluation.

The mandated minimum standards for chest pain evaluation must be implemented to ensure consistency of practice for every patient, every time.

For more information on roles, see: page 30

The take-home message from this implementation support guide is slightly different depending on who you are. Consider the following questions:

**Clinicians in Emergency Departments (doctors and nurses)**

- Do we have a local chest pain pathway?
- Do I know what is on it and how to use it?
- Do I use this pathway for every patient every time?
Cardiology and Emergency Department Directors

- Do we have a local chest pain pathway that meets the minimum standards?
- Have we trained our clinicians in how to use the pathway?
- Do we monitor compliance with the local pathway and feed back to staff?

Hospital and Local Health District Executive (particularly Directors of Clinical Governance)

- Is there Hospital/District sponsorship for a chest pain pathway?
- Does our Hospital/District meet all requirements of the mandated minimum standards for chest pain evaluation (PD2011_037)?
- Do our clinicians have the training and resources required to use the chest pain pathway for every patient, every time?

Safety and Quality Departments

- Do we monitor patient safety against the performance of existing local chest pain pathways?
- How can we integrate monitoring of the minimum standards for chest pain evaluation into ongoing quality and safety improvement?

Common issues with Chest Pain Pathway compliance

In May 2006 the Chest Pain Evaluation Area Toolkit was released by the Health Services Performance Improvement Branch. Research relating to the use of existing pathways and in conjunction with the repeated findings of Root Cause Analyses and Coronial investigations, highlights some common issues to be:

<table>
<thead>
<tr>
<th>Category</th>
<th>Issues</th>
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<tbody>
<tr>
<td>General Issues</td>
<td>• Varying degree of use of chest pain pathways leading to differences in clinician practices</td>
</tr>
<tr>
<td></td>
<td>• Cultural aversion to pathways, despite evidence-based good practice.</td>
</tr>
<tr>
<td></td>
<td>• Implementation of pathways have not always followed procedural ‘good practice’ – change management principles need to be followed (e.g. sponsorship, use of a “process owner” at each site, etc).</td>
</tr>
<tr>
<td>Process Issues</td>
<td>• Delayed or lack of access to stress test inhibits the use of pathway.</td>
</tr>
<tr>
<td></td>
<td>• Inconsistencies with acquisition and accurate interpretation of ECGs</td>
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<tr>
<td></td>
<td>• Inconsistencies with acquisition and interpretation of Troponins</td>
</tr>
<tr>
<td>People Issues</td>
<td>• Insufficient leadership and Executive agreement - Variations in ED and cardiology buy-in.</td>
</tr>
<tr>
<td></td>
<td>• Insufficient training for ED clinicians in local pathways – rotation of staff accentuates this problem. A key cause of this problem is a lack of ownership of pathways at each location to help educate staff in its use.</td>
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</table>
This confirms that the issue with existing Chest Pain Pathways in NSW is not the level of sophistication of the pathway, but the implementation of minimum standards of chest pain evaluation into core practice.

**Ordering the NSW Chest Pain Pathway**

There are 2 generic NSW Chest Pain Pathway forms to select from:

- PCI Hospital Pathway
- Non PCI Hospital Pathway

These forms are now available for order from Salmat:

**Chest Pain Pathway PCI Site**
Stockcode NH606600

**Chest Pain Pathway Non PCI Site**
Stockcode NH606601
Case For Change

Significant adverse events continue to occur where patients presenting to NSW Emergency Departments experience inconsistencies in the minimum standards for chest pain evaluation.

The high rate of chest pain presentations, coupled with the potentially catastrophic outcomes when inconsistencies lead to suboptimal care, demands a strategic response.

The NSW State Coroner and Root Cause Analysis (RCA) Committees have called for the use of minimum standards of chest pain evaluation for every patient, every time.

Real life examples below highlight the need to ensure that the minimum standards are implemented and actively used consistently in all NSW Public Hospitals.

NOTE: the causes identified in Coronial and Root Cause Analysis investigations frequently relate to lapses in the basic fundamentals of care for chest pain patients, rather than the use of sophisticated treatment protocols.

Coroner’s recommendations

The NSW State Coroner’s recommendations arising from investigation of recent deaths include the need to:

- Consider Chest Pain as the cause of other related symptoms presented
- Consider the different causes of Chest Pain
- Follow a Chest Pain pathway in its entirety
- Train all staff in any chest pain treatment protocol
- Stratify the risk of a patient’s condition deteriorating

Excerpts from the Coronial Inquest into the death of a 61 year-old man at a metropolitan hospital in 2006:

... Acute Chest Pain Protocol should be reviewed and amended as appropriate to emphasise the necessity to consider and exclude life-threatening conditions other than cardiac ischaemia, specifically aortic dissection, coronary artery occlusion and pulmonary embolism, in all presentations of acute chest pain.

The ... Acute Chest Pain Protocol should be reviewed and amended as appropriate to emphasise that all sections of the Chest Pain Evaluation ED Management Form are to be completed ... Specifically, the person filling in the form must note the likelihood of ischaemic heart disease, the risk stratification, the preliminary diagnosis and the action to be taken.

... an exercise stress test is not to be carried out in any case where the patient is experiencing any form of chest pain at the time of the proposed test.

... an induction program presented by a senior cardiologist to ensure that all residents and interns caring for cardiac patients are familiar with relevant protocol ...
Root Cause Analysis Report Findings
The following factors have been consistently identified through the RCA process as contributing to Acute Coronary Syndrome incidents:

- Failure to undertake appropriate investigations, e.g. ECG, Troponin testing
- Failure to interpret ECGs correctly
- No formal system for obtaining senior clinician review of the ECG
- Delay or failure to notify the consultant on call / consultant responsible for the patient
- Failure to review results prior to patient transfer or discharge
- Failure to have a chest pain pathway in place for the management of patients with cardiac / possible cardiac pain

These are illustrated by factors and recommendations highlighted in the following real-life RCA investigations.

Death of a 51 y-o male (rural district hospital)
Contributing factor:
The network specific- chest pain/ ACS pathway was not initiated for an atypical acute coronary syndrome presentation resulting in a missed opportunity for further assessment and acute coronary syndrome risk stratification and subsequent management which may have reduced the likelihood of cardiac arrest resulting in death.

Recommendation:
“...the RCA team recommend that all patients presenting to the emergency department with both typical and atypical chest discomfort/tightness or symptoms suggestive of ACS be triaged category 2 and have a chest pain / ACS pathway initiated and followed according to ACS stratification.”

Contributing Factor:
Lack of timely Troponin T analysis resulted in missed opportunity for early recognition and management of acute coronary syndrome which may have prevented cardiac arrest and death.

Recommendation:
“If Troponin T analysis is clinically indicated it should be processed immediately and results known before patients leave the department.”
Death of a 76 year old female, district hospital

Contributing factor:
A delay in seeking specialist advice ... may have contributed to further myocardial ischaemia and the patient’s deterioration which contributed to the patient’s death.

Recommendation:
“... ensure the emphasis on the use of the Chest Pain Pathway and ensure knowledge of the process for obtaining specialist medical advice and support 24 hours a day.”

Contributing Factor:
A chest pain pathway was not initiated and the recommended treatment was not followed.

Recommendation:
“ ... a chest pain pathway is initiated at triage for patients with chest pain regardless of the cause of the pain.”

Death of 52 year old female, rural referral hospital and tertiary hospital

Contributing Factor:
Failure to review the patient's pathology results prior to discharge meant that a patient with a positive Troponin was discharged home with an incorrect diagnosis. As a consequence the patient experienced an acute cardiac event at home resulting in cardiac arrest from which they did not survive.

Recommendation:
“Patients who have test results pending, specifically Troponin results, are not to be discharged from hospital until the results have been reviewed, documented in the notes and appropriate actions have been undertaken to address the findings.”

Contributing Factor:
Chest Pain Pathway ... was not used. These tools are designed to assist clinicians to recognise acute cardiac events and to reduce the possibility of a missed diagnosis.

Recommendation:
“Patients presenting to the Emergency Department with cardiac/possible cardiac pain are to be commenced in the NSW Health state-wide Chest Pain Pathway documentation...”
**Incident involving 70 year old female, metropolitan hospital**

**Contributing Factor:**

There are gaps in competence of ECG analysis and/or interpretation skills among medical and nursing staff in ED. This led to an inability to identify ST elevation on ECG and resulted in delay in diagnosing an acute STEMI that required an urgent coronary angioplasty.

**Recommendation:**

“Implementation of a formal education program on ECGs for both medical and nursing staff and a competency assessment according to the expected standard for each.”
Minimum Standards for Chest Pain Evaluation
Minimum Standards for Chest Pain Evaluation

Minimum Standards Explanation

The minimum standards for chest pain evaluation must be implemented in all NSW hospitals. They aim to ensure that the fundamentals of care are delivered, every patient, every time.

The following explains some basic detail for each of the minimum standards and the generic NSW Chest Pain Pathway.

1. Assigns triage category 2

All patients who present to an Emergency Department with chest pain or other symptoms of myocardial ischaemia, (eg. sweating, sudden orthopnea, dyspnea, syncope, epigastric discomfort, jaw pain or arm pain) within the last 48hrs MUST be assigned triage category 2.

Where the patient’s clinical situation demands it, these patients could also be assigned triage category 1.

2. ECGs are taken and reviewed

Within 10 minutes of starting on the Chest Pain Pathway, all patients are to have a 12 Lead ECG taken, reviewed and interpreted by a professional who is accredited to interpret the ECG.

A formal process to document that the review has occurred should be in place.

3. Includes risk stratification

All Chest Pain pathways must contain a process for risk stratification that assigns either:

- High Risk
- Intermediate Risk, or
- Low Risk

This risk stratification must be in line with the NHF/CSANZ guidelines for the management of Acute Coronary Syndromes.

4. Troponin levels are taken and reviewed

All patients MUST have a blood sample collected for testing that includes Troponin (or equivalent cardiac biomarker) level on arrival. Once the sample is collected, it must be labelled “urgent” and sent for processing immediately.

The staff member who ordered the Troponin (or equivalent cardiac biomarker) test must actively seek the results to ensure that they are reviewed in a timely fashion.
NO patient is to be discharged prior to the review of a Troponin (or equivalent cardiac biomarker) test that has been ordered.

Sites that are able to conduct high sensitivity Troponin assay are encouraged to do so providing that the timeframes meet the recommendations in the 2011 addendum to the NHF/CSANZ guidelines for the management of Acute Coronary Syndromes.

It is recommended that the laboratory reports elevated Troponin levels to the ordering physician as soon as possible.

5. **Vital signs are taken and documented**

Vital signs (Blood Pressure, Temperature, Pulse, Respiratory Rate and Pain) must be taken and documented in the patient notes at the time that they are taken. If any of the results are outside the acceptable parameters then they must be acted upon, in line with the recognition and management of a deteriorating patient.

If it is not possible to obtain a pain score, a description of the pain is also very useful. A report of ongoing, unresolved pain requires a repeat ECG to be taken and reviewed.

6. **Critical times are documented (symptom onset, presentation)**

All patients must have critical times documented. These include, but are not limited to, symptom onset and time of presentation.

Other important times to document are:

- Diagnostic (or “trigger”) ECG
- Thrombolytic administration
- Cath Lab arrival
- On table time
- First device use
- TIMI 3 flow
- Discussion with Cardiologist.

7. **Aspirin is given, unless contraindicated**

Aspirin use is recommended as per the NHF/CSANZ guidelines

If patients present via Ambulance, ensure that Aspirin administered by Paramedics is recorded in the patient record.

This should already be documented in the paramedics’ notes. A reference to the advice provided by the paramedics should subsequently be sufficient.

8. **A Senior Medical Officer is assigned to provide advice and support on chest pain assessment and initial management, 24/7**

Identifying Senior Medical Officers should be considered based on the local staff base and could be defined as:

- Consultants
- Visiting Medical Officers
- Staff Specialists
- Career Medical Officers
- Registrars
- Senior Nurses (as a first line of assistance where a senior doctor is not immediately available)

Consideration should be given to strengthening networking linkages through local referral networks and centralised ECG reading services.

9. **A nominated Cardiologist is assigned to provide advice on further management 24/7**

All Emergency Departments MUST have a defined and documented process that ensures that a nominated Cardiologist is contacted to provide further management advice for the following patient groups:

- STEMI
- High Risk ACS
- Intermediate Risk ACS who are being discharged without access to stress testing within 72hrs

Consideration should be given to strengthening networking linkages through local referral networks and centralised ECG reading services.

10. **The pathway gives instruction regarding atypical chest pain presentations**

Most chest pain presentations are ‘typical’ with symptoms, such as: sweating, orthopnea, syncope, dyspnoea, epigastric discomfort, jaw pain and arm pain. There are, however, occasions when chest pain presentations are ‘atypical’.

Pathways must contain a listing of common high risk atypical presentations eg. diabetes, renal failure, female, elderly or aboriginal.

Some populations require additional considerations/awareness of the presence of Acute Coronary Syndrome due to the nature of atypical presentations for chest pain and other symptoms of myocardial ischaemia or for the increased prevalence of cardiovascular disease.

These populations are patients with diabetes or renal failure, age>65yrs, chronic renal failure or aboriginal.

11. **High risk alternative diagnosis listed for consideration e.g. Aortic Dissection, Pulmonary Embolism & Pericarditis.**

Following advice from the Coroner the alternate High Risk diagnoses MUST be included on the pathway to ensure consideration during the initial diagnostic process.

Chest discomfort is a common challenge for clinicians in the emergency department. The differential diagnosis includes conditions affecting organs throughout the thorax and abdomen, with prognostic implications that vary from benign to life-threatening. Failure to recognize potentially serious conditions such as acute ischaemic heart disease, aortic dissection, tension pneumothorax, or pulmonary embolism can lead to serious complications, including death. Conversely, overly conservative management of low-risk patients leads to unnecessary hospital admissions, tests, procedures, and anxiety.
Aortic dissection, pulmonary embolus, expanding pneumothorax, pericarditis with impending tamponade or serious gastrointestinal pathology are all potentially life threatening and may closely mimic presentations of an acute coronary syndrome. Further, the presence or absence of reproducible chest wall pain does not preclude the possibility of a more serious underlying cause.

12. Sites that do not have 24/7 PCI capability must have Thrombolysis as the default STEMI management strategy unless there is an existing documented system for transfer.

Sites that do not have 24/7 PCI capability (referred to in the Chest Pain Pathway as Non Primary PCI Sites) must have Thrombolysis as the default STEMI management strategy. The only exceptions to this directive are sites that have a predetermined and documented process for the emergency transfer of patients to a defined Primary PCI site that is able to deliver this service 24/7. The documented system for transfer MUST ensure that the maximum acceptable delay from First Medical Contact (FMC) to percutaneous intervention is not exceeded.

<table>
<thead>
<tr>
<th>Maximum Acceptable Delay from First Medical Contact (FMC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time since symptom onset</td>
</tr>
<tr>
<td>&lt; 1 hours</td>
</tr>
<tr>
<td>1-3 hours</td>
</tr>
<tr>
<td>3-12 hours</td>
</tr>
<tr>
<td>&gt;12 hours</td>
</tr>
</tbody>
</table>

from NHF/CSANZ Guidelines for the management of acute coronary syndromes 2006

NB: It is accepted that some non Primary PCI sites have the capability to perform primary PCI during limited hours. However, outside these hours, thrombolysis must be the default strategy unless a documented system for transfer exists.
Generic NSW Chest Pain Pathway

If your hospital does not have an existing chest pain pathway, you must implement the generic NSW Chest Pain Pathway to ensure compliance against the minimum standards.

There are two versions of the generic NSW Chest Pain Pathway that are applicable to two different hospital types:

PCI Hospital

A PCI Hospital is one that does Percutaneous Coronary Intervention, i.e. Coronary Angioplasty.

The PCI site pathway provides users with opportunity to perform primary angioplasty or thrombolysis depending on the clinical situation of the patient.

Non-PCI Hospital

A non-PCI Hospital is one that does not have access to a Cardiac Catheter Laboratory to perform Percutaneous Coronary Interventions, i.e. Coronary Angioplasty.

The non-PCI site pathway directs users to perform thrombolysis on patients unless contraindicated.

Non-PCI sites may also choose to transfer the patient directly to a PCI site for Coronary Angioplasty, as long as the referral network is established and can meet the timeframes identified on the pathway.
Implementation of minimum standards for chest pain evaluation – Making Change
Implementation of minimum standards for chest pain evaluation – Making Change

The policy mandates the implementation of the minimum standards for chest pain evaluation, as described in the previous chapter.

The good news is that if your hospital already has a functioning chest pain pathway, you can continue to use it, as long as:

1. It meets all of the minimum standards
2. Your hospital can demonstrate that it is used completely and consistently.

Even if your hospital cannot answer ‘yes’ to the two points above, it does not mean that you have to implement an entirely new pathway. You may choose to review an existing pathway and see where it meets the minimum standards and where it does not. You must also check if the pathway is used or not.

Implementing any change requires a planned approach. Resistance to change is perfectly normal and expected. Managing this resistance well will aid the sustainability of the change.

The following section is a helpful guide to identify and make the necessary changes to implement the minimum standards for chest pain evaluation.

A resource aimed at facilitating effective local change projects has been developed and is available for review (http://www.archi.net.au/resources/moc/making-change).
1. Getting started

1.1 Minimum standards for chest pain evaluation

Review the minimum standards and the two default pathways.

1.2 Case for Change

Read the compelling case for change and consider what it means for your facility. Being able to relate this rationale to the clinicians and managers at your facility is crucial in generating momentum.

The underlying message is simple: people presenting to hospitals with chest pain are experiencing unexpected significant adverse incidents and the root cause is often due to inconsistency in the minimum standards.

1.3 Sponsorship

Who has the authority to make change count? There may be a need to identify a sponsor for Cardiology, a sponsor for Emergency and an overarching sponsor to link the two together. At the facility level, this may be the General Manager or the Director of Medical Services. Implementation at the LHD level should sit under the Director of Clinical Governance.
1.4 Engagement, and involving the right people

Think carefully about who needs to be involved and when, so that any changes to the local Chest Pain Pathway include collaboration from all who are impacted, e.g. (but not limited to):

- Senior doctors
- Junior doctors
- Nursing (particularly Triage)
- Cardiology and Emergency Departments
- Pathology
- Cardiac Catheter Laboratories
- Hospital executive
- Patient Flow Managers

2. Review before you rebuild

Understand your local starting point. At the highest level there are 3 questions that every facility must ask itself when considering implementation of the minimum standards for chest pain evaluation:

1. Do we have an existing Chest Pain Pathway?
2. Does our pathway meet the minimum standards in the new policy directive?
3. Do clinicians in our facility consistently use the pathway from start to finish?

There are a number of ways to source information that will help you to get a full understanding of the starting position of your facility against the minimum standards.

2.1 The facts:

- **Paper audit of the minimum standards** – use the Self Audit of Existing Local Pathways Template to review the elements of any existing local pathway against the mandated minimum standards.
- **File audit of local pathway use** – undertake a sample file audit of patients presenting with chest pain. Using the Self Audit of Existing Local Pathways Template review the files to record which elements of the minimum standards were completed for each patient. Tabulate the compliance rate for each of the minimum standards and look for trends.
- **Observation / tagalong** – observe the journey of patients presenting in the Emergency Department with chest pain. Look for successes, barriers and opportunities to successful implementation of the mandated minimum standards.
- **Incident review of patients presenting with chest pain** – review a series of local incidents that relate to patients presenting with chest pain. What are the patterns? Where are the barriers, risks and opportunities?
2.2 The experience and perceptions of clinicians:

Talk to frontline clinicians to give context to the factual information. Some options to consider are:

- One on one interviews – booking time for conversations with a number of different types of clinicians can help to generate a deeper understanding of why the existing pathway works as it does and the potential impact of any change.

- Focus groups – Focus groups are great for bouncing ideas off one another and to generate some respectful, but challenging discussion. Make sure that all those participating in a focus group have a clear understanding of what is in and out of scope.

- Surveys – Surveys are another option for gathering information, as not everyone feels comfortable speaking out in a group scenario.

Questions that are rated on numerical scales are easier to compare and generally have higher completion rates. However, open ended questions can deliver some valuable detail.

Consider the question types carefully in any survey.

2.3 The facts and the experience – prioritise the issues

The risk of any investigation is that you get lost in the detail.

Compare the facts of your local Chest Pain Pathway structure and compliance with completion with the experience of what clinicians are telling you.

To create some sense of the list of issues, barriers and opportunities keep bringing your thinking back to the key message: Minimum standards for chest pain evaluation: every patient, every time.

Create the priority list that will help your facility to first meet the mandated minimum standards for every patient, every time, before becoming more sophisticated.

3. Plan the way forward

There are most likely a number of different ways that you can successfully move from your current state to your desired state – having a fully-compliant pathway.

Your job now is to plan the most effective way to shift your current practice to a compliant pathway while maintaining focus and motivation.
Try and learn from the successes and challenges of others. There is a high probability that another hospital has faced, or is facing the same issue that you are now and has implemented a useful solution.

- **Brainstorm and develop solutions** to the issues you have identified. It is very important to maintain good engagement with the different clinical and non-clinical groups that will be affected.

These stakeholders understand the existing local practices, so it is important to make use of their knowledge to help design the relevant solutions.

Consider mechanisms that will ensure the local Chest Pain Pathway both meets the minimum standards and is consistently used, e.g.:

- Senior leadership involvement
- Governance, policy, evaluation and monitoring
- Pathway awareness and communications
- Education and training

- **Prioritise the solutions** to meet all of the minimum standards, before going beyond specific minimum standards. Further prioritise against the Pathway to see if implementing one solution is dependent on another already being in place.

For example, ensure Troponin testing is in place before implementing a solution that expands to high sensitivity assays.

- **Plan the sequence of work**, including a description of the work to be undertaken at each stage, timeframes and who is responsible for each section of work.

- **Communicate** throughout change. Plan the important key messages that may include: what will change? when? and, what is everybody’s role?
4. Making Change

Newton’s third law says that for every action there is an equal and opposite reaction. Therefore you should expect some resistance if you make any change to the existing local Chest Pain Pathway.

If you’ve planned well to this point it is not hard, just hard work. You need to stick to your communication plan and actively manage timeframes, risks and issues.

Pay now or pay later

The faster you expect a change in process to include the minimum standards for chest pain evaluation the greater the effort will be to monitor and evaluate compliance with the change.

The concept is that you can either pay now by building early commitment and engagement to design a change, or pay later, by having to enforce compliance with the pre-determined changes. Neither of these options is incorrect, you just need to decide on the approach that is appropriate for the local context for change:

1. There is a serious deficiency against the minimum standards that is a risk to patient care = Enforce the change and “pay later”
2. There is some minor tweaking to be done that will set up the local Chest Pain Pathway to go beyond the minimum standards = Design and build the change with clinicians, “pay now”

5. Monitor and evaluate

Evaluating change is essential. Without a regular monitoring and evaluation strategy your change is likely to slip back down the hill to where it began.

The work that you and your facility undertook in section 2 (Review before you rebuild) will give you an excellent baseline to continue monitoring and evaluation.

Monitoring compliance against consistent completion of the minimum standards on every chest pain pathway should start with:

- high frequency (monthly audit of X% of chest pain files), and;
- high profile (direct feedback to key stakeholder groups).

Feeding back to stakeholder groups means both up and down the chain. When providing the feedback, consider the type of feedback that resonates best with the group it is being provided to (e.g. formal report, newsletter, one on one briefing, staff meeting, focus groups etc).

Wherever possible, try to include opportunities for a feedback loop in the opposite direction so that there is a continual dialogue about the process, results and the context of potential barriers and opportunities.

As the implementation of the minimum standards for chest pain evaluation settle towards core business then the monitoring plan can reduce in frequency to quarterly, half-yearly and then annually.

It is important that if you detect deterioration in performance the high profile and frequency of monitoring is returned immediately.

Increasing monitoring is not just to check up on people, but to understand why there has been a change in performance. By understanding the facts and the clinician context for change, there is a greater chance of taking corrective and sustainable action.

A resource aimed at facilitating effective local change projects has been developed and is available for review: http://www.archi.net.au/resources/moc/making-change
Appendices
Frequently Asked Questions

1. What is a pathway?

A pathway provides the standard map of care for all patients presenting to hospital with a particular clinical condition or set of symptoms.

The generic NSW Chest Pain Pathway is targeted at all patients presenting with symptoms of chest pain or symptoms suggestive of myocardial ischaemia and directs their care to achieve definitive diagnosis of Acute Coronary Syndrome or not and their subsequent management.

2. Why have a Chest Pain Pathway?

Acute Coronary Syndrome is a time-critical and potentially life-threatening condition. Using an evidence-based, standardised protocol of care for every patient, every time, will help to quickly identify the patients with the greatest clinical need.

3. We have a pathway already. Why change?

If you have an existing pathway, it meets the minimum standards and you can demonstrate that the pathway is actively and consistently used in your facility, then you do not need to change a thing.

However, if your facility does not have a pathway, or has one that does not meet the minimum standards or your facility has a low compliance rate with an existing pathway, then you need to make change. The Implementation Support Guide is designed to help.

4. How do I utilise the Chest Pain Pathway in a facility using an electronic Medical Record for patients?

The Chest Pain Pathway is flagged as a high priority to be integrated into the State Based Build for EMR. However (as at June 2011), it does not currently exist in the integrated electronic form.

Unless facilities have existing Chest Pain Pathways (meeting the minimum standards) integrated into their local EMR, paper based forms must continue to be used.

5. How do the minimum standards apply to rural and regional NSW?

The policy (PD2011_037) mandates that the minimum standards are implemented and that all hospitals have a Chest Pain Pathway for patients presenting to Emergency Departments.
Rural and regional hospitals are advised to implement the minimum standards in a locally appropriate way, by exploring linkages with rural referral networks and centralised ECG reading services.

6. What are ‘the basics’?

The minimum standards are defined in this toolkit, however, there is also a list of considered ‘basics’ with respect to care for patients presenting with symptoms of chest pain. It is these ‘basics’ that are often found to have been suboptimal in the root cause analyses of critical adverse events. ‘The basics’ include:

- Triage category 2 being assigned
- ECG being taken
- ECG being reviewed (accurately)
- Troponins being taken
- Troponins being reviewed (accurately)
- Lack of senior leadership being available or sought

7. Do the minimum standards apply to children?

The minimum standards for chest pain evaluation have been developed in response to critical adverse events occurring in the adult population presenting with symptoms of chest pain.

It is very rare that children with presenting with symptoms of chest pain or associated symptoms are in fact experiencing Acute Coronary Syndrome (ACS). It is therefore considered that the minimum standards for chest pain evaluation do not apply as a value-add to the existing specialised care of paediatric patients.

8. Do the minimum standards for chest pain evaluation apply to inpatients on wards?

The minimum standards and associated generic NSW Chest Pain Pathway have been designed for patients presenting to Emergency Departments (e.g. Assigns triage category 2).

Hospitals are recommended to focus their implementation on the Emergency Department initially. However, the minimum standards should be considered transferable to tailored implementation for patients who experience chest pain or associated symptoms on inpatient wards. The Emergency Department pathway would need to be altered, but the bulk of the minimum standards remain highly relevant to safe clinical care.

9. If a patient is part of a clinical trial, do they still use the pathway?

Clinical trials are highly important for researching treatment regimes that lead to improvement of the way we deliver healthcare. This however must not stop a patient presenting with chest pain commencing on a chest pain pathway that meets the minimum standards when they present to hospitals.

There is no reason why patients on a Chest Pain Pathway cannot be enrolled in a clinical trial, as the pathway mandates the minimum standards only.
Implementation of the minimum standards is of critical importance and requires that all of the necessary clinicians and managers understand and perform their necessary roles.

**LHD Chief Executives**
- Direct a LHD gap analysis against the chest pain evaluation minimum standards
- Assign LHD sponsorship to the appropriate Executive figure to implement the minimum standards for chest pain evaluation (likely Director of Clinical Governance)
- Report minimum standards for chest pain evaluation implementation to the LHD Governing Board
- Report Chest Pain Pathway implementation and performance against the minimum standards to NSW Department of Health as requested

**LHD Directors of Clinical Governance**
- Provide Hospitals direction and lead the LHD initial gap analysis of compliance against the minimum standards for chest pain evaluation
- Ensure data from current information systems is accessible
- Develop and sponsor the implementation strategy to ensure LHD compliance with the minimum standards
- Coordinate appropriate educational resources for clinicians
- Evaluate LHD momentum and performance against the local implementation strategy to meet the minimum standards
- Investigate RCA incidents relating to the minimum standards for chest pain evaluation

**Facility General Managers and Heads of Cardiology and Emergency Departments**
- Undertake the local gap analysis against the minimum standards for chest pain evaluation – 1) Do we have a pathway; 2) Does it meet the minimum standards, and; 3) Do we actively and consistently use our local pathway?
- Involve clerical and medical records staff as appropriate to access date from existing information systems
- Communicate a united message that patients presenting with symptoms of chest pain must commence and complete a chest pain pathway that meets the minimum standards – every patient, every time.
- Lead local implementation of the chest pain evaluation minimum standards
- Engage junior and senior clinicians to get feedback on current barriers, risks and opportunities relating to any existing chest pain pathway and the implementation of the minimum standards.
- Engage junior and senior clinicians in implementation.
• Engage Imaging, Pathology and Cardiac Catheter Laboratory teams to ensure that each understand the needs of the minimum standards as they relate to them and can be involved in implementation.

• Evaluate and monitor local implementation momentum and performance

• Determine requirements and provide local education for clinicians

• Coordinate local rostering to ensure that a senior clinician is available to assist 24/7 as per the chest pain evaluation minimum standards or utilise documented referral networks

**Clinicians**

• Triage nurses will be the first point to initiate the use of a local chest pain pathway that meets the minimum standards and hand over to subsequent clinicians that the patient is on the chest pain pathway.

• Junior doctors should provide feedback to senior clinicians regarding the challenges and opportunities relating to the use of any current chest pain pathway.

• Senior clinicians need to be available and place a high value on providing clinical advice to more junior colleagues with regards to questions relating to chest pain evaluation.

• Junior clinicians need to proactively seek out the advice of more senior colleagues when they are concerned about any aspect of management for patients presenting with symptoms of chest pain.

• All clinicians should seek opportunities to engage in implementation of the minimum standards for chest pain evaluation.

• All clinicians must comply with the minimum standards of chest pain evaluation.

• All clinicians need to provide Safe Clinical Handover when there is a transfer of accountability and responsibility for patient care (e.g. shift change, when seeking advice from senior colleagues or when a patient transfers for a test).

• Escalate management of deteriorating patients as per Between the Flags (PD2010_026).

• In Emergency Departments that do not have a medical officer accessible 24/7, it will be necessary to implement processes where the nurse in charge of the ED signs the Chest Pain Pathway form in place of the medical officer. Where the nurse in charge of the ED is not accredited or competent and active in interpreting ECGs, a process must also be implemented to engage suitably accredited practitioners through ECG reading networks with coronary care or other facilities.

• Clerical data and medical records staff have a role in accessing data during implementation and ongoing monitoring.
APPENDIX C

Self audit of local pathways

PD2011_037 mandates the implementation of a set of minimum standards for chest pain evaluation for patients presenting to Emergency Departments in all NSW public hospitals.

Hospitals are advised that they may continue to use any existing pathway, as long as it complies with the minimum standards and they can demonstrate that it is actively used.

The following tool is designed to facilitate hospitals to review any existing local pathways with the mandated minimum standards.

Evaluating a local pathway has 3 steps:

Step 1: Does your hospital have an existing local pathway?

Step 2: Does the existing local pathway meet the mandated minimum standards for chest pain evaluation?

Step 3: Is the existing pathway actively used – every patient, every time?

Hospital: _______________________________________

Date local pathway reviewed: _____________________________________

Name of person reviewing local Chest Pain Pathway: ______________________________

Position of person reviewing local Chest Pain Pathway: ____________________________

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Does your hospital have an existing local pathway?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Answer</td>
<td>Secondary question/instruction</td>
</tr>
<tr>
<td>Yes</td>
<td>What is the name of the local pathway?</td>
</tr>
<tr>
<td></td>
<td>Is the pathway formal, or informal (i.e. backed by a local policy or guideline?, if so, what is the Policy reference)</td>
</tr>
<tr>
<td></td>
<td>Who owns the pathway? (e.g. content, usage, education, monitoring and evaluation)</td>
</tr>
<tr>
<td></td>
<td>Who knows about the local pathway?</td>
</tr>
<tr>
<td></td>
<td>Who is expected to fill out the local pathway?</td>
</tr>
<tr>
<td></td>
<td>Please progress to Step 2 of the self audit</td>
</tr>
<tr>
<td>No</td>
<td>If no existing local pathway, you do not need to complete the rest of this self audit, and must implement the generic NSW Chest Pain Pathway to meet the minimum standards for chest pain evaluation</td>
</tr>
</tbody>
</table>
Step 2

Does the existing local pathway meet the mandated minimum standards for chest pain evaluation?

Further explanation on the minimum standards for chest pain evaluation will assist with completion of the audit tool. This information is available from the Minimum Standards for Chest Pain Evaluation Implementation Support Guide (www.archi.net.au/resources/moc/cardio).

<table>
<thead>
<tr>
<th>Minimum standard</th>
<th>Local compliance (Y/N)</th>
<th>Exceeds minimum standard (detail if appropriate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assigns triage category 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Document when ECGs have been taken</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Document when ECGs have been reviewed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stratify risk into high, intermediate or low risk patient groups (in alignment with the NHF/CSANZ guidelines)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Document when Troponin levels have been taken</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Document with Troponin levels have been reviewed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Document when vital signs are taken</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct action to be taken if vital signs move outside of acceptable ranges (as per Between the Flags PD2010_026)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Document critical times within the patient journey, specifically:</td>
<td>Symptom onset</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Presentation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Time of diagnostic ECG</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Time of Thrombolytic administration, if given</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Catheter Laboratory arrival time (if applicable)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>□ On table time</td>
<td></td>
</tr>
<tr>
<td></td>
<td>□ First device used</td>
<td></td>
</tr>
<tr>
<td></td>
<td>□ TIMI 3 flow time</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Discussion with cardiologist</td>
<td></td>
</tr>
<tr>
<td>Direct that Aspirin is given, unless contraindicated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct that a Senior Medical Officer is assigned to provide advice and support on chest pain evaluation and initial management, 24/7 (an SMO could include consultant or VMO ED Physician, Cardiologist, General Physician, Career Medical Officer, Cardiac or Emergency Registrars)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct that a nominated cardiologist is assigned to provide advice on further management, 24/7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Give instruction regarding atypical chest pain presentations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>List high risk alternate diagnoses for consideration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indicate the process to initiate either Thrombolysis or PCI as the default management strategy for STEMI</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Local pathway mal-compliance list – list each of the minimum standards that are not met by the local pathway.

If choosing to amend an existing pathway, instead of implementing the generic NSW Chest Pain Pathway, these are the items that must be addressed prior to plans to exceed the minimum standards in any other item.

#1
#2
#3
#4
#5

Please progress to Step 3 of the self audit

---

**Step 3**

Is the existing pathway actively used – every patient, every time?

Perform a sample file audit of patients presenting to your hospital with Chest Pain over the past 3 months. A helpful automated data analysis tool is available for download (www… ARCHI Cardiology page)

Transcribe results below.

<table>
<thead>
<tr>
<th>Date range of files audited</th>
<th>Number of files audited</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Chest Pain presentations during the audit date range (best approximate from HIE – variability due to coding and potential multiple co-morbidities of patient cohort)</td>
<td></td>
</tr>
<tr>
<td>% of chest pain presentation files audited (#files audited / # of Chest Pain presentations)</td>
<td></td>
</tr>
<tr>
<td>Overall compliance (% compliance of total positive responses across all files audited)</td>
<td>Xx%</td>
</tr>
<tr>
<td>Minimum standard evaluated (in the file there is documented evidence of…)</td>
<td>Activity compliance (% compliance of total positive responses across all files audited)</td>
</tr>
<tr>
<td>Triage category 2 assigned</td>
<td></td>
</tr>
<tr>
<td>ECG taken</td>
<td></td>
</tr>
<tr>
<td>ECG reviewed</td>
<td></td>
</tr>
<tr>
<td>risk stratified</td>
<td></td>
</tr>
<tr>
<td>Troponin level taken</td>
<td></td>
</tr>
<tr>
<td>Troponin level reviewed</td>
<td></td>
</tr>
<tr>
<td>Vital signs taken at regular intervals as appropriate</td>
<td></td>
</tr>
<tr>
<td>Vital signs documented at same time as being taken</td>
<td></td>
</tr>
<tr>
<td>Escalation of care when vital signs move outside acceptable parameters (BTF indicators)</td>
<td></td>
</tr>
<tr>
<td>Time symptom onset documented</td>
<td></td>
</tr>
<tr>
<td>Event Description</td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Time of presentation documented</td>
<td></td>
</tr>
<tr>
<td>Time of ECG documented</td>
<td></td>
</tr>
<tr>
<td>Time of thrombolytic administered documented (if applicable)</td>
<td></td>
</tr>
<tr>
<td>Cath Lab arrival time documented (if applicable)</td>
<td></td>
</tr>
<tr>
<td>On table time documented (if applicable)</td>
<td></td>
</tr>
<tr>
<td>First device used documented (if applicable)</td>
<td></td>
</tr>
<tr>
<td>TIMI 3 flow time documented (if applicable)</td>
<td></td>
</tr>
<tr>
<td>Discussion with Senior Medical Officer documented (if required)</td>
<td></td>
</tr>
<tr>
<td>Discussion with Cardiologist documented (if required)</td>
<td></td>
</tr>
<tr>
<td>Aspirin given unless contraindication recorded</td>
<td></td>
</tr>
<tr>
<td>High risk alternate diagnoses are considered and clinical reasoning documented</td>
<td></td>
</tr>
</tbody>
</table>

Where suboptimal compliance is found through this activity audit, the answers obtained in Step 1 should be reviewed and considered to give insight into the potential causes/solutions, specifically:

- Is the pathway formal, or informal?
- Who owns the pathway? (e.g. content, usage, education, monitoring and evaluation)
- Who knows about the local pathway?
- Who is expected to fill out the local pathway?

**What do we do now?**

1. If necessary, undertake further diagnostic review to understand why an existing pathway does not already meet the minimum standards, or why it is not actively used (further advice on understanding the ‘as is’ state can be found in the Minimum Standards for chest Pain Evaluation Implementation Support Guide)

2. Create a plan that is designed to:
   a. Ensure the local pathway meets the minimum standards
   b. Ensure the local pathway is actively used – every patient, every time
Chest Pain Evaluation (NSW Chest Pain Pathway)

Document Number  PD2011_037
Publication date  09-Jun-2011
Functional Sub group  Clinical/ Patient Services - Governance and Service Delivery
Clinical/ Patient Services - Medical Treatment
Summary  The Policy outlines the minimum standards for the management of patients presenting with Chest Pain or other symptoms of myocardial ischaemia.

NOTE: This Policy also applies to Local Health Networks until Local Health Districts commence on 1 July 2011.

Author Branch  Health Services Performance Improvement Branch
Branch contact  James Dunne 9391 9555
Audience  All staff involved in the management and risk stratification of patients who present with chest pain
Distributed to  Public Health System, Divisions of General Practice, Government Medical Officers, Health Associations Unions, NSW Ambulance Service, NSW Department of Health, Tertiary Education Institutes
Review date  09-Jun-2016
Policy Manual  Patient Matters
File No.
Status  Active

Director-General
This Policy Directive may be varied, withdrawn or replaced at any time. Compliance with this directive is mandatory for NSW Health and is a condition of subsidy for public health organisations.
IMPLEMENTATION OF MINIMUM STANDARDS FOR CHEST PAIN EVALUATION (NSW CHEST PAIN PATHWAY)

PURPOSE

The policy mandates the implementation of minimum standards for chest pain evaluation, by all hospitals in the NSW Health system for patients presenting to Emergency Departments with chest pain. Compliance with these minimum standards for chest pain evaluation will improve the management of patients by guiding clinicians through risk stratification and outlining the best practice management. Facilities may continue to use existing local Pathways provided that they meet all of the minimum standards and are in active use in emergency departments.

Facilities who do not use an existing Chest Pain Pathway that meets the minimum standards must implement the standard NSW Chest Pain Pathway. The NSW Chest Pain Pathway aligns with the National Heart Foundation/Cardiac Society of Australia and New Zealand Guidelines for the management of acute coronary syndromes.

MANDATORY REQUIREMENTS

1. All facilities with Emergency Departments must have and use a pathway that meets the following minimum standards for chest pain patients:
   - Assigns triage category 2
   - Includes risk stratification
   - ECGs are taken and reviewed
   - Troponin levels are taken and reviewed
   - Vital signs are taken and documented
   - Critical times are documented (symptom onset, presentation)
   - Aspirin is given, unless contraindicated
   - A Senior Medical Officer is assigned to provide advice and support on chest pain assessment and initial management, 24/7
   - A nominated Cardiologist is assigned to provide advice on further management 24/7
   - The pathway gives instruction regarding atypical chest pain presentations
   - High risk alternate diagnosis listed for consideration e.g. Aortic Dissection, Pulmonary Embolism & Pericarditis.
   - Sites that do not have 24/7 PCI capability must have Thrombolysis as the default STEMI management strategy unless there is an existing documented system for transfer.

2. All facilities who do not use an existing Chest Pain Pathway that meets the minimum standards must implement the standard NSW Chest Pain Pathway that matches their facility (i.e. only sites that can provide 24/7 Primary PCI are able to use the Primary PCI site Pathway) as the minimum standard.
IMPLEMENTATION

ROLES AND RESPONSIBILITIES

NSW Department of Health:
- Review the minimum standards of a Chest Pain Pathway in line with relevant national guidelines and best practice evidence.
- Develop and make accessible implementation support tools.
- Evaluate Chest Pain Pathway implementation and performance against the minimum standards across the NSW Health system.

LHN Chief Executives:
- Ensure effective implementation of the minimum standards for chest pain evaluation in all LHN Emergency Departments
- Report minimum standards for chest pain evaluation implementation to the LHN Governing Council
- Report Chest Pain Pathway implementation and performance against the minimum standards to NSW Department of Health as requested

LHN Directors of Clinical Governance:
- Direct a LHN gap analysis against the chest pain evaluation minimum standards
- Develop and lead implementation strategy
- Coordinate appropriate educational resources for clinicians
- Evaluate LHN Chest Pain Pathway implementation and performance against the minimum standards
- Investigate RCA incidents relating to the minimum standards for chest pain evaluation

Facility General Managers and Heads of Cardiology and Emergency Departments:
- Direct a local gap analysis against the chest pain evaluation minimum standards
- Implement the chest pain evaluation minimum standards locally
- Evaluate and monitor local implementation and performance against the chest pain evaluation minimum standards
- Coordinate local education requirements for clinicians
- Coordinate local rostering to ensure that a senior clinician is available to assist 24/7 as per the chest pain evaluation minimum standards or utilise documented referral network

Clinicians:
- Comply with the minimum standards of chest pain evaluation
- Escalate management of deteriorating patients as per Between the Flags (PD2010_026)
- In Emergency Departments that do not have a medical officer accessible 24/7, it will be necessary to implement processes where the nurse in charge of the ED signs the Chest Pain Pathway form in place of the medical officer.
REVISION HISTORY

<table>
<thead>
<tr>
<th>Version</th>
<th>Approved by</th>
<th>Amendment notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 2011</td>
<td>Dr Tim Smyth, Deputy Director-General, HSQPID</td>
<td>New Policy</td>
</tr>
<tr>
<td>(PD2011_037)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ATTACHMENTS

1. NSW Chest Pain Pathway: Primary PCI Site
2. NSW Chest Pain Pathway: Non Primary PCI Site
**CHEST PAIN PATHWAY**

**PRIMARY PCI SITE**

**Date of Presentation**

**ECG & Vital Signs, expert interpretation within 10 minutes**

**ST ELEVATION**

- Consider Aortic Dissection
  - Back pain, hypertension, abrupt pulse, BP difference
- Consider Pulmonary Embolism
  - Severe dyspnoea, respiratory distress, low Subc/O. saturation

**Consider Pericarditis**

- Sharp chest pain, respiratory or proximal collateral

**Go immediately to STEMI MANAGEMENT (page 3)**

**COMPLETE ALL DETAILS OR AFFIX PATIENT LABEL HERE**

---

**APPENDIX E**

**FAMILY NAME MRN**

**GIVEN NAME**

**D.O.B. / M.O.**

**ADDRESS**

**LOCATION / WARD**

---

**Contraindications and cautions for thrombolysis use in STEMI**

**Absolute contraindications:**
- Active bleeding or bleeding diathesis (excluding menorrhagia)
- Significant closed head or facial trauma within 3 months
- Suspected aortic dissection (including new neurological symptoms)
- Risk of intracranial haemorrhage
  - Any prior intracranial haemorrhage
  - Ischaemic stroke within 3 months
  - Known structural cerebral vascular lesion (eg. arteriovenous malformation)
  - Known malignant intracranial neoplasm (primary or metastatic)

**Relative contraindications:**
- Risk of bleeding
  - Current use of anticoagulants: the higher the international normalised ratio (INR), the higher the risk of bleeding
  - Recent (within 4 weeks) internal bleeding (eg, gastrointestinal or urinary tract haemorrhage)
  - Active peptic ulcer

---

**Contraindications to Exercise Testing (ACC/AHA Guidelines)**

**Absolute**
- Recent chest pain
- Acute myocardial infarction, within 2 days
- High-risk unstable angina
- Uncontrolled cardiac arrhythmias causing symptoms or haemodynamic compromise
- Symptomatic severe aortic stenosis
- Uncontrolled symptomatic heart failure
- Acute pulmonary embolus or pulmonary infarction
- Acute myocarditis or pericarditis
- Acute aortic dissection

**Relative**
- Critical left main coronary stenosis
- Moderate stenotic valvular heart disease
- Electrolyte abnormalities
- Systolic hypertension > 200 mmHg
- Diastolic hypertension > 100 mmHg
- Tachyarrhythmias or bradycardia
- New onset atrial fibrillation
- Hypertrophic cardiomyopathy and other forms of outflow obstruction
- Mental or physical impairment leading to the inability to exercise adequately
- High degree atrioventricular block
- RESTING ECG which will make EST interpretation difficult

**Recommended Management on page 2**

---

**Abbriviations:**
- ACS – Acute Coronary Syndrome
- CA90 – Coronary Artery Bypass Graft
- ECG – Electrocardiogram
- EST – Exercise Stress Test
- FMC – First Medical Contact
- GTN – Glyceryl nitrate
- LBBB – Left Bundle Branch Block
- LVF – Left Ventricular Failure
- LWM – Left Ventricular Hypertrophy
- PCI – Percutaneous Coronary Intervention
- SMO – Senior Medical Officer
- STEMI – ST Elevation Myocardial Infarction
### CHEST PAIN PATHWAY

**NON PRIMARY PCI SITE**

#### STERN MANAGEMENT

<table>
<thead>
<tr>
<th>1. CONFIRM INDICATIONS for REPERFUSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Chest pain &gt; 30 min and &lt; 12 hrs</td>
</tr>
<tr>
<td>- Persistent ST segment elevation of ≥ 1 mm in two or more contiguous limb leads or ST segment elevation of ≥ 2 mm in two contiguous chest leads or presumed new LBBB pattern</td>
</tr>
</tbody>
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<thead>
<tr>
<th>2. GENERAL MANAGEMENT</th>
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</thead>
<tbody>
<tr>
<td>- Cardiac monitoring</td>
</tr>
<tr>
<td>- Routine bloods</td>
</tr>
<tr>
<td>- Oxygen</td>
</tr>
<tr>
<td>- Analgesia – Morphine</td>
</tr>
<tr>
<td>- Beta Blockers</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>3. ADMINISTER ANTITHROMBOTIC THERAPY</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Confirm administration or give:</td>
</tr>
<tr>
<td>- Aspirin 300 mg (soluble)</td>
</tr>
<tr>
<td>- Clopidogrel 300 - 600 mg (or prasugrel &amp;/or ticagrel)</td>
</tr>
<tr>
<td>- Enoxaparin 30 mg IV then bd (or IV heparin or bivalirudin) Max 100 mg</td>
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</tbody>
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<tr>
<th>4. CHOOSE REPERFUSION METHOD</th>
</tr>
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<tbody>
<tr>
<td>- Thrombolysis</td>
</tr>
<tr>
<td>- Primary PCI</td>
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</tbody>
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<tr>
<th>5. THROMBOLYSIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Tenecteplase / Reteplase</td>
</tr>
<tr>
<td>- Body Weight ___kg</td>
</tr>
</tbody>
</table>

**Time of diagnostic ECG**

**Time of reperfusion**

**Maximum Acceptable Delay from First Medical Contact (FMC):**

- < 1 hours: 60 minutes
- 1-3 hours: 90 minutes
- > 3 hours: 120 minutes

**OR**

- Transfer to PRIMARY PCI SITE if appropriate (As per table below)

#### APPENDIXES

**NSW HEALTH NON PRIMARY PCI SITE CP ASSESSMENT.indd**

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**Recommended Further Management**

- Refer to drug protocols &/or Therapeutic Guidelines

### HIGH RISK

<table>
<thead>
<tr>
<th>ADMIT or TRANSFER</th>
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</thead>
<tbody>
<tr>
<td>- Continuous cardiac monitoring &amp; frequent vital signs</td>
</tr>
<tr>
<td>- Repeat ECG immediately if symptoms recur</td>
</tr>
<tr>
<td>- Repeat ECG 8 hrs post onset of symptoms</td>
</tr>
<tr>
<td>- Repeat Troponin at 8 hrs if 1st sample negative *</td>
</tr>
<tr>
<td>- ECG/Troponin review by medical officer</td>
</tr>
</tbody>
</table>

#### ANTITHROMBOTIC THERAPY

- Aspirin 300 mg (soluble)
- Clopidogrel 300 - 600 mg (or prasugrel &/or ticagrel)
- Enoxaparin 30 mg IV then bd (or IV heparin or bivalirudin Max 100 mg)

**Time of diagnostic ECG**

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**OR**

- Transfer to PRIMARY PCI SITE if appropriate (As per table below)
Chest Pain Patient Journey — Working Party

Membership

GMCT Cardiac Network

- Prof Peter Fletcher
- Ms Karen Lintern
- Ms Bride Carr

Emergency Care Taskforce

- Dr Rod Bishop
- Dr Adam Chan

Critical Care Network

- Dr Garry Tall

Rural Critical Care Network

- Dr. Patricia Saccasan Whelan
- Ms Megan Tuipulotu

NSW Ambulance

- Mr Paul Stewart

Quality & Safety Branch

- Ms Christine Hapustein

Nursing & Midwifery Office

- Mr James Wedeswieler

Health System Performance Improvement Branch

- Mr Daniel Comerford
- Mr Neil Rickwood

Additional members

- Mr Lindsay Savage
- Dr Carolyn Hullick
- Dr Matthew Bragg

Project contact: James Dunne JDUNN@doh.health.nsw.gov.au