Background

The use of the Chest Pain Pathway is monitored through annual auditing. This year, audits were completed between March and May at all facilities where there was a presentation of chest pain resulting in a diagnosis of Non-ST segment Elevation Myocardial Infarction (NSTEMI).

The audit looks at management of patients presenting to Emergency Departments with chest pain and the use of the Chest Pain Pathway and ongoing management of the patient as per NSW Policy Directive: Chest Pain Evaluation (NSW Chest Pain Pathway) [PD2011_037].

The audit is retrospective with auditors asked to review a sample of patient medical records where the primary presentation was for chest pain leading to a diagnosis of NSTEMI during 2018.

A total of 122 audits were completed where the diagnosis was NSTEMI.

These results will form part of the evidence for the National Safety and Quality Health Service (NSQHS) Standards requirement to have agreed and documented clinical guidelines and/or pathways available to the clinical workforce, and that the use of those clinical guidelines by the clinical workforce is monitored. Facilities will use these results to prepare an action plan where necessary to improve the use of the Chest Pain pathway.

Executive Summary of results

This annual audit reviews the use of and compliance with the chest pain pathway and subsequent patient management. Below is a summary of these results. Where the result for this audit has varied significantly from previous audits, it will be noted.

- Across the LHD, a total of 122 audits were conducted on patients identified as having Non-ST-elevation myocardial infarction (NSTEMI).
- Of the 122 patients, 52% were brought to hospital by Ambulance (63 of 122).
- The audit looked at pre-hospital ECGs attended by the Ambulance Service. Of the 63 patients who presented to hospital by ambulance, 75% had an ECG attended (47 of 63).
- The time of symptom onset is relevant to the care provided. The time of symptom onset was documented in 81% of records (99 of 122). This result has declined from 90% last audit.
- Chest pain or other symptoms of myocardial ischaemia require at least a Triage 2 category. 90% of patients received a triage category 1 or 2 (110 of 122). This result is consistent with last audit.
- 12 patients did not receive a category 2 triage. Of those, four had no reason for the lower triage; one was noted as being pain free on arrival however was later upgraded to a category 2; and the remaining seven were all noted as being appropriately triaged at the initial site and commenced on treatment, therefore the receiving site did not require a category 2.

Since 2015, there has been a steady improvement in ensuring chest pain patients receive a minimum category 2 triage, from only 68% of patients, now to 90%.

- The use of the Chest Pain Pathway (paper or electronic) or evidence of following the chest pain protocol is required for all chest pain presentations. The chest pain pathway was present in 38% of
cases audited (46 of 122). Of the 76 records where the pathway was not present, 88% (67 of 76) had documented evidence that the chest pain protocol was followed.

This identified nine patients where no chest pain pathway or other chest pain protocol was documented. Of those, six patients were considered high risk; two intermediate risk and one low risk.

Since 2015, there has been a steady increase from 79% compliance with using the chest pain pathway or chest pain protocol to 93% this audit.

- An ECG was attended within 10 minutes of arrival in 75% of cases (92 of 122). This result has declined from 81% last audit.

- The patient is to be seen by a medical officer for interpretation of ECG results and vital signs within 10 minutes of arrival. This occurred for 70% of patients (86 of 122).

- The patient’s troponin level was taken and reviewed in 99% of cases (121 of 122).

- First line management includes giving 300mg of Aspirin. A total of 90% of patients were given Aspirin either pre-hospital or in the Emergency Department (110 of 122). One patient was contraindicated. A total of eleven patients were not given Aspirin - two patients were on anticoagulant medication regularly, therefore it was not administered; One patient refused; and the remaining eight indicated no reason.

- A chest x-ray is also first line general management. Of the 122 patients, 99 had a chest x-ray (81%). It was noted that 11 patients (9%) could not have an x-ray at the presenting site due to x-ray services being unavailable. A total of 12 patients (10%) did not have a chest x-ray. This result has improved from the previous audit.

- A documented diagnosis of NSTEMI by the medical officer was present in the patient record for 92% of cases (112 of 122). This has improved from 83% in the previous audit.

- All chest pain presentations must be stratified according to their risk (low, intermediate or high). The risk stratification category was documented by the medical officer in 44% of cases (54 of 122). This has continued to increase from 30% and 19% in the previous two audits respectively.

- The expert auditor reviewed the clinical record of the remaining 68 patients and deemed the risk category based on information at the initial presentation -
  - High risk – 62% of patients (42 of 68)
  - Intermediate risk – 32% of patients (22 of 68)
  - Low risk – 6% of patients (4 of 68)

**High risk patients**

- A total of 84 audits indicated that the patient was in the high risk category.

- 99% (83 of 84) of high risk patients had continuous cardiac monitoring (CCM) as required.

- 44% (37 of 84) of high risk patients had their vital signs documented at least every 30 minutes as required. Patients on continuous cardiac monitoring have vital signs monitored with alarms set, however documentation is required. Documenting of vital signs has declined from 60% last audit.
• 31% (26 of 84) of high risk patients had **continuing pain or symptoms**, and 81% of those (21 of 26) had a repeat ECG attended as required.

• Where applicable, 73% (38 of 52) high risk patients had a **repeat ECG** 8 hours following symptom onset. This excluded where the patient was transferred within the first 8 hours.

• 86% (72 of 84) of high risk patients had an initial elevated **troponin**. For those patients with a negative first troponin, a **repeat troponin test** is required to be repeated after 8 hours.

  Excluding the patients who were transferred to another facility within 8 hours, 88% (7 of 8) of patients had a repeat troponin done.

• 83% of high risk patients (excluding those that were contraindicated) had **antiplatelet therapy** administered (67 of 81).

• 85% of high risk patients (excluding those that were contraindicated) had **anticoagulant** administered (69 of 81).

• 11% of high risk patients (9 of 84) required **IV GTN** for treatment of ongoing pain and or hypertension, while 21% (18 of 84) required **IV Morphine**.

• 95% (80 of 84) of high risk patients were referred to a Cardiologist for further management.

**Intermediate risk patients**

• 32 audits indicated that the patient was in the intermediate risk category.

• 97% (31 of 32) of intermediate risk patients had continuous cardiac monitoring. This result is consistently high over the past two audits compared to previous years.

• 81% of patients had their vital signs attended at least every 30 minutes (26 of 32). This has improved from 73% last audit.

• 12 intermediate risk patients had continuing pain or symptoms (38%). Of those, 92% had a repeat ECG attended as required (11 of 12).

• 82% of intermediate risk patients (excluding patients who were transferred within the first 8 hours) had a repeat ECG after 8 hours following onset of symptoms (14 of 17).

• 75% (24 of 32) had an initial elevated troponin. For those patients with a negative first troponin, a **repeat troponin test** is required to be repeated after 8 hours. Excluding the patients who were transferred to another facility within 8 hours, this occurred for 88% of patients (15 of 17).

• Intermediate risk patients should be referred for an **exercise stress test** if they have no ongoing pain or symptoms, have two negative Troponin results and no ECG changes. Of the 32 intermediate risk patients, two patients met the criteria for EST.

  One patient at Casino Hospital was unable to complete EST as it is unavailable and the other patient from Grafton did not have EST attended.

• 100% of intermediate risk patients (32 of 32) were **referred to a Cardiologist** for further management.
Low risk patients

- Six patients were identified during the audit to be low risk.
- 100% of low risk patients had their vital signs monitored at least 4 hourly.
- Two low risk patients had continuing pain or symptoms. Both patients (100%) had a repeat ECG attended as required.
- Of the six low risk patients, one was discharged within 8 hours, and 100% of the remaining patients (5 of 5) had a repeat ECG as well as a repeat troponin attended 8 hours post onset of symptoms.
- 50% of patients initially assessed as low risk were re-stratified to intermediate risk (3 of 6).
- The three remaining low risk patients all had their vital signs attended prior to discharge (100%).

Discharge management (all patients audited)

- Overall, of the 125 patient records audited, 82% of patients were transferred to another facility for ongoing treatment (101 of 125).
- Of those 101 patients transferred, the majority (61%) were conveyed from smaller hospitals to larger hospitals within our LHD (62 of 101). The remaining 39% of transferred patients (39 of 101) went to hospitals outside our LHD, mainly located on the Gold Coast or Brisbane.
- A total of 18 patients were discharged home following treatment (15%) while three patients died during their admission.
- Of the 18 patients discharged home, it was documented in only four records that the patient was provided with a written, individualised care plan prior to discharge (22%).
- A discharge summary was provided to the patient’s GP or ongoing care provider in 89% of cases (16 of 18). This has significantly improved from 64% last audit.
- 94% (17 of 18) patients were prescribed aspirin or dual antiplatelet therapy on discharge; while 78% were prescribed lipid lowering therapy (14 of 18).
- Of the 18 discharged patients, one was deemed clinically unsuitable for cardiac rehabilitation or other secondary prevention program on discharge. For the remaining 17 patients, only five were referred (29%). Northern NSW LHD has phase 2 cardiac rehabilitation programs and services available at the majority of our facilities.

Overall clinical management

Following completion of each audit, the auditor was asked to assess each patient’s management based on the information contained with the patient medical record, and determine if management was appropriate according to the National Guidelines and whether a clinical review is required.

- The auditor determined that 92% of cases (112 of 122) were managed appropriately according to the National Guidelines.
• Of the ten cases that were deemed as not managed appropriately, lack of documentation was the primary issue identified. Of the ten cases, only three required further review.

• Auditors determined that three cases (2%) required a clinical review be attended:
  o Grafton Base Hospital – one patient’s treatment has been identified as suboptimal and a review recommended.
  o Two patients, one at Lismore Base and the other at The Tweed Hospital also require a clinical review, however no further information was provided as to the reason.
  o Medical record numbers will be provided to these hospitals to enable review of these records.

**Actions and Recommendations**

Actions and recommendations that may be considered are:

1. This executive summary should be read in conjunction with the site level data spreadsheet.

2. Where indicated, sites are to review the patient record and undertake a clinical review where the auditor deemed a clinical review should be undertaken. Medical record numbers will be provided to these hospitals to enable review of these records.

3. Regular audits, in addition to the annual LHD audit, be conducted at all sites to review management of chest pain patients.

4. All chest pain presentations should utilise the chest pain pathway or ensure the chest pain protocol is followed as per NSW Policy Directive: Chest Pain Evaluation (NSW Chest Pain Pathway) PD2011_037. This audit identified five cases where no chest pain pathway or other chest pain protocol was followed.

5. Sites should consider ongoing education to assist staff in recognising which patients need to be commenced on a chest pain pathway.

6. These audits should be discussed at each site and an action plan developed to identify areas and strategies for improvement where required.

**Further information**

For further information on these audits, please contact the Clinical Governance Unit or your local Quality Manager.