Nurse Administered Thrombolysis for ST Elevation Myocardial Infarction (STEMI)

Summary This Policy Directive outlines the mandatory requirements for implementation and utilisation of the state-wide NAT protocols. The NAT protocol authorises an accredited registered nurse to administer specified doses of thrombolytic and antithrombotic medication when there is no medical officer or authorised nurse practitioner on site using standing orders for people presenting with STEMI who meet the NAT criteria.

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POLICY DIRECTIVE

Nurse Administered Thrombolysis for ST Elevation Myocardial Infarction

POLICY STATEMENT

The Nurse Administered Thrombolysis (NAT) protocol authorises an accredited registered nurse to administer specified doses of thrombolytic and antithrombotic medication when there is no medical officer or authorised nurse practitioner on site using standing orders for people presenting with ST elevation myocardial infarction (STEMI) who meet the Nurse Administered Thrombolysis criteria.

SUMMARY OF POLICY REQUIREMENTS

Nurse Administered Thrombosis (NAT) is one of the models included in the NSW State Cardiac Reperfusion Strategy (SCRS) which aims to improve the care of patients with an Acute Coronary Syndrome (ACS) and reduce the time to reperfusion for patients with ST elevation myocardial infarction (STEMI).

The Nurse Administered Thrombolysis protocol is only for the management of patients with ST elevation myocardial infarction confirmed by the electrocardiogram (ECG) Reading Service who meet all Nurse Administered Thrombolysis criteria.

The protocol is only to be used in facilities that have fully implemented the Nurse Administered Thrombolysis protocol and when there is no medical officer or authorised nurse practitioner on site at the time of presentation. The protocol is only to be used by registered nurses accredited in Nurse Administered Thrombolysis processes and procedures.

Facilities must implement appropriate governance, including procedures to ensure counter signature by the medical officer or authorised nurse practitioner on call within 24 hours, as per local procedures, identify and minimise the risks of adverse events and to approve the relevant protocols.

In accordance with the NSW Health Policy Directive *Medication Handling* (PD2022_032), Nurse Administered Thrombolysis standing orders must be in the form of a written instruction, signed and dated by the authorising senior medical officer or authorised nurse practitioner and approved by the local drug and therapeutics committee to enable the administration of Nurse Administered Thrombolysis medications without a patient specific written order.

Each standing order must be reviewed every two years and re-approved as appropriate.

Activation of the Nurse Administered Thrombolysis protocol occurs in parallel with notification of the local medical officer or authorised nurse practitioner on call. It is not the intention of a Nurse Administered Thrombolysis protocol to bypass or exclude the local medical officer or authorised nurse practitioner; rather it allows appropriate treatment to be commenced while awaiting their arrival. On arrival, the medical officer or authorised nurse practitioner assumes responsibility for the medical management of the patient, in collaboration with nursing staff.

Medication administration must follow the NSW Health Policy Directive *Medication Handling* (PD2022_032).

Registered nurses administering Nurse Administered Thrombolysis must have successfully completed the requisite education and accreditation packages which include:

- Nurse Administered Thrombolysis education and accreditation package
- Competency in basic cardiac rhythm and basic 12 lead ECG interpretation
- Advanced Life Support (ALS) certification including recognition of life-threatening arrhythmias, manual and/or automated defibrillation and the use of Advanced Life Support drugs
- Certification in peripheral intravenous (IV) cannulation.

REVISION HISTORY

Version	Approved By	Amendment Notes
PD2022_055 November-2022	Chief Health Officer Deputy Secretary, Population and Public Health	Updated policy directive includes full review including revision of the document. • Increases the treatment window between symptom onset to thrombolysis from less than six hours to less than 12 hours • Reduces the maximum dose of enoxaparin for patients 75 years and over • Includes nurse practitioners as decision makers where the clinical activities are covered by their authorised scope of practice.
October-2015 (PD2015_044)	Deputy Secretary, Chief Health Officer Population & Public Health	New policy directive

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1. BACKGROUND

This Policy Directive outlines the mandatory requirements for implementation and utilisation of the state-wide Nurse Administered Thrombolysis (NAT) protocols. The NAT protocol authorises an accredited registered nurse to administer specified doses of thrombolytic and antithrombotic medication when there is no medical officer or authorised nurse practitioner on site using standing orders for adults presenting with ST Elevation Myocardial Infarction (STEMI) who meet the NAT criteria.

NAT is one of the models included in the NSW State Cardiac Reperfusion Strategy (SCRS) which aims to improve care and reduce the time to reperfusion for patients with STEMI.

1.1. About this document

The purpose of this Policy is to increase the proportion of patients receiving reperfusion for STEMI with the shortest possible treatment delay to improve short and long-term survival and cardiac function.

This updated Policy:

- increases the treatment window between symptom onset to thrombolysis from less than six hours to less than 12 hours
- has minor changes to the contraindications and timeframes in the *NAT Patient Screening Tool*
- reduces the maximum dose of enoxaparin for patients 75 years and over
- includes nurse practitioners as decision makers where the clinical activities are covered by their authorised scope of practice
- includes the electronic medication management (eMeds) system for documentation of standing orders and administration of medication
- changes the requirement for revision of standing orders from every year to every two years
- removes the electrocardiogram (ECG) interpretation competency (but retains advanced life support and intravenous cannulation competencies) as pre-requisite requirements for NAT accreditation.

1.2. Key definitions

Antithrombotic medication	Medications which reduce thrombus formation including anticoagulants, such as enoxaparin, warfarin, rivaroxaban, dabigatran; and antiplatelets, such as aspirin and clopidogrel.
Authorised nurse practitioner	A nurse practitioner whose authorised scope of practice includes complex decision making and prescribing in relation to acute coronary syndrome care.

Clinical Emergency Response System (CERS) Assist	CERS Assist is the provision of urgent additional clinical assistance by NSW Ambulance paramedics, in response to a rapidly deteriorating patient in a public health care facility. This is requested when a facility requires additional clinical resources. This is not a request for transport.
ECG reading service	Electrocardiogram (ECG) interpretation for suspected STEMI provided by senior medical staff, such as a cardiologist or emergency physician, to support clinicians in rural and remote sites.
eMeds	Electronic medication management system.
Escalation	The recognition and communication of patient deterioration to a more experienced or qualified colleague, followed by an appropriate response by the more experienced or qualified colleague according to established local pathways.
Nurse administered thrombolysis (NAT)	Administration of antithrombotic and thrombolytic medication, according to protocol, by a NAT-accredited RN to a patient with a diagnosis of STEMI, confirmed by an ECG reading service.
NAT-accredited registered nurse (RN)	A Registered Nurse who has successfully completed the NAT education, training and annual re-accreditation to administer antithrombotic and thrombolytic medication according to established protocol, including advanced life support and peripheral cannulation accreditation.
Person responsible	When a patient lacks capacity to provide consent to treatment, the Person Responsible can give valid substitute consent. Section 33A of the *Guardianship Act 1987* (NSW) sets out the hierarchy, in descending order, of the Person Responsible: a) The person's guardian (including enduring guardian) b) The person's spouse or de facto spouse, who has a close and continuing relationship c) The person's carer who is unpaid d) A close friend or relative providing they are not receiving remuneration for any services provided.

Symptoms of myocardial ischaemia	Typical ischaemic chest pain has characteristics of heaviness, pressure, tightness or a squeezing sensation that is left-sided or retrosternal. It may radiate to the arms, throat or jaw. Women are more likely than men to experience non-chest pain symptoms such as jaw, shoulder or back pain, nausea or vomiting, dizziness, shortness of breath/difficulty breathing, epigastric pain or fatigue/tiredness. In patients with chest pain who are 75 years and over, accompanying symptoms may include shortness of breath, syncope, acute delirium, or an unexplained fall. Diabetics are more likely to experience 'silent ischaemia' due to neuropathy, so other warning signs such as shortness of breath, unexpected nausea or persistent hyperglycaemia may be important.
Shared decision making	Discussing the risks and benefits of each option available, taking into consideration the person's values, preferences and circumstances. Shared decision making may involve one person and their clinician, and may also include care teams, families and carers. The level of responsibility between parties for decision making relies on the context of the situation.
Telephone order	A medication order given over the telephone by a medical officer or a nurse practitioner with relevant, authorised scope of practice.
Thrombolysis	The dissolution of a blood clot, especially as induced artificially by infusion of an enzyme into the blood.
Thrombolytic medication	Medication which acts to dissolve blood clots, such as tenecteplase.

1.3. Context for reperfusion models and nurse administered thrombolysis

1.3.1. Reducing time to reperfusion

Reducing the time from symptom onset to cardiac reperfusion for patients with STEMI reduces myocardial damage, thereby improving patient outcomes. Thrombolysis is the treatment of choice where it is not possible to transfer a patient from a non-percutaneous coronary intervention (non-PCI) capable hospital to a PCI-capable hospital within 120 minutes (for first medical contact to device time).[1]

1.3.2. The NSW State Cardiac Reperfusion Strategy

The State Cardiac Reperfusion Strategy (SCRS)[2] aims to improve the care of all patients with an acute coronary syndrome and to reduce the time to cardiac reperfusion for patients with STEMI. The state strategy improves access to early reperfusion for all patients,

regardless of their geographical location or how they present (either transfer by NSW Ambulance or self-presentation to hospital).

The strategy includes assessment for provision of best-practice primary percutaneous coronary intervention, or thrombolysis, with the type of care provided tailored to the setting. Early reperfusion models include:

- Pre-hospital assessment for primary angioplasty (PAPA) which facilitates field triage for patients who call an ambulance and are within 45 minutes safe travel time of a designated 24-hour primary angioplasty facility.
- Pre-hospital thrombolysis (PHT), which is a protocol-directed, paramedic-administered early reperfusion option for patients who call an ambulance and are unable to access timely primary percutaneous coronary intervention in regional and rural settings.
- Nurse administered thrombolysis (NAT), which is an early reperfusion option for patients in small rural or remote hospitals that do not have 24-hour on site medical cover.

1.3.3. Nurse administered thrombolysis model

NAT provides an option for patients whose STEMI is not evident prior to arrival in the emergency department, for those who self-present, or for patients whose symptoms develop during an inpatient stay.

The NAT protocol authorises an accredited registered nurse to administer specified doses of thrombolytic and antithrombotic medication (specifically aspirin, clopidogrel, tenecteplase and enoxaparin), when there is no medical officer or authorised nurse practitioner on site.

The NAT standing orders enable the administration of NAT medications without a patient-specific written order[3], for people with STEMI who meet the NAT criteria.

NAT must be followed by expedited transfer.

1.4. When a nurse administered thrombolysis protocol does not apply

Medical officer or authorised nurse practitioner on site

If a medical officer or authorised nurse practitioner is on site, the NAT protocol does not apply.

Telephone order available

Activating a NAT protocol is not to be confused with a telephone order from a medical officer or authorised nurse practitioner, which negates the need for care under the NAT protocol. While any medication can be administered subject to an individual medical telephone order[3], the development of a local robust training and accreditation package for NAT is essential.

This ensures that registered nurses are competent to screen and assess a patient for suitability, deliver the required therapy and provide appropriate ongoing monitoring and care prior to medical assessment.

Remote medical consultation service accessible

The growing role of telehealth is acknowledged, and sometimes hospitals in outlying areas that are not routinely staffed with doctors operate using Medical Critical Operations Standard Operating Procedures (COSOP).

Some facilities will have access to a 24-hour virtual critical care service with telehealth cameras. While elements such as the ECG reading service remain useful, under the Medical Critical Operations Standard Operating Procedures or virtual critical care service model, the NAT protocol may not be applicable, and treatment decisions and medication ordering may occur in a virtual consultation with medical staff. As with telephone orders, the development of local robust NAT training and accreditation is essential to support remote medical consultation service models.

1.5. Legal and legislative framework

Nurse administered thrombolysis training and accreditation

The NAT protocol may be utilised by registered nurses who have completed the requisite training and accreditation package for NAT which includes:

- pre-requisite requirements, such as:
    - advanced life support certification (including manual and/or automated defibrillation and use of advanced life support medications)
    - certification in peripheral intravenous (IV) cannulation.
- My Health Learning modules, assessment tool for NAT and local accreditation.

1.5.1. Scope of practice

The *Nursing and Midwifery Board of Australia's Decision-making Framework*[4] supports nurses and midwives to make decisions in practice, particularly about scope of practice and delegation. Nurses accredited to utilise the NAT protocol do so within the registered nurse's scope of practice and remain accountable for all aspects of their practice. According to the Nursing and Midwifery Board of Australia (2020)[4]:

"Scope of practice is the full spectrum of roles, functions, responsibilities, activities and decision-making capacity that individuals… are educated, competent and authorised to perform… Decisions about scope of practice should be based on:

- *the person's health status and any relevant social determinants to their health care*
- *lawfulness (legislation and common law)*
- *compliance with evidence, professional standards, and regulatory standards, policies and guidelines*
- *context of practice and the health service provider/employer's policies and protocols, and*
- *whether there is organisational support, sufficient staffing levels and appropriate skill mix for the practice."*

1.5.2. Standing orders and safe medication administration

Facilities and accredited registered nurses operating within this protocol must conform to the NAT policy and procedures and the NSW Health Policy Directive *Medication Handling* (PD2022_032)[3] in particular, Standing Orders and Principles for Safe Medication Administration.

In accordance with the NSW Health Policy Directive *Medication Handling* (PD2022_032)[3], nurse administered thrombolysis standing orders must be in the form of a written instruction, signed and dated by the authorising senior medical officer and approved by the local drug and therapeutics committee to enable the administration of nurse administered thrombolysis medications without a patient-specific written order.

Each standing order must be reviewed and reapproved every two years[3], unless there has been a change of relevant acute coronary syndrome guidelines in the interim.

2. INITIAL ASSESSMENT AND APPLICATION OF PROTOCOL

Nursing staff must follow the process outlined in the *Nurse Administered Thrombolysis (NAT) Treatment Pathway* in attachment 11.3.1.

2.1. Initial assessment

Conduct an assessment including:

- structured pain assessment
- 12 lead electrocardiogram (ECG) and vital signs within 10 minutes[5,6,7,8]
- confirming the time of onset of severe, sustained symptoms as the NAT treatment window is **less than 12 hours after symptom onset**[1]
- age and actual weight to determine the correct dosage of NAT medications. If the patient cannot be weighed, they must be asked to provide their weight. If the patient's estimate is unavailable[9], an estimate must be made by nursing staff and documented (as an estimate) on the patient's medication chart.

2.2. ECG transmission

If the ECG does not meet ST elevation myocardial infarction (STEMI) criteria, it must be reviewed within 10 minutes by a medical officer. This may involve transmission to an ECG reading service in some Local Health Districts.

If the ECG states, "MEETS ST ELEVATION MI CRITERIA" and/or "CONSIDER ACUTE INFARCT", or "ACUTE STEMI" and/or "POSSIBLE ACUTE STEMI" the ECG must be transmitted to the ECG reading service to confirm or exclude a ST elevation myocardial infarction (STEMI) diagnosis. Ideally, this transmission is to occur within the first 10 minutes[7].

The ECG transmission must include the patient's name, age and sex.

If a response is not received from the ECG reading service within 10 minutes of transmission, the ECG MUST be re-transmitted and the ECG reading service contacted by telephone to verify that the transmission has been received.

If the patient deteriorates or the nurse is concerned about the patient in any way, local escalation processes must be followed until such time as the on call medical officer or authorised nurse practitioner arrives and assumes ongoing medical management, or further advice is received from a remote medical consultation service.

2.3. Parallel notification

Activation of the protocol must occur in parallel with notification to the medical officer or authorised nurse practitioner on call, preferably at the time of ECG transmission. Once the medical officer or authorised nurse practitioner arrives, they are to assume responsibility for ongoing medical management of the patient, in collaboration with the nursing staff until the patient is transferred.

In situations where a medical officer or authorised nurse practitioner is not available on call, appropriate escalation processes such as remote medical consultation service contact, or CERS Assist[10] must be activated, as per local procedures.

3. PATIENT SCREENING

3.1. Nurse Administered Thrombolysis Patient Screening Tool completion

The *Nurse Administered Thrombolysis Patient Screening Tool* (NH700083 – available from the state catalogue, see attachment 11.3.2) must be commenced as soon as possible (ideally, prior to call back from the electrocardiogram (ECG) reading service).

For Nurse Administered Thrombolysis (NAT) eligibility, there must be **NO** contraindications to treatment in the screening tool. This means all boxes within the screening tool must be ticked and answered ‘YES’ before initiating the NAT protocol.

If the patient does not meet **ALL** criteria in the screening tool, they are **NOT** eligible to receive thrombolysis using the NAT protocol. Thrombolysis may still be administered; however, this must be at the discretion and under the direction of a medical officer or authorised nurse practitioner outside of the NAT protocol.

If the patient is conscious but unable to answer questions or confirm details in the *Nurse Administered Thrombolysis Patient Screening Tool*, another person with sufficient knowledge of their medical condition/history may answer on their behalf e.g., a relative, friend, carer or general practitioner. The name and relationship of this person must be documented in the patient’s medical record.

However, if the person does not have adequate knowledge of the patient’s medical history, and the questions in the administration checklist cannot otherwise be firmly established, the NAT protocol must NOT be activated and a separate order (written or phone order) for the administration of thrombolysis must be sought from the medical officer or authorised nurse practitioner on call.

3.2. Inclusion criteria

The patient may be considered for the NAT protocol only if the following criteria are met:

- No medical officer or authorised nurse practitioner is on site at the time of the patient's presentation.
- A registered nurse who is accredited in NAT delivery is available and there is a second person to check medications as per local procedures.
- **ALL** criteria are met within the *Nurse Administered Thrombolysis Patient Screening Tool*.
- The patient (or the person responsible as outlined in section4) has provided verbal consent.

3.3. Exclusion criteria

Any negative response (if the patient answers 'No') to the NAT screening criteria.

Patients who present more than 12 hours after symptom onset.

Patients who have a confirmed ST elevation myocardial infarction (STEMI), but do **NOT** meet the NAT criteria may still be eligible for thrombolysis. However, this CANNOT occur within the NAT protocol. A separate written, telephone or virtual order for the administration of thrombolysis will be required from the medical officer or authorised nurse practitioner on call as per the NSW Health Policy Directive *Medication Handling* (PD2022_032)[3].

Patients who do not have a STEMI confirmed by the ECG reading service or who do not meet the NAT screening criteria must continue to be managed as per the NSW Health Guideline *Pathway for Acute Coronary Syndrome Assessment* (PACSA) [GL2019_014][8] and in consultation with the medical officer or authorised nurse practitioner on call.

This is to include a repeat ECG to determine if there are any changes and redetermine if the patient's condition evolves to meet STEMI criteria.

Patients who have contraindications to thrombolysis must have transfer expedited as outlined in section 7.

4. ADMINISTRATION CHECKLIST AND CONSENT

4.1. Staff required

A minimum of two people are required to initiate the Nurse Administered Thrombolysis (NAT) protocol, one of whom must be a registered nurse who has completed the NAT training and accreditation.

A second NAT-accredited nurse would be ideal, a non-accredited second person may check the medications and dose calculation, confirm the patient's identity and co-sign the medication chart[3], as per local procedures; however, they must **NOT** complete the checklist or administer the medications.

4.2. Nurse Administered Thrombolysis Administration Checklist

If the patient meets all screening criteria, the *Nurse Administered Thrombolysis Administration Checklist* (NH700083 – available from the state catalogue, see attachment 11.3.3) must be completed by the NAT-accredited registered nurse prior to the administration of medication. **ALL** responses MUST be ticked 'YES' and the relevant sections completed prior to proceeding.

The accredited registered nurse must sign the *Nurse Administered Thrombolysis Administration Checklist* to acknowledge the confirmation of ST elevation myocardial infarction (STEMI) by the electrocardiogram (ECG) reading service and agree that the patient meets **ALL** the NAT screening criteria.

4.3. Consent

The information script within the *Nurse Administered Thrombolysis Administration Checklist* (attachment 11.3.3) MUST be read to the patient (or Person Responsible where a **conscious** patient lacks capacity for consent) by the NAT-accredited nurse **exactly as written**.

The patient or person responsible must be given an opportunity to ask questions and seek further information.

There is no requirement to obtain the patient's signature, however, the accredited registered nurse must sign and date the checklist to acknowledge that they have advised the patient of the benefits and risks and that the patient has given verbal consent to treatment.

Where a patient does not have capacity for consent (due for example, to cognitive impairment or an intellectual disability), the Person Responsible may give verbal consent on their behalf. See definition of a Person Responsible in section 1.2.

Under these circumstances the name, and the relationship of the Person Responsible, must be clearly documented in the medical record. If that person is not present, attempts must be made to contact them. If there is no available Person Responsible, the NAT protocol must NOT be activated and a separate order (written or phone order) for the administration of thrombolysis must be sought from the medical officer or authorised nurse practitioner on call.

While treatment for STEMI is time-sensitive, considering the principles of shared decision making may enhance the person and family's sense of safety and trust and facilitate informed consent.

For guidance on consent where a patient lacks capacity, see section 7 of NSW Health *Consent to Medical and Healthcare Treatment Manual* (Consent Manual)[11]. See definition of Person Responsible in section 1.2 and section 33A of the *Guardianship Act 1987* (NSW)[12].

4.4. Non-fluent English-speaking patients

Interpreter services must be contacted for any patients who are not fluent in English or who are deaf, as per the NSW Health Policy Directive *Interpreters – Standard Procedures for Working with Health Care Interpreters* (PD2017_044)[13]. Telephone interpreter services are also available. An Aboriginal health worker may be a further source of support where appropriate.

5. TREATMENT

5.1. Safe clinical environment

All patients must be managed in an area where staff trained and accredited in Nurse Administered Thrombolysis (NAT) are able to assess, treat and monitor the patient, such as an emergency department or close observation unit.

Appropriate resuscitation equipment and medications must be available to manage any adverse events. The NAT-accredited registered nurses administering tenecteplase is to ideally ensure that the patient has two reliable, well-secured and patent intravenous cannulas in situ.

Continuous cardiac monitoring must be in place before, during and after the administration of thrombolysis.[14]

5.2. Nurse Administered Thrombolysis medications

All patients who present with symptoms suggestive of acute coronary syndrome will receive initial management including aspirin, if not already given or contraindicated. Patients who meet the NAT criteria will also receive the following medications as per the NAT protocol:

- Clopidogrel (unless contraindicated)
- Tenecteplase
- Enoxaparin.

The treating team are to consider the need for maintenance aspirin, clopidogrel and enoxaparin on completion of the NAT protocol.

5.2.1. Allergy or hypersensitivity

If the patient has an allergy or hypersensitivity to aspirin or clopidogrel the NAT protocol must still be enacted with documentation of the medications omitted. The medical officer or authorised nurse practitioner must be advised about omitted medication.

5.2.2. Medication dose

The dosage of all NAT protocol medications depend on the patient's age and actual weight:

- Clopidogrel dosages MUST be adjusted according to the patient's age.
- Tenecteplase and enoxaparin dosages MUST be adjusted according to the patient's actual weight and age.

5.2.3. Standing orders

All medications must be administered by a NAT-accredited registered nurse, as per individual standing orders in the attachments listed:

11.1.2 *Standing Order for Clopidogrel for Nurse Administered Thrombolysis*
11.1.3 *Standing Order for Tenecteplase for Nurse Administered Thrombolysis*

11.1.4 *Standing Order for Enoxaparin Sodium for Nurse Administered Thrombolysis*
11.1.5 *Enoxaparin Subcutaneous Dosage Table*.

5.2.4. Nurse Administered Thrombolysis documentation

Medication must be documented in the "Once only and nurse-initiated medicines and pre-medications" section of the medication chart, with the abbreviation "(STO)" and include the time and dosage given.

If a facility uses an eMeds system for NAT, local procedures are to guide documentation of the NAT standing orders and/or documentation of the NAT medication administration.

The record of administration must be co-signed on the patient's medication chart by the medical officer or authorised nurse practitioner on call within 24-hours, as per local procedures and the NSW Health Policy Directive *Medication Handling* (PD2022_032)[3].

If the accredited registered nurse using the protocol and standing orders has any concerns regarding patient safety at any time, they must contact the local medical officer or authorised nurse practitioner on call, or remote medical consultation service and escalate as per local procedures.

6. POST THROMBOLYSIS MANAGEMENT

6.1. Ongoing responsibility

Once the medical officer or authorised nurse practitioner arrives and receives handover, they are responsible for ongoing medical management of the patient in collaboration with the nursing staff. Arrangements must be made for transfer of the patient as soon as possible.

6.2. Ongoing clinical monitoring

Continuous cardiac monitoring must be continued for at least 24-hours, as per the NSW Health Clinical Practice Guide *Cardiac monitoring of adult cardiac patients in NSW public hospitals* (Guide)[14].

The patient's vital signs; respiratory rate, oxygen level (SpO_2), pulse rate and rhythm, blood pressure, neurological status, pain score and temperature must be monitored and documented on the *Standard Adult General Observation Chart* or the *Adult Emergency Department Observation Chart* every 15 minutes, for at least 60 minutes, to identify any trends in clinical deterioration[15]. Observations that fall into the Clinical Review or Rapid Response areas must be escalated.

Monitoring includes observation for signs and symptoms of adverse events, which may include allergic reactions, bleeding, haemorrhage of any kind, stroke and reperfusion arrhythmias which may lead to cardiac arrest.

If the patient has ongoing chest pain and no resolution of ST elevation, and the local medical officer or authorised nurse practitioner has not arrived, escalation of care is to occur in line with local procedures.

6.3. Determining the success of thrombolysis

Reperfusion generally occurs within 60 to 90 minutes following administration of thrombolysis. The patient must be observed for signs of successful thrombolysis therapy suggestive of reperfusion which includes:

- relief of symptoms
- restoration of haemodynamic or electrical stability
- reduction by 50% of initial ST-segment elevation within 90 minutes of initiation of therapy[1].

A repeat 12 lead electrocardiogram (ECG) must be recorded between 60 to 90 minutes after thrombolysis. The ECG must be reviewed by the medical officer on call to determine whether reperfusion has been successful. A repeat ECG must also be recorded and interpreted prior to patient transfer.

Any adverse events must be documented and managed accordingly and escalated as per the NSW Health Policy Directive *Recognition and management of patients who are deteriorating* (PD2020_018)[15].

7. TRANSFER

Following administration of thrombolysis, the patient needs expedited transfer to a hospital that has emergency percutaneous coronary intervention facilities and/or a coronary care unit to await angiography, with links to cardiac surgery facilities, as per the *Australian Clinical Guidelines for the Management of Acute Coronary Syndromes*[1].

Patients must be assessed for urgency of transfer in consultation with the medical officer or authorised nurse practitioner on call and arrangements made as per local procedures and the NSW Health Policy Directive *Inter-facility Transfer Process for Adults Requiring Specialist Care* (PD2011_031)[16] and the NSW Health Policy Directive *Critical Care Tertiary Referral Networks and Transfer of Care (ADULTS)* (PD2018_011)[17].

Patients who have contraindications to thrombolysis, or who fail to re-perfuse also require expedited transfer.

8. PATIENTS WHO DO NOT HAVE STEMI OR DO NOT MEET NURSE ADMINISTERED THROMBOLYSIS SCREENING CRITERIA

Patients who do not have a ST elevation myocardial infarction (STEMI) confirmed or do not meet the Nurse Administered Thrombolysis (NAT) criteria must be managed as per the NSW Health Guideline *Pathway for Acute Coronary Syndrome Assessment* (PACSA) [GL2019_014][8] and in consultation with the medical officer or authorised nurse practitioner on call.

Patients who do not initially have a STEMI confirmed by the electrocardiogram (ECG) reading service, whose symptoms evolve at any time, MUST have a repeat ECG recorded and transmitted to the ECG reading service to exclude STEMI. Eligibility for the NAT protocol

must then be reassessed if the local medical officer or authorised nurse practitioner is still not on site.

In addition, if the nurse is concerned about the patient at any time, escalation must occur, as per local procedures, until such time as the on call medical officer or authorised nurse practitioner arrives to assume responsibility for ongoing medical management.

9. MONITORING, EVALUATION AND QUALITY IMPROVEMENT

9.1. Stakeholder engagement

Implementation and evaluation of this policy/protocol must engage local stakeholders including members of the multidisciplinary team, and staff with roles in patient safety and quality, information technology, pharmacy, medical records, or other roles that may facilitate safe embedding of the protocol into local systems.

9.2. Local systems data collection and evaluation

It is recommended that monitoring and evaluation of the outcomes of the Nurse Administered Thrombolysis (NAT) protocol occurs on an ongoing basis at a facility level. This data collection aligns with the state-wide cardiac reperfusion evaluation data and includes the minimum dataset for the ST elevation myocardial infarction (STEMI) reperfusion model as per attachment 11.2.1 *Mandatory Dataset for STEMI*.

Additional recommended data may also be collected as per attachment 11.2.2 *Recommended Dataset for STEMI*.

9.3. Strengthening education and training

Apart from the pre-requisite education described in section 1.5 and requirements for NAT-accredited registered nurses outlined in section 1.2, education could be supported by simulated NAT scenarios to reinforce skill and protocol awareness.

Cultural competency training is recommended to help achieve the best outcomes in patients of diverse racial and ethnic backgrounds who present with symptoms of myocardial ischaemia.

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11. ATTACHMENTS

11.1 NAT standing orders for STEMI management

- 11.1.1 NAT Standing Order Medication Overview
- 11.1.2 Standing Order for Clopidogrel for NAT
- 11.1.3 Standing Order for Tenecteplase for NAT
- 11.1.4 Standing Order for Enoxaparin Sodium for NAT
- 11.1.5 Enoxaparin Subcutaneous Dosage Table

11.2 Minimum dataset for STEMI reperfusion model

- 11.2.1 Mandatory Dataset for STEMI
- 11.2.2 Recommended Dataset for STEMI

11.3 Nurse Administered Thrombolysis Assessment Tools

- 11.3.1 Nurse Administered Thrombolysis Treatment Pathway
- 11.3.2 Nurse Administered Thrombolysis Patient Screening Tool
- 11.3.3 Nurse Administered Thrombolysis Administration Checklist

11.1. NAT standing orders for STEMI management

11.1.1. NAT standing order medication overview

The NAT medication overview below must be read in conjunction with the individual standing orders*.

Patients 18 - 74 years	Patients 75 years and over
Aspirin 300 mg tablet if not already given	Aspirin 300 mg tablet if not already given
Clopidogrel 300 mg tablet (1 x 300 mg tablet)	Clopidogrel 75 mg tablet (1 x 75 mg tablet)
Tenecteplase intravenous 18 - 74 years dose	Tenecteplase intravenous 75 years and overdose
15 minutes after tenecteplase:	
Enoxaparin 30 mg intravenous bolus	No intravenous bolus Enoxaparin dose for patients aged 75 years and over
15 minutes after intravenous enoxaparin:	**15 minutes after tenecteplase:**
Enoxaparin dose 1 mg / kg given subcutaneously, up to a maximum of 100 mg	Enoxaparin dose 0.75 mg / kg given subcutaneously, up to a maximum of 75 mg

* Medication information is a guide only and aligns with the NSW Health Guideline *Pathway for Acute Coronary Syndrome Assessment (PACSA)* [GL2019_014][8]. Further information is available in MIMS[20], product information, the Australian Medicines Handbook[21] and Therapeutic Guidelines[22].

11.1.2. Standing order for clopidogrel for NAT

Title	Standing Order for Clopidogrel for Nurse Administered Thrombolysis (NAT)	
Medication	Clopidogrel	
Strength, form, route	75 mg and 300 mg tablets, oral	
Indication	**Antiplatelet therapy given in combination with aspirin prior to administration of thrombolysis in patients meeting the criteria for nurse administered thrombolysis and consenting to treatment**	
Contraindications	Failure to meet ALL nurse administration thrombolysis eligibility screening criteria AND/OR allergy or hypersensitivity to clopidogrel	
Interactions	Administration with other medications that can affect the clotting process may increase the risk of bleeding (however, antiplatelet and anticoagulant agents must be used where indicated); monitor combinations closely.	
Administration	Oral as a STAT dose prior to thrombolysis by NAT-accredited registered nurse	
Dose	**Patients 18 - 74 years**	**Patients 75 years and over**
	300 mg (1 x 300 mg tablet)	75 mg (1 x 75 mg tablet)
Adverse effects* relevant to NAT	Diarrhoea, allergic reactions (e.g., asthma, angioedema, rhinitis, urticaria, laryngeal oedema, shock), gastric irritation; aggravation of any bleeding tendency, bleeding may take longer to stop	
Nursing Implications	Clopidogrel MUST only be administered under this standing order following screening of the patient using the Nurse Administration Thrombolysis Patient Screening Tool and completion of the NAT Administration Checklist which includes confirmation of STEMI by the ECG reading service. Clopidogrel MUST be administered **prior** to thrombolysis treatment with tenecteplase.	
Monitoring	Patients need continuous cardiac monitoring for at least 24-hours as per the *Cardiac monitoring in adult cardiac patients in NSW public Hospitals* (Guide). Observe for signs of bleeding or bruising.	
Documentation	• Complete screening tool, checklist and obtain patient verbal consent using the explanatory script provided. • Record dose of clopidogrel on the "Once only and nurse-initiated medicines and pre-medications" section of the medication chart, with the standing order abbreviation "(STO)" (or use locally approved eMEDs documentation protocols) and include time and dose given. • The medication order **must be CHECKED and CO-SIGNED** by the medical officer or authorised nurse practitioner within 24-hours as per local procedures.	
LHD Drug & Therapeutics Committee Approval	Date of approval: _____	Date for Review: _____ Signature _____
	Name: _____	

* Medication information is a guide only and aligns with the NSW Health Guideline *Pathway for Acute Coronary Syndrome Assessment (PACSA)* [GL2019_014][8]. Further information is available in MIMS[20], product information, the Australian Medicines Handbook[21] and Therapeutic Guidelines[22].

11.1.3. Standing order for tenecteplase for NAT

Title	Standing Order for Tenecteplase for Nurse Administered Thrombolysis (NAT)		
Medication	Tenecteplase (Metalyse®)		
Stock strength, form route*	40 mg and 50 mg vials, powder + solvent, intravenous injection. Requires reconstitution before use		
Indication	Thrombolysis in a patient meeting the criteria for NAT and consenting to treatment		
Contraindications	Failure to meet ALL NAT eligibility screening criteria **and/or** allergy or hypersensitivity to tenecteplase		
Interactions	Administration with other medications that can affect the clotting process may increase the risk of bleeding (however, antiplatelet and anticoagulant agents must be used where indicated); monitor combinations closely		
Administration	Intravenous bolus over 10 seconds by a NAT-accredited registered nurse. Flush with 30 mL sodium chloride 0.9% **NB: Tenecteplase is incompatible with glucose solutions**		
Weight adjusted dose	**Patient Weight**	**Patient Age**	
	Kg	**18 - 74 years**	**75 years and over**
	Less than 60 kg	30 mg (6 mL)	15 mg (3 mL)
	60 - 69 kg	35 mg (7 mL)	17.5 mg (3.5 mL)
	70 - 79 kg	40 mg (8 mL)	20 mg (4 mL)
	80 - 89 kg	45 mg (9 mL)	22.5 mgs (4.5 mL)
	90 kg and above	50 mg (10 mL)	25 mgs (5 mL)
Adverse effects* related to NAT	Bleeding, including bleeding at injection sites, internal bleeding, intracranial haemorrhage, aggravation of any bleeding tendency, reperfusion arrhythmias (usually self-limiting), cardiac arrest and hypotension		
Nursing implications	• Tenecteplase (Metalyse®) MUST only be administered under this standing order following patient screening using the Nurse Administered Thrombolysis Patient Screening Tool and completion of the Nurse Administered Thrombolysis Administration Checklist which includes confirmation of STEMI by the ECG Reading Service. • **A positive response is required for ALL** Nurse Administered Thrombolysis **eligibility screening criteria to proceed to administer TENECTEPLASE.** • **Exclusions:** If the answer is NO to **ANY question**, this standing order **MUST** be ceased and medical advice obtained. • **Consent:** The registered nurse **MUST** obtain and confirm verbal consent from the patient using the explanation script in section 11.3.3 (Nurse Administered Thrombolysis Administration Checklist). **NB:** The registered nurse administering tenecteplase **MUST** obtain a patient's actual weight (or estimated weight if unavailable) and ideally establish two reliable, well-secured and patent cannulas.		
Monitoring	• Patients MUST have continuous cardiac monitoring for at least 24-hours[14]. • Respiratory rate, temperature, heart rate and rhythm, blood pressure, oxygen level (SpO_2), Glasgow Coma Scale and Numerical Rating Scale for pain score every 15 minutes for at least 60 minutes. • Observe for reperfusion arrhythmias including ventricular tachycardia and ventricular fibrillation and use the Advanced Life Support protocol if these occur. • Record 12 lead ECG 60 - 90 minutes post tenecteplase which MUST be reviewed by a medical officer or authorised nurse practitioner. • Observe for signs of bruising and/or bleeding and report to a medical officer or authorised nurse practitioner if these occur.		
Documentation	• Complete screening tool, checklist, patient's actual weight, patient verbal consent and vital signs. • Record dose of tenecteplase on the "Once only and nurse-initiated medicines and pre-medications" section of the medication chart with the standing order abbreviation "(STO)" or use locally approved eMEDs documentation protocols and include the time and dosage given. • The medication order **MUST be CHECKED and CO-SIGNED** by the medical officer or authorised nurse practitioner within 24-hours as per local procedures.		
LHD Drug and Therapeutics Committee Approval	Date of approval: _____ Date for Review: _____ Name: _____ Signature _____		

* Medication information is a guide only and aligns with the NSW Health Guideline *Pathway for Acute Coronary Syndrome Assessment (PACSA)* [GL2019_014][8]. Further information is available in MIMS,[20] product information, the Australian Medicines Handbook[21] and Therapeutic Guidelines.[22]

11.1.4. Standing order for enoxaparin sodium for NAT

Title	Standing Order for Enoxaparin Sodium for Nurse Administered Thrombolysis	
Medication*	Enoxaparin sodium	
Stock strength, form, route	**Intravenous bolus administration** (The 40 mg prefilled syringe does not have graduated dose markings so must not be used to administer the 30 mg IV bolus dose. Use the 60 mg stock strength and administer half the dose. **Subcutaneous administration** 40 mg (0.4 mL) pre-filled syringes. Clexane Forte must not be used as it has a different strength.	
Indication	Anticoagulant therapy given immediately following administration of thrombolysis in a patient meeting the nurse administered thrombolysis screening criteria and consenting to treatment	
Contra-indications	Failure to meet ALL NAT eligibility screening criteria AND/OR allergy or hypersensitivity to enoxaparin sodium or heparin induced thrombosis-thrombocytopenia syndrome (HITTS). Urgent medical advice must be sought regarding risk versus benefit, and potential for thrombolysis outside of the NAT protocol in patients who are pregnant/have recently delivered or people with liver failure (due to heightened bleeding risk[18, 19] and severe renal impairment (creatinine clearance less than 30 mL/ minute), due to the need for modified dose of enoxaparin[20] or substitution with heparin[21].	
Interactions	Administration with other drugs affecting the clotting process may increase risk of bleeding (however, antiplatelet and anticoagulant agents must be used where indicated); monitor combinations closely.	
Administration	Intravenous (IV) for initial bolus and subcutaneous (SC) for subsequent doses by nurse administered thrombolysis accredited registered nurse.	
Dose	15 minutes following tenecteplase	
	18 - 74 years	**75 ears and over**
	• **30 mg** enoxaparin **intravenous bolus** then; 15 minutes after intravenous enoxaparin give: • **1 mg / kg subcutaneous** up to maximum of 100 mg as per 11.2.5 (enoxaparin subcutaneous dosage table)	• **No intravenous bolus** dose then; 15 minutes after tenecteplase give: • **0.75 mg / kg subcutaneous** up to a maximum of 75 mg as per table 11.2.5 (enoxaparin subcutaneous dosage table)
NB: Patients 75 years and over do **NOT** receive an initial intravenous dose of enoxaparin sodium.		
Adverse effects	Bleeding, bruising and pain at injection site, thrombocytopaenia, allergic reactions including urticaria and anaphylaxis.	
Nursing implications	Enoxaparin sodium MUST only be administered under this standing order following screening of the patient using the Nurse Administered Thrombolysis Patient Screening Tool and completion of the NAT Administration Checklist which includes confirmation of STEMI by the ECG reading service. NB: The registered nurse administering enoxaparin MUST obtain the patient's actual weight.	
Monitoring	Patients must have continuous cardiac monitoring for at least 24-hours.[14] Observe for signs of bruising and/or bleeding and report to a medical officer if this occurs.	
Documentation	Complete screening tool, checklist and obtain patient verbal consent. Record administration on the "Once only and nurse-initiated medicines and pre-medications" section of the medication chart, with the abbreviation "(STO)" or use locally approved eMEDs documentation protocols and include the time and dosage given. The medication order **MUST be CHECKED and COUNTERSIGNED** by the medical officer within 24-hours as per local procedures.	
LHD Drug and Therapeutics Committee approval	Date of approval: _____ Name: _____	Date for Review: _____ Signature _____

* Medication information is a guide only and aligns with the NSW Health Guideline *Pathway for Acute Coronary Syndrome Assessment (PACSA)* [GL2019_014][8]. Further information is available in MIMS[20] product information, the Australian Medicines Handbook[21] and Therapeutic Guidelines[22].

11.1.5. Enoxaparin Subcutaneous Dosage Table

The enoxaparin** subcutaneous dosage must be calculated according to the patient's actual weight and age, using the table below as a guide. **Clexane Forte products must not be used as their stock strength is greater than 1 mg /0.1 mL**.

- Select the patient's actual weight in the left-hand column, then
- Select the patient's age: either 18–74 years or 75 years and over.

Patient's Weight	18–74 years Subcutaneous - 1 mg / kg Maximum 100 mg	75 years and over Subcutaneous - 0.75 mg / kg Maximum 75 mg
40 kg	40 mg / 0.4 mL	30 mg / 0.3 mL
45 kg	45 mg / 0.45 mL	33.7 mg / 0.35 mL
50 kg	50 mg / 0.5 mL	37.5 mg / 0.35 mL*
55 kg	55 mg / 0.55 mL	41.2 mg / 0.4 mL*
60 kg	60 mg / 0.6 mL	45 mg / 0.45 mL
65 kg	65 mg / 0.65 mL	48.7 mg / 0.5 mL*
70 kg	70 mg / 0.7 mL	52.5 mg / 0.5 mL*
75 kg	75 mg / 0.75 mL	56.2 mg / 0.55 mL*
80 kg	80 mg / 0.8 mL	60 mg / 0.6 mL
85 kg	85 mg / 0.85 mL	63 mg / 0.65 mL*
90 kg	90 mg / 0.9 mL	67.5 mg / 0.65 mL*
95 kg	95 mg / 0.95 mL	71.2 mg / 0.7 mL*
100 kg +	100 mg / 1 mL	75 mg / 0.75 mL

* Dose rounded to nearest .05 mL for ease of administration

** Medication information is a guide only and aligns with the *Pathway for Acute Coronary Syndrome Assessment (PACSA)*[8] Further information is available in MIMS[20], product information, the Australian Medicines Handbook[21] and Therapeutic Guidelines[22].

11.2. Minimum Dataset for STEMI

The National Heart Foundation recommends collection of core quality care indicators as part of a minimum data set to allow benchmarking of services and to inform quality and practice improvement.[1] Such monitoring addresses Action 1.08 of the *National Safety and Quality Health Service Clinical Governance Standard* that guides hospital accreditation in relation to organisation-wide quality improvement systems[23]. Both a minimum (required), and recommended data set are provided and local roles and processes must be developed to enable this data collection, storage and potential dissemination to inform future practice development and quality assurance activities.

11.2.1. Mandatory Dataset for STEMI

Variable	Sect.	Definition	Format
Age	1		
Gender	1		
Date/Time of Symptom Onset	1	Onset of severe, sustained symptoms	Date/Time
Type of First Clinical Contact	1	Select 'Hospital triage' or 'Inpatient consult'	Tick Box
Date/Time of First Clinical Contact	1		Date/Time
Source of Diagnostic ECG	1	Select Hospital	Tick Box
Date/Time of Diagnostic ECG	1		Date/Time
Date/Time of ECG Reading Service Contact	1	Use time ECG was transmitted or faxed/emailed	Date/Time
Presentation Source to this Hospital	1	Select community self-present, hospital transfer or existing inpatient	Tick Box
Date/Time of Arrival at this Hospital	1	Not applicable if existing inpatient at the time of STEMI	Date/Time
Out of Hospital Cardiac Arrest	1	Out of hospital cardiac arrest	Yes/No
Patient Intubated	1		Yes/No
Thrombolysed	1	Select NAT, IHT or Nil	Tick Box
Date/Time of Thrombolysis	1		Date/Time
Thrombolytic Agent Used	1	Select 'Tenecteplase' or 'Other'	Tick Box
Transferred to Cath. Lab. Facility	1		Yes/No
Date/Time of Transfer Request	1	Time ambulance/Medical Retrieval Unit contacted to request patient transfer	Date/Time
Date/Time of Transfer	1	Time patient actually left facility	Date/Time
Transfer Mode	1	Select 'Road ambulance', 'helicopter', 'fixed wing'	Tick Box

Definitions

PPCI = Primary percutaneous coronary intervention
PHT = Protocol Directed, Paramedic Administered Pre-Hospital Thrombolysis **IHT** = In Hospital Thrombolysis
NAT = Nurse Administered Thrombolysis NB: Where times are required only use 24-hour clock

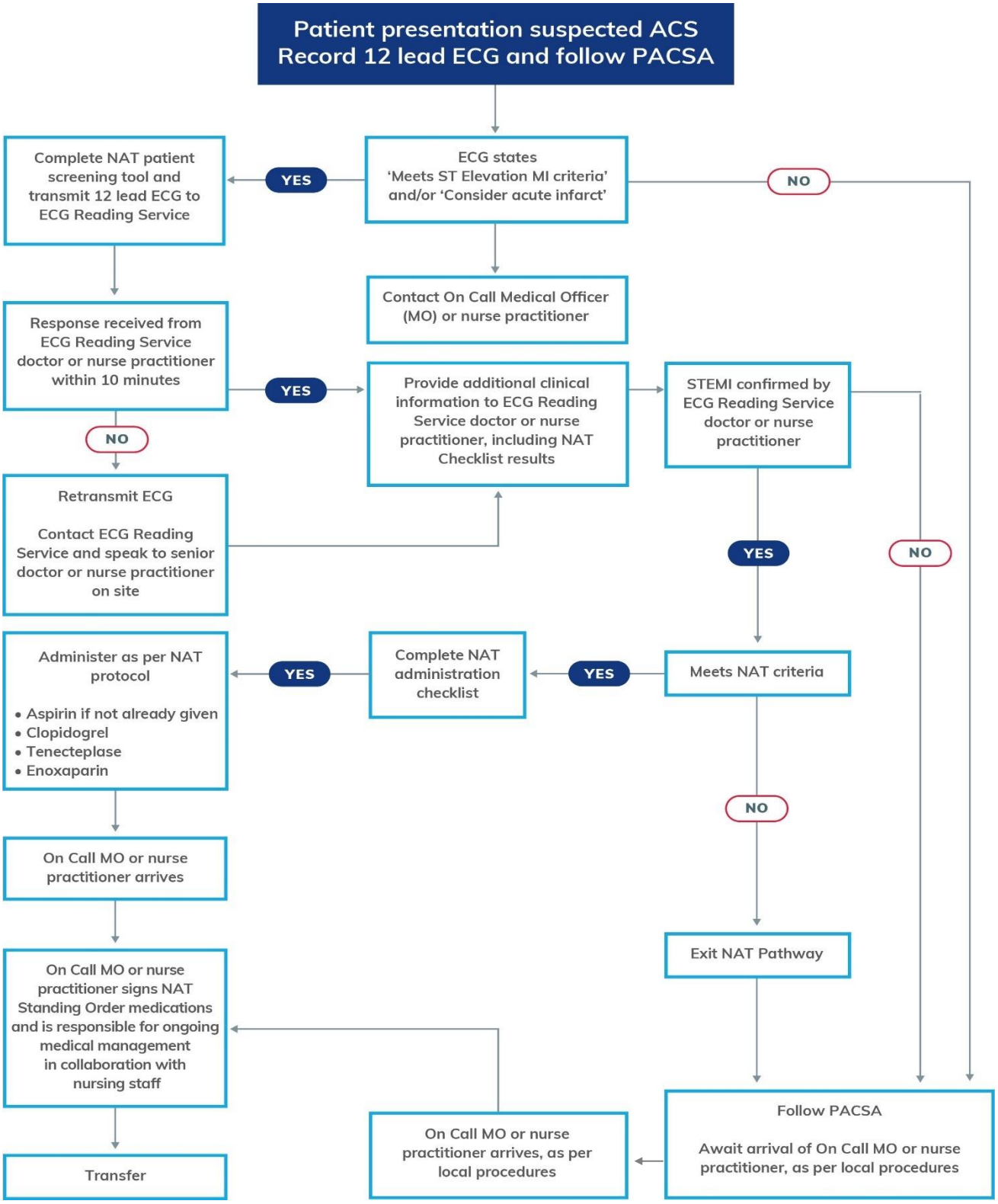
11.2.2. Recommended Dataset for STEMI

Variable	Sect.	Definition	Format
Heart Rate	1	First recorded heart rate (use ambulance data if available)	
Systolic blood pressure (BP)	1	First recorded BP (use ambulance data if available)	
Maximum ST Deviation	2	Record lead and mm of elevation or depression	
Cardiac Biomarker (Type)	1	Troponin I, Troponin T, Troponin-High Sensitivity or creatine kinase-MB	Tick box
Cardiac Biomarker (Assay)*	1	**Only required if Troponin I used**	Tick box
Cardiac Biomarker (Values)	3	Record Initial, 24-hour peak and upper reference limit	
Creatinine	2	Record baseline and peak values	
Full Blood Count	3	Record initial haemoglobin, white cell count and platelets	
Killip Class	2	Select class I - IV (include definition on form). Record on arrival and worst during admission	Tick box
Intra-arterial balloon pump required	1		Yes/No
Smoking History	1	Select 'current', 'past' or 'never'. Actively smoking in the last month = current	Tick box
Hypertension	1	Select YES if documented history prior to this admission	Yes/No
Hyperlipidaemia	1	Select YES if documented history prior to this admission	Yes/No
Diabetes Mellitus	1	Select YES if documented history prior to this admission	Yes/No
Prior Myocardial Infarction	2	Select YES if documented in health care record. If YES, add date (month and year) if known	Yes/No+
Prior percutaneous coronary intervention	2	Select YES if documented in health care record. If YES, add date (month and year) if known	Yes/No+
Prior Coronary Artery Bypass Graft	2	Select YES if documented in health care record. If YES, add date (month and year) if known	Yes/No+
Family History of Premature Coronary Heart Disease	1	Select YES if parent or sibling diagnosed with Coronary Heart Disease (male relative under 55, female relative under 65)	Yes/No
Atrial Fibrillation	1	Select YES if documented history prior to this admission	Yes/No
Previous TIA/Stroke	1	Select YES if documented history prior to this admission	Yes/No
Aspirin	2	If YES, record date and time of first dose given (during this presentation)	Yes/No+
Other Antiplatelet	3	If YES, record agent, date and time of first dose given (during this presentation)	Yes/No+

Novel Oral Anti-Coagulant	3	If YES, record agent, date and time of first dose given (during this presentation)	Yes/No+
Statin Therapy	2	If YES, record date and time of first dose given (during this presentation)	Yes/No
Interpreter Needed for Consent	1		Yes/No
In-Hospital Outcome Data			
In-Hospital Death	1		Yes/No
Repeat MI	1	If YES, also select one of the options listed below	Yes/No
		1. Spontaneous Myocardial Infarction [troponin or creatine kinase-MB greater than 3 times the upper reference limit or new Q waves or Left Bundle Branch Block]. If biomarkers are elevated at re-myocardial infarction onset, greater than 20% increase in troponin above stable baseline or greater than 50% in creatine kinase-MB above stable baseline is required. 2. [early] stent thrombosis 3. Recurrent ST elevation greater than 1 mm increase [in 2 leads] at less than 18 hours post index myocardial infarction (excluding 1 or 2 above) 4. Post Coronary Artery Bypass Graft – myocardial biomarkers [troponin or creatine kinase-MB greater than 5 times the upper reference limit or new Q waves or new Left Bundle Branch Block]	
Major Bleeding	1	Select YES if event requiring transfusion and/or decrease in haemoglobin by greater than 4 g/ dl	Yes/No
Cerebrovascular accident	1		Yes/No

11.3. Nurse Administered Thrombolysis Assessment Tools

11.3.1. Nurse Administered Thrombolysis Treatment Pathway



11.3.2. Nurse Administered Thrombolysis Patient Screening Tool

NSW Health

Facility:

NURSE ADMINISTERED THROMBOLYSIS

FAMILY NAME | MRN

GIVEN NAME | ☐ MALE ☐ FEMALE

D.O.B. _____/_____/_____ | M.O.

ADDRESS

LOCATION / WARD

COMPLETE ALL DETAILS OR AFFIX PATIENT LABEL HERE

SMR060810

Holes Punched as per AS2828.1: 2019

BINDING MARGIN - NO WRITING

MUST BE USED WITH PATHWAY FOR ACUTE CORONARY SYNDROME ASSESSMENT (PACSA)

Nurse Administered Thrombolysis Patient Screening Tool

	Tick YES or NO for each. If the patient is unable to answer questions, another person with sufficient knowledge of their medical history such as a relative, friend, carer, general practitioner may provide information on their behalf. However, where a patient lacks capacity to consent, a Person Responsible must be available for consent.	YES	NO	COMMENTS
1	The patient complains of non-traumatic chest pain or other symptoms consistent with acute coronary syndrome/myocardial ischaemia (consider atypical symptoms in women, people with diabetes and patients 75 years and over)			
2	The patient confirms sustained symptom onset was less than 12 hours ago			
3	The patient is conscious			
4	Pulse rate is less than 150 beats per minute, systolic blood pressure is less than 180 mmHg and diastolic blood pressure is less than 110 mmHg			
5	The patient has **no** previous allergy, hypersensitivity or adverse reaction (including heparin induced thrombosis-thrombocytopenia syndrome HITTS) to clot dissolving or antithrombotic medications such as alteplase, tenecteplase, heparin or enoxaparin			
6	When asked if taking medication to thin their blood or to treat or prevent blood clots, the patient confirms they are not taking: • warfarin *(Coumadin or Marevan)* ™ • dabigatran *(Pradaxa)*™ • rivaroxaban *(Xarelto)* ™ • apixaban *(Eliquis)* ™ or any other anticoagulant. *Use of antiplatelet medications such as aspirin, clopidogrel, prasugrel and ticagrelor are not a contraindication* **CHECK PATIENT MEDICATIONS**			
7	The patient confirms **no** active, suspected or known bleeding tendency or recent blood loss (within 4 weeks) except normal menstruation			
8	The patient confirms **no** gastrointestinal or other internal bleeding in the last 4 weeks			
9	The patient confirms **no** surgical operation, invasive procedure, tooth extractions, significant trauma requiring hospital admission or head injury within the last 4 weeks			
10	The patient has **not** had an intracerebral haemorrhage at any time			
11	The patient has **not** had an ischaemic stroke, transient ischaemic attack (TIA or mini-stroke) in the last 12 months*			
12	The patient is **not** pregnant, nor has given birth including miscarriage in the last 2 weeks*			
13	The patient has **no** known liver or renal failure*			
14	STEMI confirmed by the ECG Reading Service from transmitted 12 Lead ECG			

Do Not proceed with Nurse Administered Thrombolysis unless all responses are YES

Name: _____ Signature: _____

Designation: _____ Date: _____/_____/_____

* Urgent medical advice should be sought regarding risk versus benefit, and potential for thrombolysis outside of the NAT protocol in patients who 1) a. are pregnant/or have recently delivered b. have liver failure or c. have had ischaemic stroke in the last 3 - 12 months, due to heightened bleeding risk and 2) severe renal impairment (creatinine clearance less than 30 mL/minute), due to the need for modified dose of enoxaparin or substitution with heparin.

NH-700083 100822

NURSE ADMINISTERED THROMBOLYSIS SMR060.810

NO WRITING

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11.3.3. Nurse Administered Thrombolysis Administration Checklist

NSW Health

Facility:

NURSE ADMINISTERED THROMBOLYSIS

FAMILY NAME | MRN

GIVEN NAME | ☐ MALE ☐ FEMALE

D.O.B. _____ / _____ / _____ | M.O.

ADDRESS

LOCATION / WARD

COMPLETE ALL DETAILS OR AFFIX PATIENT LABEL HERE

Nurse Administered Thrombolysis Administration Checklist

A. To proceed, all responses must be ticked YES for all sections	YES	NO
ECG indicates *"Meets ST Elevation MI Criteria"* and/or *"Consider Acute Infarct"* or *"Acute STEMI"* or *"Possible Acute STEMI"*		
The ECG has been transmitted to the ECG Reading Service		
The medical officer on call has been notified		
The ECG Reading Service medical officer confirms that the ECG meets STEMI criteria		
Name of ECG Reading Service medical officer: Time consulted:		
Nurse Administered Thrombolysis patient screening tool completed and all responses are YES		

B. *Patient information script* - To be read exactly

NB: The interpreter service must be contacted for any patients who are are not fluent in English or who are deaf.

Your ECG (heart tracing) has been sent to a doctor who has confirmed that you [or the person for whom you are responsible] are having a heart attack. This is caused by a clot blocking blood flow to your heart muscle. The longer the blockage is left untreated, the more of the heart muscle is damaged. Your recommended treatment includes a clot busting medicine called TENECTEPLASE and medicines that reduce new clots forming called ENOXAPARIN, ASPIRIN and CLOPIDOGREL.

The sooner you [or the person for whom you are responsible] receives these medicines, the lower your risk of dying from this heart attack - which is why doctors recommend that treatment is started as soon as possible.

The likely benefits of using these medicines are generally much greater than the risks of potential harm for someone having a heart attack.

Treatment generally improves the chances of surviving by about 25%, although it can sometimes cause serious side effects. These risks include; significant bleeding, which is not normally life threatening and can occur in about 4 in 100 patients and there is a risk of life-threatening stroke, which can affect up to 2 in every 100 patients. Some patients may have allergic reactions and other side effects that do not usually cause any major problems.

Interpreter ..... / ..... /20..... : .....
PRINT NAME | SIGNATURE | DATE | TIME | Emp ID/Prov No.

C. Patient Consent - Patient [or the Person Responsible] agrees with the following: Where a person lacks capacity to consent, a Person Responsible may consent on their behalf. A Person Responsible in accordance with section 33A of the Guardianship Act 1987 (NSW) is, in descending order: an appointed guardian; a spouse or de facto spouse; an unpaid carer; or an unpaid close friend or relative.

Name [and relationship] of Person Responsible if applicable: _____

- I have been advised that I [or the person for whom I am responsible] am having a heart attack. The information outlining the risks and benefits of treatment has been read to me
- I understand that I [or the person for whom I am responsible] will be given a clot dissolving drug and associated treatment
- I have been provided with the opportunity to ask questions about the risks and benefits of the treatment
- I consent to this treatment

D. Nurse Declaration	YES	NO
The patient information script was read exactly to the patient [or Person Responsible] (section B)		
The patient [or the Person Responsible] verbally indicates that they consent to the treatment by agreeing with the statements above (section C)		

I declare that I have read the information script to the patient [or the Person Responsible], provided opportunity for them to ask questions and gained verbal consent to administer Nurse Administered Thrombolysis

Name: _____ **Signature:** _____

Designation: _____ **Date and Time:** ____/____/____ ____:____

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NO WRITING

Holes Punched as per AS2828.1:2019

BINDING MARGIN - NO WRITING

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