National Registry of Diseases Office
Health Promotion Board
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Guidelines

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ABBREVIATIONS

3.1.	AMI	–	Acute Myocardial Infarct
3.2.	SMIR	–	Singapore Myocardial Infarct Registry
3.3.	HCI	–	Healthcare institution (e.g. hospital / clinic)
3.4.	HIDS	–	Hospital Inpatient Discharge Summary
3.5.	NRDO	–	National Registry of Diseases Office
3.6.	ICD10	–	International Classification of Diseases 10th Revision
3.7.	sFTP	–	secured File Transfer Protocol (Secured Electronic Data Transmission)

PART I. INTRODUCTION

The National Registry of Diseases (NRD) Act became operational on 1 August 2009 to establish the National Registry of Diseases and to provide for compilation of information on the incidence of certain diseases for use as a basis for direction of programme for disease prevention and control, and for purposes connected therewith.

Acute Myocardial Infarction is another reportable disease which has been included under the NRD Act, effective from 1st September 2012. Hence, it is mandatory for managers of Healthcare institutions to notify all cases diagnosed or undergoing treatment for Acute Myocardial Infarction to the Singapore Myocardial Infarction Registry of the National Registry of Diseases Office.

These guidelines have been written to assist managers of healthcare institutions and medical practitioners to better understand the responsibilities in the notifications of Acute Myocardial Infarction cases and providing the additional information (as applicable).

PART II. DEFINITION

"acute myocardial infarction" means myocardial infarction with one or more of the following:

(*a*) changes in cardiac biomarkers beyond the typical limits applicable to the particular test used, together with —

(i) symptoms indicative of myocardial ischaemia; or

(ii) electrocardiogram changes indicative of new myocardial ischaemia;

(b) development of new pathological Q waves in the electrocardiogram of the patient;

(c) new loss of viable myocardium or new regional wall motion abnormality;

(d) fresh thrombus;

and includes acute myocardial infarction developed as a complication of cardiovascular intervention for some other cardiac condition;

"patient" means a person to whom a notification referred to in regulation 3 relates.

PART III. PATHWAYS AND TIMELINE FOR NOTIFICATION OF CASES

Table 1 shows the pathways and timeline for reporting Acute Myocardial cases. It is important to send listings and notifications of Acute Myocardial Infarction cases not later than the timeline as stated so that NRDO can produce trend reports timely.

TABLE 1: Pathways and Timeline of reporting

Pathways of reporting	**Timeline**	**Mode of data transmission**
1. Diagnosis of "acute myocardial infarction (AMI)" **notification form** • For new cases diagnosed on /after 1st September 2012 at healthcare institutions. • Treatment of acute myocardial infarction which commenced. • Where patient is undergoing treatment for acute myocardial infarction which commenced.	Not later than 3 months after the diagnosis Before 1st September 2012 and continues on or after that date, not later than 30th November 2012. On or after 1st September 2012, not later than 3 months after the treatment commenced.	a. E- Notification - @ www.moh.gov.sg or b. Hard copy can be downloaded @ www.nrdo.gov.sg or requested from the National Registries of Diseases Office (NRDO) Tel : 6435 3039 / 3091 Email : hpb.servicenrdo@hpb.gov.sg and send by: **Registered mail** / by hand (including courier service) to: Singapore Myocardial Infarction Registry National Registries of Diseases Office Health Promotion Board Level 5, 3 Second Hospital Avenue Singapore 168937 **N.B. Please DO NOT submit the form via email or fax.**

Pathways of reporting	Timeline	Mode of data transmission
2. Listings: • **HIDS (ICD9-410) Listings** • **Cardiac Enzymes (CPK / CKMB / TnT / TnI) Listings** • **Listings of Percutaneous Coronary Intervention (PCI)**	Monthly	Listings can be sent via any of the following: Electronically transmitted via secure File Transfer Protocols (sFTP) / File encryption.

Notification can be done with the following minimal mandatory data items:

1. Identification number of patient (NRIC number, passport number, Foreign Identification number or hospital registration number).
2. Name of patient
3. Date of birth or age of patient (if date of birth is unknown).

However every effort should be made to complete the notification form. Upon receipt of the notification if additional information is required, the registry coordinator will contact the managers or designated staff of the healthcare institutions to arrange for the data collection.

The manager of the healthcare institution is legally responsible to ensure that the required information is provided to the registry.

PART IV. DATA ITEMS ON DIAGNOSIS OR COMMENCEMENT OF TREATMENT OF ACUTE MYOCARDIAL INFARCTION NOTIFICATION FORM

Guidelines for Completing AMI Notification Form	
SECTION 1 : PARTICULARS OF PATIENT	
Account Number	Hospital Account Number/Patient Account Number
Name of patient	The patient's name from NRIC/ Passport/ Birth certificate/employment pass/work permit/ case-notes.
NRIC Passport No. Hospital Registration No. Foreign Identification No (FIN)	Patient's personal Identification number <u>NRIC No.</u> Applicable to Singapore citizens and Permanent Residents National Registration Identity Card (NRIC) number is a set of 9 alpha-numeric given to each Singapore citizen or Permanent Resident at age15 and older It should be entered as in the format - SXXXXXXXC or TXXXXXXXC for those Singaporean born from 2000 <u>Passport No.</u> Applicable to Foreigners only Enter passport no. if FIN no. is unavailable <u>Hospital Registration No.</u> Applicable to Foreigners and residents admitted to hospital without personal identification number e.g. NRIC or FIN no. <u>FIN No.</u> Applicable to Foreigners only Foreign Identification Number (FIN) is the set of 9 alphanumeric assigned to foreigners who are issued with immigration (visit pass) or work passes in Singapore. If patient has both FIN & Passport Nos. – enter the FIN No.
Date of Birth	Day, month and year of the patient's birth If only the year of birth is available, enter the date as 01/01/YYYY and tick estimated date.
Resident Status	Tick accordingly: • Singapore citizen • Singapore Permanent Resident • Others – refers to Non- residents, select from 'drop-down' list
Gender	Tick accordingly: • Male • Female

Ethnic Group	Tick accordingly: • Chinese • Malay • Indian • Eurasian • Others - for groups not classified as Chinese / Malay / Indian / Eurasian, select from drop down list
Residential Postal code	Enter the postal code of patient's residential address in Singapore
SECTION 2 : ADMISSION DATA	
Date of Admission	Enter date (DD/MM/YYYY) of admission
Date of Discharge	Enter date (DD/MM/YYYY) of discharge Tick accordingly the discharge status: • AOR • Non AOR
Transferred To	Patient transferred to other hospital for continuation of treatment If transferred, select from the dropdown list of hospital If no transfer, select No
Transferred from other acute care or specialist hospital:	Tick accordingly: • Yes - select from dropdown list of hospitals • No If the transfer is Yes, tick accordingly: • Urgent transfer without admission • Urgent transfer after admission

Admitting Hospital:	Tick accordingly the Hospital where the patient is admitted. • AH • CGH • KTPH • NHC • TTSH • NUH • SGH • KKH • PEH • GEH • MAH • MEH • MEH NOVENA • RH

	• NTFGH • SKGH • Others – select
Arrival at EMD:	Enter the date(DD/MM/YYY) Patient arrived / registered at Emergency Medicine Department(EMD) Tick Not Applicable if arrival at EMD does not qualify
Arrival at EMD Time:	Enter time(HHRR) at Emergency Medicine Department for: • Registration • Triage • Ambulance Tick Not Applicable if arrival at EMD does not qualify *Ambulance refers to SCDF ECG Trans* – Tick accordingly: • Yes – Indicate ECG faxed from ambulance to EMD • No *Transmission
Onset Of Symptoms	Enter date(DD/MM/YYYY) and time(HHRR) If time of onset is not available, tick Unknown
Presenting Symptoms/ Signs:	Tick accordingly: • Chest Pain • Breathlessness • Diaphoresis • Syncope • Back Pain • Epigastric Pain • Jaw Pain • Shoulder Pain • ECG changes • Elevated Cardiac Enzymes • Others – Enter symptoms/signs that are not listed
Symptoms	Tick accordingly: • **Typical -** chest pain characterized by duration of 20 minutes or more • **Atypical** - Atypical pain recorded as of short duration or intermittent with each bout lasting for less than 20mins or pain at an unusual site • Others - symptoms that do not satisfy the criteria of **typical** or atypical • None - no presenting symptoms

	• **Typical (Inadequately Described) -** For cases otherwise satisfying criteria for typical pain but the duration is not stated such as patient describe chest pain but does not know the duration • **Insufficient Data** - Where information is inadequate or missing (e.g. brought in dead)
CPR in Ambulance	Tick accordingly: • Yes • No
Brought in Dead	Tick accordingly: • Yes - Death occurred before arrival to EMD Hospital, • No
CPR in EMD	Tick accordingly: • Yes • No
Died At EMD	Tick accordingly: • Yes • No
DC Shock	Tick accordingly: • Yes • No
Heart Failure On EMD / Admission	Tick accordingly: • Killip Class 1 - No signs of pulmonary or venous congestion, itself alone is not a complication = Normal / None (no evidence of heart failure) • Killip Class 2 - Moderate heart failure (rales over lung bases up to 50%), tachypnea,S3 gallop = CCF • Killip Class 3 - Severe heart failure, rales over >50% lung field with sustained blood pressure = APO • Killip Class 4 - Shock with systolic B/P<90mmHg, evidence of peripheral constriction, mental confusion, decreased urine output = Cardiogenic Shock • Unknown - Where information is inadequate or missing (e.g. brought in dead)
Vital Signs on EMD/Admission	Enter accordingly: First Heart Rate (HR) : defined as the first recorded HR captured upon index admission • First HR : _____bpm • Unknown First Blood Pressure (BP): defined as the first recorded BP captured upon index admission. • First Systolic / Diastolic BP : _____/_____mmHg • Unknown

Management of patient after the onset of event :	Select accordingly: • In hospital • In hospital/On clinical trial • Medically unattended • In Nursing Home • Other medical consultation, excluding hospitalization, home-care • At home by a doctor • Insufficient Data
SECTION 3 : RISK FACTOR PROFILE	
Smoking	The most current status of cigarette smoking at the time of notification / data collection. Tick accordingly: • Current Smoker- has not stopped smoking • Ex-Smoker- history of smoking • Never – has never smoke a cigarette • Missing – no information is available If current smoker is selected - cessation advice given during this admission – select: • Yes • No • Unknown
Obesity	Enter Height (M) measured – If unavailable – tick unknown Enter Weight (Kg) measured at time of admission – If unavailable – tick unknown

Past History of:	If Yes, select accordingly the treatment for : • Hypertension • Diabetes Mellitus • Hyperlipidemia • AMI Event: Yes, documented - If medical records seen for the current event include past records of a coronary event Yes, undocumented - there are no past medical record that patient had AMI event but recorded in the medical history of this event is a statement that the patient had AMI Yes, if history of procedure documented for: • CABG • PTCA /PCI

	Tick No or Unknown - if No past history for the above.
Diagnosed during this Admission	Tick accordingly : • Hypertension • Diabetes Mellitus • Hyperlipidemia Tick No - if not diagnosed during this admission. For newly diagnosed Hyperlipidemia refers to diagnosis at the time of the admission which should be based on the Total Cholesterol>6.2 or LDL Cholesterol>4.1mmol/L
SECTION 4 : INVESTIGATION	
Enzyme Test Findings	If no enzyme test findings - Tick Not Done If done - Enter the value of investigations and date(DD/MM/YYYY) at time of admission
Investigations Blood Sugar	Tick accordingly and enter the admitting blood values of the tests. Criteria for capturing blood sugar and cholesterol tests must be within 48hrs of admission / inpatient event onset. Acceptable to take up to 72hrs(3days) if no test done within 48hrs Select: • Random • Fasting

Total Cholesterol HDL Cholesterol LDL Cholesterol Triglyceride HbA1c	Select: • Random • Fasting
Haemoglobin	Enter the first result values Tick Not Done – if no test is available for all
Creatinine	Enter the first result values Tick Not Done – if no test is available for all
Renal Impairment	Select • Pre-existing • New • No • Unknown

SECTION 5 : TREATMENT	
STEMI Thrombolysis: • RTPA • Streptokinase • Others Primary PTCA Rescue PTCA Facilitated PTC Urgent CABG	Tick the diagnosis accordingly –STEMI / NSTEMI: If STEMI, select Reperfusion Therapy: • Yes • No If Yes, immediate: - select the type of treatment and indicate date(DD/MM/YYYY) and time(HHRR) Enter first device date(DD/MM/YYYY) and first device time(HHRR) <u>First Device Date</u> Date of procedure performed <u>First Device Time</u> First Device Time (except wire) will be taken as the perfusion time However in the event whereby this information is not available, to capture reperfusion time at start of : a) Aspiration catheter b) Thrombuster c) Balloon/Stent If time is not available for the above, tick Unknown Failed thrombolysis followed by PTCA Thrombolysis followed by immediate PTCA Tick No if no procedure done for the above

Subsequent (12 Hours)	Select No – if no procedure is done If Yes, select the type of procedure • Cath • PTCA • CABG Planned – for procedure scheduled at a later date after discharge Select No – if no elective procedure planned If Yes - select the type of procedure: • Cath

	• PTCA • CABG
If No ReperfusionTherapy, Reasons: Subsequent (12 Hours)	Select accordingly: More than 1 reason can be selected. • Late Presentation • Declined • Contraindication, • Specify: More than 1 Contraindication can be selected. o Previous Cerebrovascular Event, Intracranial Neoplasm, AVM o Or Aneurysm o Active Bleeding e.g. Bleeding GIT, ICH, Post Op Bleeding o Conditions That increase Bleeding Risk : a. Haemorrhagic Diasthesis b. Known Thrombocytopenia c. Oral anticoagulants (INR>2) d. Prolonged CPR e. Puncture of Non-Compressible Vessel (<10Days) f. Systolic BP>200mmhg Not responding to Treatment g. Organ Biopsy Or Major Surgery Or trauma Within the Past 6 weeks h. Peptic Ulcer Within past 3mths Reasons unknown – Not selected for the above, enter Remarks for other reasons Select No – if no procedure is done If Yes, select the type of procedure: • Cath • PTCA • CABG Planned – for procedure scheduled at a later date after discharge Select No – if no elective procedure planned If Yes - select the type of procedure: • Cath • PTCA • CABG
NSTEMI	Select No – if no procedure is done If Yes, select the type of procedure: • Cath • PTCA • CABG Planned – for procedure scheduled at a later date after discharge

	Select No – if no elective procedure planned If Yes - select the type of procedure: • Cath • PTCA • CABG
MI	Select accordingly • AMI • **Type 1** • **Type 2** • **Type 3** • **Type 4a** • **Type 4b** • **Type 5**
Reinfarction within 28 days	Determination of reinfarction cases is to be based on the counting of the 28days rule from the date of onset of the 1st event against the 2nd date onset of symptoms. • Yes, Date (DD/MM/YYYY) • No
Stent Thrombosis	Myocardial infarction associated with stent thrombosis Select accordingly • Thrombosis of prior stent • Acute stent thrombosis • Not Applicable
SECTION 6 : DRUGS USED	
Stat Dose On Admission / Inpatient Event Onset within 24hrs Aspirin Other Anti-Platelet Agents	Drugs - Given at EMD/ SOC and within 24hrs after Hospital arrival. Or if patient developed AMI during current hospitalization**,** the Stat Dose on Admission applies on the date **of the onset** If ticked **No** for Drugs not administered: Select accordingly for contraindication: • Yes • No • Unknown
Current Hospitalization : Aspirin Beta-Blockers ACE Inhibitors/ARB Lipid Lowering Therapy/Statin Other Anti-Platelet Agents	Medication given in this current admission If ticked **No** for Drugs not administered: Select accordingly for contraindication: • Yes • No • Unknown

At Discharge : Aspirin Beta-Blockers ACE Inhibitors/ARB Lipid Lowering Therapy/Statin Other Anti-Platelet Agents	Medication given at discharge If ticked **No** for Drugs not administered: Select accordingly for contraindication: • Yes • No • Unknown
SECTION 7: COMPLICATIONS (IN-HOSPITAL)	
Complication of AMI: If Yes, immediate	Tick Yes or No If ticked Yes -This complication starts from the time of admission Tick accordingly the type of complications as listed: • Cardiogenic shock • Heart Failure – Tick accordingly: a. Killip Class 1 b. Killip Class 2 c. Killip Class 3 d. Killip Class 4 e. Unknown • Arrhythmic complications – If Yes • Supraventricular Arrhythmia – If Yes a. Atrial fibrillation b. Atrial flutter • Ventricular Arrhythmia – If Yes a. VF b. Sustained VT c. NSVT • Complete Heart Block
In-Patient Events	Tick Yes or No for events occurring during hospitalization • Acute Renal Failure • CVA – If Yes a. Ischaemic b. Haemorhagic c. Unknown • LVSD – If Yes, enter LVEF value which is <50% (EF %) and dates – If No, enter LVEF value which is >50 %(EF %) and date – Unknown-Test not done during current admission
SECTION 8: DEATH	
The data in this section are auto-populated from MHA.	

SECTION 9: ADMITTING ELECTROCARDIOGRAM ASSESSMENT	
If MI, Admitting Electrocardiographic (ECG) Diagnosis:	Tick accordingly: • Yes • No
Site of AMI:	*If Yes, indicate the site of myocardial infarct:* • *Anterior* • *Inferior* • *Lateral* • *Right Ventricular* • *Posterior* • *NSTEMI* • *LBBB*
Admitting ECG Bundle Branch Block :	Tick accordingly: • Yes • No If Yes, indicate the type of block: • Complete RBBB • Complete LBBB ▪ New ▪ Old
Discharge Diagnosis (AMI)	Tick accordingly: • Primary Diagnosis • Secondary Diagnosis • Others

PART V. DATA ITEMS ON LISTINGS

Note: Data items (No.1 – 4) on each listing are mandatory data fields which must be filled.

a) **Listing of HIDS with (ICD10 – I21 and I22)**

1	Name Of Patient
2	Patient NRIC/Passport/FIN/Hospital Registration No.
3	Date of Birth
4	Gender
5	Ethnic group
6	Nationality / Resident status
7	Date of admission
8	Date of Discharge
9	Diagnosis / ICD Codes
10	Name of notifying Healthcare institution (Hospital / Clinic)

b) Listing of Cardiac Enzymes (CPK /TnT / Tnl) listings

1	Name Of Patient
2	Patient NRIC/Passport/FIN/Hospital Registration No.
3	Patient's Account no
4	Date of Birth
5	Gender
6	Collection date / Date done
7	Location / Ward
8	Doctor
9	CK / CPK (U/L)
10	CK2M / CKMB Mas (ng/mL)
11	Tropt (TnT)
12	Tropt (TnT) High Sensitive (pg /mL)
13	Tropt quant (ug/L)
14	Tropt / POCT (ng/mL)
15	TNTH
16	TNI / TNIS
17	Name of notifying Healthcare institution (Hospital / Clinic)

c) Listings of Percutaneous Coronary Interventions (PCI) Cases

1	Name Of Patient
2	Patient NRIC/Passport/FIN/Hospital Registration No.
3	Procedure Date
4	Procedure
5	EMD Arrival Time
6	Procedure Time In
7	Device Start Time
8	Procedure Time Out
9	Device Type
10	Device Name
11	Device End Time
12	Presentation to Cath Lab
13	Indication Collated
14	Name of notifying Healthcare institution (Hospital / Clinic)