Winnipeg Regional Health Authority / Office régional de la santé de Winnipeg Caring for Health / À l'écoute de notre santé **WRHA Emergency Program Guideline**	**Practice Guideline:** **Management of Acute Coronary Syndrome**	
	Approved By: WRHA Emergency Program Joint Council	**Pages:** 1 of 11
	Date Approved: September 2018	**Revised Date:** June 2021

1.0 INTRODUCTION:

1.1 In the Province of Manitoba, Acute Coronary Syndrome (ACS) including unstable angina, non-ST segment elevation myocardial infarction (non-STEMI), and ST segment elevation myocardial infarction (STEMI) is a major reason for hospitalization and death. Effective therapies and adherence to treatments guidelines have had a major impact on the incidence of ACS mortality.

2.0 PURPOSE:

2.1 To standardize the care of patients who present to a WRHA Emergency Department (ED)/Urgent Care (UC) with chest pain suggestive of a coronary event.

2.2 To rapidly identify and treat patients presenting with a ST Elevation Myocardial Infarction (STEMI).

2.3 To identify and determine timing of coronary angiography for patients with non-ST elevation acute coronary syndrome (NSTEACS) which includes non-STEMI/unstable angina (UA).

2.4 To rule out ACS/chest pain not yet diagnosed (NYD).

3.0 DEFINITIONS:

3.1 **Acute Coronary Syndrome (ACS):** describes a spectrum of conditions associated with sudden reduced blood flow to the heart and includes ST Elevation Myocardial Infarction (STEMI) and NSTEACS (NSTEMI/Unstable Angina).

3.2 **Electrocardiogram (EKG):** records the electrical impulse while in a resting state with the use of electrodes placed over the skin.

3.3 **Emergency Department (ED):** WRHA Emergency Departments and Urgent Care Centres.

3.4 **Emergency Department Information System (EDIS):** part of the electronic patient record (EPR) which facilitates patient flow and timely access to clinical data. EDIS functions as an electronic patient tracking and display board, computerized triage, lab and radiology results reporting, discharge instruction and other electronic clinical documentation tool.

3.5 **First Medical Contact (FMC):** is the time of triage at the hospital or arrival of a paramedic at the side of the patient for emergency medical services (EMS) users.

3.6 **Health Professional:** a person who exercises skill and judgment in providing health care and who is licensed or registered under an Act of the Legislature or who is a member of a class of persons designated as health professionals in *The Personal Heath Information Regulation.*

3.7 **Non-ST Elevation Acute Coronary Syndrome (NSTEACS):** refers to unstable angina and Non-STEMI, both are closely related conditions whose pathogenesis and clinical presentations are similar but vary in severity. The conditions differ primarily by whether the ischemia is severe enough to cause myocardial damage leading to detectable quantities of myocardial injury biomarkers.

3.8 **ST Segment Elevation Myocardial Infarction (STEMI):** clinical syndrome defined by characteristic symptoms of myocardial ischemia in association with persistent EKG ST elevation and subsequent release of biomarkers of myocardial necrosis. The care for STEMI is the restoration of blood flow in the coronary artery. There are two treatment options for "reperfusion" modalities: primary percutaneous coronary intervention (PPCI) and fibrinolytics.

3.9 **Triage:** is a sorting process utilizing knowledge and critical thinking in which an experienced Registered Nurse assesses patients quickly on their arrival to the ED.

3.10 **Triage Nurse(s):** experienced emergency nurse(s) who have completed the WRHA Emergency Triage Orientation and are assigned to either the Triage or reassessment role.

3.11 **Primary Percutaneous Coronary Intervention (PPCI):** is a revascularization technique to treat coronary artery disease. It involves widening of the coronary artery, using a balloon catheter to dilate the artery from within. A coronary artery stent is usually placed in the artery after dilatation.

4.0 USED BY:

4.1 WRHA Emergency Program Health Professionals.

5.0 GUIDELINE:

5.1 Triage:

5.1.1 All persons presenting to an ED are to be Triaged by a Triage Nurse according to CTAS guidelines and *WRHA Policy 110.080.010 Emergency Program Triage* available at: http://home.wrha.mb.ca/corp/policy/policy.php.

5.1.2 Patients presenting to triage complaining of chest pain or discomfort suggestive of ACS (see **Appendix A** for guidelines for the identification of patients with ACS) should be given high priority at triage. Patient with suspect ACS must have a **screening electrocardiogram (EKG) immediately without delay.** This will reduce time to treatment for STEMI patients and rule out malignant arrhythmias at time of presentation.

- **5.1.2.1** 12 lead EKG target is to perform within 10 minutes and interpreted within 5 minutes by emergency physician (EP).
- **5.1.2.2** Indications for a 15 lead EKG are:
  - **5.1.2.2.1** Cardiac chest pain is GREATER than 15 minutes;
  - **5.1.2.2.2** 12 lead EKG showing ST depression in V1 and V2 with prominent R waves;
  - **5.1.2.2.3** 12 lead EKG showing signs of acute inferior MI.

5.1.3 Ensure patient has received the following medications:
- **5.1.3.1** ASA within the last 24 hours if there are no allergies or contraindications; and
- **5.1.3.2** Nitroglycerin if there are no allergies and systolic pressure is GREATER than 90 mmHg.

5.1.4 Determine and document the utilization of sildenafil (Viagra), vardenafil (Levitra) within the last 24 hours and tadalafil (Cialis) within the last 48 hours in the Triage note- *Reason For Visit* section.

5.1.5 Triage Nurse/ED nurse can initiate ACS standing orders for any suspect ACS patients.

5.2 ACS General Orders:

5.2.1 The order sets reflect the MB ACS Network recommended standards for the evaluation and treatment of suspected cardiac chest pain. The standards address five key areas: 1) Rapid identification of STEMI, 2) Rapid treatment of STEMI (Primary PCI and fibrinolysis for those patients whom transfer to the SBH Cardiac Centre cannot be accomplished within target of 100 minutes from EKG diagnosis), 3) Rapid transfer of those patients who received fibrinolysis to the SBH Cardiac Centre, 4) triage for timely coronary angiogram for NSTEACS, and 5) best practice pre and post hospital discharge.

5.2.2 The EP must determine if the patient is a STEMI or NSTEMI/Unstable angina, (see **Appendix** D: Chest Pain with Cardiac Features Algorithm) and select the correct standing order set either ACS STEMI or ACS Non- STEMI/Unstable Angina.

5.2.3 General orders on the standing orders (**Appendix B,C**) are identified with a:
- **5.2.3.1** black box (■) do not require physician order and can be initiated by the nurse as long as there are no allergies and the blood pressure criteria is met or preselected for order entry sites;
- **5.2.3.2** blank box (☐) require a physician's order to activate them. To activate the physician will select the box (☑) on the NSTEMI or STEMI physician order sheet.

5.2.4 Complete and document vital signs which include oxygen saturations (maintain oxygen saturations to 90% with oxygen therapy if applicable) and documentation of ST segments: q15min x 4, then q30min x 2 and q1hr until discharge or admission.
- **5.2.4.1** Complete and document vital signs q15min with ongoing chest pain and/or unstable vital signs.

5.2.5 Continuous cardiac monitoring with ST segment monitoring and documentation (see 5.2.4).

5.2.6 Mount and analyze initial rhythm strip and prn with rhythm changes.

5.2.7 Draws labs as per standing orders.

5.2.8 For continued unrelieved chest pain, Morphine IV can be ordered by physician and administered only if systolic blood pressure BP is GREATER than 90 mmHg. Prescriber must be notified after a total of 3 doses (total 7.5 mg).

5.3 Diagnosis of STEMI:

5.3.1 If STEMI diagnosis is certain **do not delay** treatment. The *WRHA Emergency Program ACS STEMI Standing Orders* is to be used (see example in **Appendix B**):

5.3.1.1 Arrange **immediate** appropriate transport by EP or nurse (204-986-2622) to PCI Center first (see **Appendix E**: *WRHA Cardiac Sciences STEMI Diagnosis*), state there is a "Code STEMI XXX Hospital (add hospital site e.g. "Code STEMI Grace Hospital") requiring transport. **The following patient information must be ready to provide inter facility transfer coordinator (IFTC): location department/room, name, if the patient requires transvenous pacing, inotropes, vasopressors or is intubated;**

5.3.1.2 Call the **Interventional Cardiologist** doctor on call through SBH Hospital Paging (204-237-2053).

5.3.2 If STEMI **diagnosis is uncertain**, call local on call cardiologist through site procedure or outside call cardiologist to discuss (204-237-2053).

5.3.3 If the patient is able to arrive to St Boniface Hospital (SBH) **within 100 minutes from EKG Diagnosis** STEMI patients should be transferred for primary coronary intervention (PCI). Refer to *WRHA Emergency Program ACS STEMI Standing Orders* section *1. Candidate for PCI*.

5.3.4 If patient transfer to SBH will be **GREATER than 100 minutes** than:

5.3.4.1 If patient is a candidate for fibrinolysis administer fibrinolysis at the site. Refer to *WRHA Emergency Program ACS ST Elevation Myocardial Infarction (STEMI) Standing Orders* section *2. Candidate for Fibrinolysis, Non Primary PCI Candidate* (see example **Appendix B**).

5.3.4.2 The EP will immediately:

5.3.4.2.1 arrange for immediate transfer for coronary angiogram;

5.3.4.2.2 call " **Interventional Cardiologist** on call doctor", (204-237-2053) to discuss patient;

5.3.4.2.3 complete cath lab referral form and send with patient.

5.4 Diagnosis of NSTEACS (Non-STEMI or Unstable Angina):

5.4.1 Once diagnosed by the EP all suspect NSTEACS patients should be risk stratified using the TIMI Risk Score for UA/Non-STEMI (**Appendix D:** *WRHA Cardiac Sciences Chest Pain with Cardiac Features*) by the EP:

5.4.1.1 **Unstable** ACS (non-STEMI): refractory angina, heart failure, life threatening arrhythmias or hemodynamic instability;

5.4.1.1.1
- Call outside call cardiologist (204-237-2053) or local specialist to discuss;
- Complete Cath Lab Referral form send with patient or fax (204-258-1089);
- Administer treatment for likely ACS (use *WRHA Emergency Program Non-STEMI/UA Standing Orders,* see example in **Appendix C**);
- Arrange appropriate transport - **Target transfer to cath lab LESS than 120 minutes from first medical**

contact (FMC).

5.4.1.2 **High Risk** ACS (non-STEMI): recurring chest pain, dynamic ST-T changes;

5.4.1.2.1
- Call outside call cardiologist (204-237-2053) or local specialist to discuss;
- Complete Cath Lab Referral form send with patient or fax (204-258-1089);
- Administer treatment for likely ACS (use *WRHA Emergency Program Non-STEMI/UA Standing Orders*);
- Arrange appropriate transport - **Target transfer to cath lab LESS than 24 hours from FMC.**

5.4.1.3 Intermediate Risk ACS (non-STEMI): **TIMI risk score 3 or GREATER** excluding Unstable ACS or High RISK ACS patients;

5.4.1.3.1 If patient has a TIMI risk score 3 or GREATER:
- Complete Cath Lab Referral form and fax (204-258-1089);
- Administer treatment for likely ACS (use *WRHA Emergency Program Non-STEMI/UA Standing Orders*);
- Arrange appropriate transport - **Target transfer to cath lab LESS than 72 hours from FMC.**

5.4.1.4 **TIMI Score 2 or LESS**; CONSIDER:

5.4.1.4.1 Pre discharge graded exercise test (GXT) if available;

5.4.1.4.2 Discharge home with follow-up cardiology/internal medicine;

5.4.1.4.3 If unsure call cardiologist (204-237-2053) or local specialist to discuss patient;

5.4.1.4.4 If smoker; assess for nicotine withdrawal, consider nicotine replacement therapy (NRT) and referral to Smoker Helpline (www.smokerhelpline.ca).

5.4.1.5 NRT should be offered to the NSTEACS population.

6.0 DOCUMENTATION:

6.1 All pertinent patient information must be documented in the patient health record (PHR), including but not limited to:

6.1.1 pertinent history including past medications;

6.1.2 all assessments;

6.1.3 vital signs (includes oxygen saturations with any oxygen therapy to maintain oxygen saturations and documentation of ST segments with every VS: q15min x 4, then q30min x 2 and q1hr until discharge or admission);

6.1.4 pain assessments including description of pain, interventions and reassessments;

6.1.5 any procedures or tests that have been completed;

6.1.6 medications given with date and time;

6.1.7 safe patient handover documentation for shift to shift and inpatient/IFT transfers.

7.0 GUIDELINE CONTACT:

7.1 WRHA Emergency Program Quality Process Improvement Officer.

8.0 REFERENCES:

8.1 Cardiac Care Network. (2013). Management of Acute Coronary Syndromes. Retrieved

from: http://www.ccn.on.ca/ccn_public/uploadfiles/files/ACS_management_in_remote_communities_FINAL_Sept_2013.pdf.

8.2 O'Gara, P. (2012). 2013 ACCF/AHA Guideline for the Management of ST-Elevation Myocardial Infarction. Retrieved from: https://www.heart.org/idc/groups/heart-public/@wcm/@mwa/documents/downloadable/ucm_453635.pdf.

8.3 Roffi, M. (2016). 2015 ESC Guidelines for the Management of Acute Coronary Syndromes in patients without Persistent ST Segment Elevation. European Heart Journal, 37, 267-315.

8.4 WRHA Cardiac Sciences Program. (2021). Chest Pain with Cardiac Features-Algorithm. Retrieved from: https://www.umanitoba.ca/faculties/health_sciences/medicine/units/cardiac_sciences/acsnetwork.html.

8.5 WRHA Cardiac Sciences Program. (2020). MB ACS Network 17 Recommended Standards. Retrieved from: https://www.umanitoba.ca/faculties/health_sciences/medicine/units/cardiac_sciences/acsnetwork.html.

8.6 WRHA Cardiac Sciences Program. (2014). Standard Work Sheet: 15 Lead EKG.

8.7 WRHA Cardiac Sciences Program. (2021). STEMI Diagnosis-Algorithm. Retrieved from: https://www.umanitoba.ca/faculties/health_sciences/medicine/units/cardiac_sciences/acsnetwork.html.

Appendix A

Identification of Suspect ACS Patients by the Triage Nurse or RN
Patients with the following signs and symptoms require immediate assessment by the triage nurse for the initiation of the ACS Standing Orders:
·chest pain, pressure, tightness, or heaviness; pain in neck, jaw, shoulders, back, or one or both arms;
·indigestion or "heartburn", nausea and/or vomiting associated with chest discomfort;
·persistent shortness of breath;
·weakness, dizziness, lightheadedness, loss of consciousness.
Patients with the following symptoms and signs require immediate RN assessment for the initiation of the ACS Standing Orders:
·chest pain or severe epigastric pain, non-traumatic in origin, with components typical of myocardial ischemia or AMI:
·central/substernal compression or crushing chest pain;
·pressure, tightness, heaviness, cramping, burning, aching sensation;
·unexplained indigestion, belching, epigastric pain;
·pain in neck, jaw, shoulders, back, or 1 or both arms;
·associated dyspnea;
·associated nausea and/or vomiting;
·associated diaphoresis.
Patient Medical History and Vital Signs
The triage nurse should take a brief, targeted, initial history with an assessment of current or past history of:
·coronary artery bypass graft (CABG), PCI, Coronary Artery Disease (CAD), angina on effort, or MI;
·nitroglycerin use to relieve chest discomfort;
·sildenafil (Viagra), vardenafil (Levitra) within the last 24 hours and tadalafil (Cialis) within the last 48 hours;
·risk factors, including smoking, hyperlipidemia, hypertension, diabetes mellitus, family history of CAD, and cocaine or methamphetamine use;
·arrhythmia history should include if the patient has a permanent pacemaker or implantable cardioverter-defibrillator;
·pregnancy complications including gestational hypertension, preeclampsia, eclampsia, hemolysis elevated liver enzymes low platelet count (HELLP)
·regular and recent medication use.
Atypical Presentations:
·women may present more frequently than men with atypical chest pain and symptoms such as epigastric pain and unexplained indigestion;
· patients with diabetes may have atypical presentations due to autonomic dysfunction;
·elderly patients may have atypical symptoms such as generalized weakness, stroke, syncope, or a change in mental status.

*** Adapted From: Cardiac Care Network-Management of Acute Coronary Syndromes

Appendix B: Page 1 of STEMI Standing Orders

Winnipeg Regional Health Authority / Office régional de la santé de Winnipeg
Caring for Health / À l'écoute de notre santé

WRHA Emergency Program
Acute Coronary Syndrome (ACS)
ST Elevation Myocardial Infarction (STEMI)
Standing Orders

These orders are to be used as a guideline and do not replace sound clinical judgement and professional practice standards. Patient allergies and contraindications must be considered when completing these orders.
■ *Automatically Activate, if not in agreement cross out and initial* ☐ *Activated by Checking Box*

Allergies: ☐ Unknown ☐ No ☐ Yes _____ Weight: _____ kg ☐ Estimated ☐ Actual

REPERFUSION STANDING ORDERS

DATE D D M M M Y Y Y Y TIME 24 HOUR

- ■ Oxygen Therapy to maintain saturation GREATER than or EQUAL to 90%
- ■ Establish peripheral venous access x 2
- ■ acetylsalicylic acid 160 mg po, chew and swallow x 1 dose, (if not taken previously within 24 hours), then 81 mg po daily
- ■ **If systolic pressure GREATER than 90 mmHg:**
  - ■ nitroglycerin spray 0.4 mg sublingual q5min x 3 doses prn for chest pain
  - ☐ nitroglycerin patch _____ mg/hr (usual 0.4 mg/hr) for 24 hours x 1 patch

  NOTE: Do not give nitroglycerin if sildenafil (VIAGRA) or vardenafil (LEVITRA) was taken within last 24 hours or tadalafil (CIALIS) was taken within 48 hours
- ☐ morphine 2.5 mg IV q5min prn for continued unrelieved chest pain (only to be given if systolic BP is GREATER than 90 mmHg)

  NOTE: Notify prescriber if a total of 3 doses (7.5 mg) is given
- ☐ ondansetron 4 mg PO/IV q8h prn for nausea

NOTE: If STEMI diagnosis CERTAIN, arrange immediate transport to SBH, then call SBH Paging at 204-237-2053 and ask for the Interventional Cardiologist on call. If STEMI diagnosis UNCERTAIN, call local specialist or SBH Paging and ask for the Outside Call Cardiologist to discuss the case

GENERAL ORDERS

- ■ EKG 12 lead STAT
- ☐ EKG 15 lead (RV4, V8, V9) STAT
- ☐ EKG posterior leads (V7, V8, V9) STAT
- ☐ EKG right sided chest leads (RV3, RV4, RV5, RV6) STAT
- ■ Draw CBC, sodium, potassium, chloride, total CO_2, urea, creatinine, glucose, troponin, STAT
- ■ Repeat troponin in 2 hours post baseline (Time 0 = first blood sample)
- ■ Vital signs (including oxygen saturations and documentation of ST segments) q15 minutes x 4, q30 minutes x 2, and q1h until discharge or admission. Continue q15 minutes with ongoing chest pain and/or unstable vital signs
- ■ Continuous cardiac monitor with ST segment monitoring
- ■ Mount and analyze initial rhythm strip and prn with rhythm changes
- ■ Review and document ACP status

Diet
- ■ NPO

Activity
- ■ Bed rest

1. Candidate for Primary Percutaneous Coronary Intervention (PCI)

- ■ Antiplatelet Order

Choose ONE only if not previously administered:
- ☐ ticagrelor 180 mg po x 1 dose STAT (PREFERRED unless contraindicated)
  OR
- ☐ clopidogrel 600 mg po x 1 dose STAT

- ■ Anticoagulant Order

Choose ONE only:
- ☐ heparin IV bolus 70 units/kg x 1 dose STAT (maximum dose 10,000 units) (PREFERRED unless contraindicated)
  Note: no continuous heparin infusion required
  OR
- ☐ enoxaparin IV 0.5 mg/kg x 1 dose STAT

CRITERIA/INDICATIONS for Primary PCI:

- ■ **Patient arrival to SBH WITHIN 100 minutes from EKG diagnosis**

Patient arrival to SBH GREATER THAN 100 minutes AND
- ☐ Cocaine Use, *OR*
- ☐ Contraindication to lytics, *OR*
- ☐ Cardiogenic shock
- ☐ Pulmonary edema, *OR*
- ☐ Recurrent VF/VT, *OR*

If patient is a PCI candidate with STEMI diagnosis, continue with orders. If No, consider fibrinolysis (see section 2).
- ■ First arrange immediate transport to SBH Heart Cath lab
- ■ Call SBH Paging at 204-237-2053 and ask for the Interventional Cardiologist on call.

PHYSICIAN'S SIGNATURE (GENERIC EQUIVALENT AUTHORIZED) ▶ MD

FAX SENT ☐ DATE D D M M M Y Y Y Y TIME 24 HOUR

Appendix C: Page 1 of Non-STEMI Standing Orders

WRHA Emergency Program
Acute Coronary Syndrome (ACS)
Non-ST Elevation Myocardial Infarction (Non-STEMI)/
Unstable Angina Standing Orders

These orders are to be used as a guideline and do not replace sound clinical judgement and professional practice standards. Patient allergies and contraindications must be considered when completing these orders.
■ *Automatically Activate, if not in agreement cross out and initial* ☐ *Activated by Checking Box*

Allergies: ☐ Unknown ☐ No ☐ Yes _____ **Weight:** _____ kg ☐ Estimated ☐ Actual

ALL MEDICATION and INTRAVENOUS ORDERS

DATE (D D M M M Y Y Y Y) TIME (24 HOUR)

- ■ Oxygen Therapy to maintain saturation GREATER than or EQUAL to 90%
- ■ Establish peripheral venous access x 2
- ■ acetylsalicylic acid 160 mg po, chew and swallow x 1 dose (if not taken previously within 24 hours) then 81 mg po daily
- ■ **If systolic pressure GREATER than 90 mmHg:**
  - ■ nitroglycerin spray 0.4 mg sublingual q5min x 3 doses prn for chest pain
  - ☐ nitroglycerin patch _____ mg/hr (usual 0.4 mg/hr) for 24 hours x 1 patch

  NOTE: Do not give nitroglycerin if sildenafil (VIAGRA) or vardenafil (LEVITRA) was taken within last 24 hours or tadalafil (CIALIS) was taken within 48 hours
- ■ acetaminophen 650 mg po q4h prn for pain
- ☐ morphine 2.5 mg IV q5min prn for continued unrelieved chest pain (only to be given if systolic BP is GREATER than 90 mmHg)
  NOTE: Notify prescriber if a total of 3 doses (7.5 mg) is given
- ☐ ondansetron 4 mg po/IV q8h prn for nausea
- ☐ dimenhyDRINATE 25–50 mg po/IV q6h for nausea
- ☐ ticagrelor 180 mg po x 1 dose, then 90 mg po BID OR
- ☐ clopidogrel 600 mg po x 1 dose, then 75 mg po daily
- ☐ atorvastatin 80 mg po daily OR
- ☐ rosuvastatin 40 mg po daily

Anticoagulation Options: (choose one option below)

A
CrCl must be GREATER than 30 mL/min
(See Serum CrCl Cut-Off Points table on back of page)
☐ enoxaparin _____ mg subcut STAT x 1 dose then q12h

Weight	Dose	Weight	Dose
☐ 40–49 kg	40 mg	☐ 110–129 kg	120 mg
☐ 50–69 kg	60 mg	☐ 130–149 kg	140 mg
☐ 70–89 kg	80 mg	☐ GREATER than 149 kg	Use Unfractionated Heparin
☐ 90–109 kg	100 mg		

B
☐ Initial heparin bolus 60 units/kg (not to exceed 4000 units)
Followed by heparin infusion 12 units/kg/hr
(initial infusion not to exceed 1000 units/hour)
heparin initial bolus _____ units IV immediately followed by heparin infusion at _____ units/hour
■ Adjust heparin according to ACS nomogram

C
CrCl must be GREATER than 30 mL/min
(See Serum CrCl Cut-Off Points table on back of page)
☐ fondaparinux 2.5 mg subcut q24h

PHYSICIAN'S SIGNATURE (GENERIC EQUIVALENT AUTHORIZED) ▶ MD

GENERAL ORDERS

- ■ EKG 12 lead STAT
- ■ Repeat EKG 12 lead STAT in 2 hours at _____ and PRN with recurrent signs of ischemia
- ■ Repeat EKG q30 minutes with ongoing chest pain
- ☐ EKG 15 lead (RV4, V8, V9) STAT
- ☐ EKG posterior leads (V7, V8, V9) STAT
- ☐ EKG right sided chest leads (RV3, RV4, RV5, RV6) STAT
- ☐ Consult Cardiology per site process if refractory pain is GREATER than 15 minutes
- ■ Draw CBC, sodium, potassium, chloride, total CO_2, urea, creatinine, glucose, troponin, STAT
- ■ Repeat troponin at 2 hours post baseline
  (Time 0 = first blood sample)
- ■ CBC, sodium, potassium, chloride, total CO_2, urea, creatinine, glucose daily
- ■ Repeat aPTT 6 hours post heparin bolus
- ■ Emergency physician to complete TIMI Risk Score for Unstable Angina and Non STEMI (See back of page for TIMI Score Calculator) to determine the recommendation for coronary catheterization
- ■ Vital signs (including oxygen saturation and documentation of ST segments) q15min x 4, then q30 minutes x 2, then q1h until discharge or admission. Continue q15 minutes with ongoing chest pain and/or unstable vital signs
- ■ Continuous cardiac monitor with ST segment monitoring
- ■ Mount and analyze initial rhythm strip and prn with rhythm changes

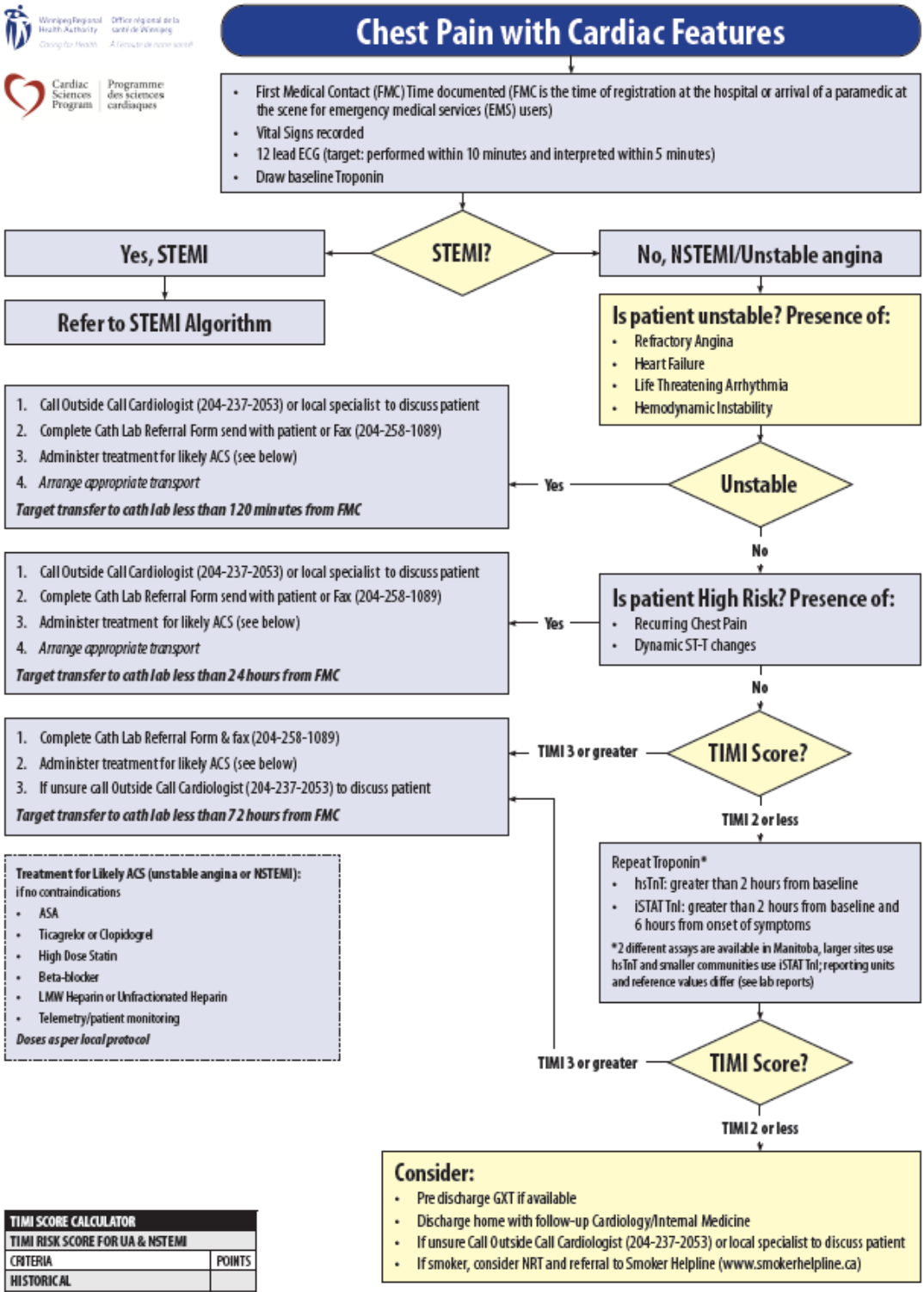
Diet
- ☐ NPO
- ☐ Standard Diet
- ☐ _____

Activity
- ☐ Bed rest
- ☐ Bed rest with bathroom privileges
- ☐ _____
- ■ Consider nicotine replacement therapy if smoker

Additional Orders:

FAX SENT ☐ DATE (D D M M M Y Y Y Y) TIME (24 HOUR)

Appendix D: Cardiac Sciences Chest Pain with Cardiac Features



TIMI SCORE CALCULATOR	
TIMI RISK SCORE FOR UA & NSTEMI	
CRITERIA	POINTS
HISTORICAL	
☐ Age 65 years or more	1
☐ 3 or more Risk Factors for CAD	1
☐ Known CAD (stenosis 50% or more)	1
☐ Aspirin use in past 7 days	1
PRESENTATION	
☐ Recent (24 hours or less) severe angina	1
☐ ST segment deviation 0.5 mm or more	1
☐ Elevated Cardiac Markers	1
RISK SCORE = TOTAL	0 - 7

ACS RISK STRATIFICATION		
RISK CATEGORY	CRITERIA	RECOMMENDATION FOR TIME TO CORONARY CATHETERIZATION
Unstable ACS (non-STEMI)	Refractory angina, heart failure, life threatening arrhythmias or hemodynamic instability	Coronary angiography within 120 minutes of first medical contact if no contraindications to procedure
High Risk ACS (non-STEMI)	Recurring chest pain and/or dynamic ST changes	Coronary angiography within 24 hours of first medical contact if no contraindications to procedure
Intermediate Risk ACS (non-STEMI)	TIMI Risk Score 3 or higher excluding Unstable ACS or High Risk ACS patients	Coronary angiography within 72 hours of first medical contact if no contraindications to procedure

Appendix E: Cardiac Sciences STEMI Diagnosis

Shared health Soins communs Manitoba

CARDIAC SCIENCES MANITOBA
SCIENCES CARDIAQUES MANITOBA

STEMI Diagnosis

If diagnosis UNCERTAIN, call Outside Call Cardiologist (204-237-2053) or local specialist to discuss.
If diagnosis CERTAIN, DO NOT delay treatment by calling! Follow as below.

Can this patient arrive at SBH in less than 100 min FROM ECG DIAGNOSIS?

YES, MD to:

1. ***First***, arrange Immediate Appropriate Transfer for Primary PCI*
2. ***Then***,
   In Winnipeg, page the Interventional Cardiologist on call (204-237-2053)
   Outside of Winnipeg, page the CODE STEMI doctor on call (204-237-2053)

Drugs prior to transport: *(if no contraindication)*

1. ASA 160 mg
2. Clopidogrel 600 mg ***OR*** ticagrelor 180 mg
3. **Bolus** IV Heparin 70 u/kg (NO Heparin Infusion Required) ***OR*** IV enoxaparin 0.5 mg/kg

NO, MD to:

First, administer immediate Fibrinolysis *(if no contraindication)*

Less than 75 Years Old

1. TNK 0.5 mg/kg *max 50 mg*
2. Enoxaparin 30 mg IV & 1 mg/kg subcut *max 100 mg*
3. Clopidogrel 300 mg PO
4. Ensure ASA 160 mg given

75 or Older

1. TNK 0.5 mg/kg *max 50 mg*
2. Enoxaparin 0.75 mg/kg subcut *max 80 mg*
3. Clopidogrel 75 mg PO
4. Ensure ASA 160 mg given

Then, MD to follow steps below:

1. Arrange Immediate transfer for coronary angiography
2. Call CODE STEMI doctor (204-237-2053) to discuss patient destination
3. Complete Cath Lab Referral form fax (204-258-1089) or send with patient
4. Instruct transport staff to page CODE STEMI doctor on call (204-237-2053) **if ongoing pain 30 minutes from SBH**

CODE STEMI doctor on call:

1. Direct patient destination as below
2. Inform Interventional Cardiologist on call

Expected Arrival Work Day 06:30 - 18:00

Patient to Y2 Pre & Post

Expected Arrival Off Hours

Patient to SBH ER & inform ER (call 204-237-2260)

***WRHA STEMI**

- Emergency Physician or nurse call 204-986-2622
- State there is a 'CODE STEMI - Grace Hospital, etc.' patient requiring transport
- Provide the Interfacility Transport Coordinator with the following information:
  - Ward/Room and transporting facility name
  - Patient's name
  - Does the patient require transvenous pacing, inotropes or vasopressors or is this patient intubated?
- The above information determines the appropriate level of transport staff

***Non WRHA**

- Follow local/regional guidelines. Call MTCC Interfacility Transfer Line at 1 800 689 6559 to request an emergent ground or air transport.

Absolute Contraindications (TNK)

As determined by asking the patient the following series of questions:

- Have you ever had a bleed into your brain?
- Have you ever had a brain aneurysm, a brain tumor, or recent brain or spine surgery (within the past two months)?
- Have you had any significant head or facial trauma within the past three months?
- Have you had a stroke within the past three months?
- Have you had recent major bleeding, or major surgery or a biopsy
- Are you currently pregnant or within one week post-delivery?

As determined when there is a high index of suspicion by the clinician

- Physician suspects acute aortic dissection
- Physician suspects acute pericarditis

Relative Contraindications (TNK)

As determined by the clinician

- Any measurement of a blood pressure on this encounter: Systolic BP greater than 180 mmHg and/or diastolic BP greater than 110 mmHg
- Traumatic or prolonged CPR

Enoxaparin Contraindications

- Refer to contraindications for fibrinolytics (as above)
- Allergy or hypersensitivity to heparin, pork products or to enoxaparin

Date Revised May 2021