



ST-Elevation Myocardial Infarction (STEMI) Pathway

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Purpose

Care of the ST-elevation myocardial infarction (STEMI) and cardiogenic shock (CS) patient requires a systematic approach to ensure optimal care. To assist the emergency department (ER), cardiac catheterization laboratory (CCL), and coronary care unit (CCU) to achieve best care possible.

Management of Cardiogenic Shock Complicating MI

Description of Roles and Responsibilities of door to balloon (D2B) Team.

Ideal D2B process, and time record.

Definition

STEMI: An acute myocardial infarction that generates a specific type of ST-segment elevation on a 12-lead ECG

Cardiogenic Shock (CS): Cardiogenic shock is a life-threatening condition in patients with acute myocardial infarction, caused by severe impairment of myocardial performance that results in diminished cardiac output, end-organ hypoperfusion, and hypoxia

Fibrinolytic therapy: is used to lyse acute blood clots by activating plasminogen. This results in the formation of plasmin, which cleaves the fibrin cross-links causing thrombus breakdown. Administered to patients with J-point ST-segment elevation greater than 2 mm (0.2 Mv) in leads V2 and V3 and 1 mm or more in all other leads or by new or presumed new LBBB without contraindications.

Examples of fibrin-specific drugs are rtPA, reteplase, and Tenecteplase.

- D2B: door to balloon time is a time measurement between the arrival of a patient with STEMI in the ER until the time of balloon inflated in the CCL
- Time entry form: recording the time of patient arrival the ER until the balloon inflated in CCL

- STEMI protocol: guideline form to give high-quality treatment for confirmed STEMI patient
- STEMI Team-A: (cardio specialist, cardio interventional, nursing supervisor, cath lab team, anesthesia, surgeon, and perfusionist)
- STEMI Team-B: (Cardio surgeon, perfusionist, and OR team)

STEMI Protocol

ER Responsibility

Triage ER nurse, Primary ER Nurse, ER Charge Nurse:

**Triage nurse respond directly as “first priority” to patients identified as possible STEMI Alert.
most common symptoms:**

- Chest pain/discomfort, uncomfortable pressure, squeezing
- Upper abdominal pain (epigastric pain)
- Arm, shoulder or jaw pain
- Shortness of breath
- Nausea/vomiting
- Dizziness/ near syncope
- Palpitations

Perform rapid initial assessment with ECG and give to ER physician with the goal of STEMI diagnosed/confirmed within 10 minutes of patient arrival

If STEMI confirmed, institute immediately activate CCL team

- Obtain appropriate laboratories, and preparation
- Keep patient NPO
- Attach cardiac monitor
- Start 2 IV's (gages 18, 20) at Left arm to KVO
- Remove all clothes and Wear hospital gown (open front)
- Shave right wrist arm, and groin area (right and left)

Emergency Physician/ cardiology specialist:

Perform rapid patient assessment to establish patient appropriateness for STEMI Alert status.

Respond with “first priority” to potential STEMI Alert ECG with STEMI diagnosed/confirmed within 10 minutes of arrival as criteria of STEMI alert:

A- Inclusion criteria for immediate ER activation of STEMI Alert Team:

1. Symptom onset <12 hours
2. ECG evidence of STEMI
3. < 80 years' old
4. Ongoing pain
5. Mobile and independent

B- Criteria requiring discussion with cardiologist:

1. Symptom onset > 12 hours
2. Borderline ECG changes
3. Left bundle branch block(LBBB)
4. Prior coronary artery bypass graft (CABG)
5. Significant comorbidities (e.g., malignancy, dementia)
6. Out-of-hospital cardiac arrest
7. Pulmonary oedma/Cardiogenic shock
8. Major surgery in past 2 weeks
9. Active bleeding
10. < 80 years' old
11. Endotracheal intubation

Interventional Cardiologist responsibility:

- Immediately respond to call
- Discuss the case with either the initial ER physician/ cardiology specialist.
- Confirm STEMI case
- Arrive CCL within 20-30 minutes ready to start the procedure
- Inflation balloon within 20-30 minutes of starting the procedure

CCL Team responsibility:

- Immediately respond to call and arrive within 20-30 minutes including preparation the procedure room, materials, medications, activate the cath lab machine and Call ER to transfer the patient
- Final check and proper hand-off
- Prepare the patient on cath lab table to be ready for catheterization within 10 minutes

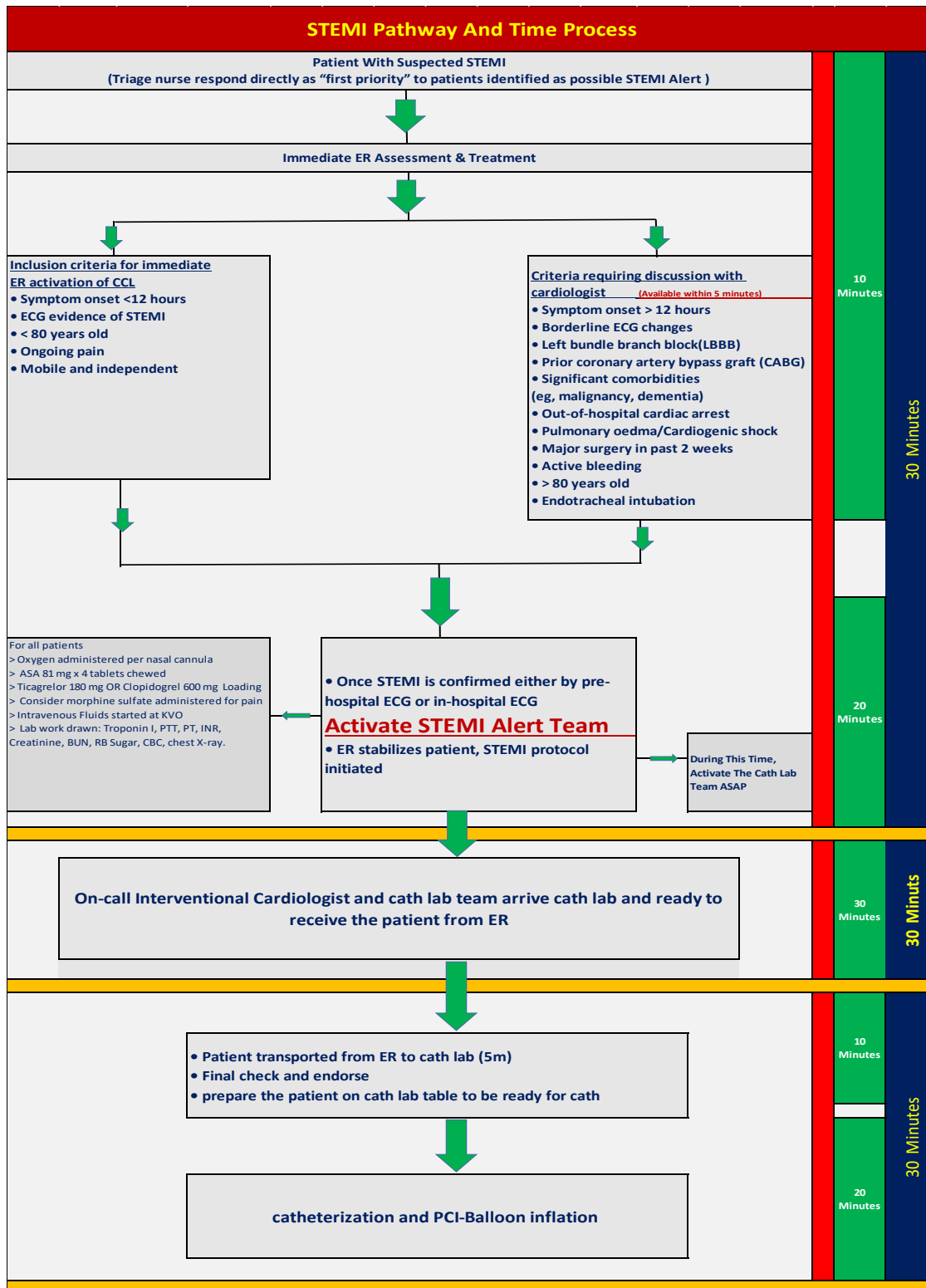
Ideal door-to-balloon time process

#	<i>Step</i>	<i>Ideal time</i>	
1	Patient arrives in ER, ECG completed (if not already), STEMI diagnosed/confirmed	10 min	On-time STEMI confirmed Activate Cath Lab Team ASAP
2	ER stabilizes patient, STEMI protocol initiated, cardiology/ER physician activates STEMI code	20 min	
3	On-call interventional cardiologist and cath lab team respond to call	5 min	30 min
4	On-call interventional cardiologist and cath lab team arrive in cath lab, prepare the procedure room, and call to shift the patient	25 min	
5	Patient transported from ER to cath lab	5 min	10 min
6	Final check and endorse, preparing	5 min	
7	Catheterization and PCI - balloon inflation	20 min	

Suggested time sheet collection: ER to CATH LAB

		Time	Step		
Emergency Department			<i>Pre-hospital ECG (if applicable)</i>	Yes No	
	Patient arrived in ER				
			Patient arrival time		
			Seen by ED Physician time		
			ECG performed		
			Call cardiology specialist	Yes	No
			Cardiology specialist arrival		
			STEMI confirmed		
			in ER If delay of activat cath lab, add the reason:		
			Cath Lab Team Call ER To Shift The Patient		
			Patient Arrival CCL		
			ER Nurse Name, Sign	CCL Nurse Name, Sign	
		Time	Step		
Cardiac Cath Lab			Cath Lab Team Ready Call		
			Cath Lab Team Arrival In CCL		
			Interventional Cardiologist arrived		
			Puncture Time		
			Device deployed (e.g., balloon, thrombectomy, stent, etc).		
	Process Measures				
			Door-To- ECG confirmed	(10 min)	30 min
			- STEMI confirmed - To- call cath lab team - ER stabilize the patient	(20 min)	
	Team:		Cath Lab Arrival (from activated cath lab -to- arrival cath lab, prepare the procedure room/ call to shift the patient		30 min
	Dr.:		(30 min)		
		cath lab call to shift the pt. -To- transported from ER+final check	(10 min)	30 min	
		Puncture Time -To - balloon inflation	(20 min)		
		Door To Balloon (ER to CCL)		90min	
CCL Nurse Name, Sign					

Summery



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