

Initial Reperfusion Treatment Goals and Options for Transportation of STEMI Patients

Reperfusion in patients with STEMI can be accomplished by pharmacological (fibrinolysis) or catheter-based (primary PCI) approaches. The overarching goal is to keep total ischemic time within 120 minutes (ideally within 60 minutes) from symptom onset to initiation of reperfusion treatment. Within this context, the following are goals for the medical system* based on the mode of patient transportation and the capabilities of the receiving hospital:

Medical System Goals:

EMS Transport (Recommended)

- If EMS has fibrinolytic capability and the patient qualifies for therapy, pre-hospital fibrinolysis should be started within 30 minutes of arrival of **EMS on the scene**.

For ACAC participation this would include:

- **Capital Health:** Edmonton EMS, Strathcona EMS, Parkland EMS, City of Leduc Fire, St. Albert Fire, Spruce Grove Fire
 - **East Central:** Camrose EMS, Beaver Ambulance (Viking and Tofield)
 - **Peace Country:** Regional EMS – all districts
 - **David Thompson Health Region:** Peace Hills EMS (Wetaskiwin), Associate Ambulance (Drayton Valley), Rocky Mountain House Ambulance
 - **Calgary Health Region:** Banff EMS
- If EMS is not capable of administering pre-hospital fibrinolysis and the patient is transported to a non-PCI-capable hospital, the **door-to-needle** time should be within 30 minutes for patients for whom fibrinolysis is indicated.

For ACAC participation this would include:

- **Calgary Health Region:** Airdrie EMS
 - **David Thompson Health Region:** Mountain view EMS (Sundre / Olds)
 - **Palliser Health Region:** EMS
- If EMS is not capable of administering pre-hospital fibrinolysis and the patient is transported to a PCI-capable hospital, the **EMS arrival-to-balloon** time should be within 90 minutes.

For ACAC participation this would include:

- **Calgary Health Region:** Airdrie EMS
- If EMS takes the patient to a non-PCI-capable hospital, it is appropriate to consider emergency *interhospital transfer* of the patient to a PCI-capable hospital for mechanical revascularization if:
 - There is a contraindication to fibrinolysis.
 - PCI can be initiated promptly within 90 minutes **from EMS arrival-to-balloon time at the PCI-capable hospital.****
 - Fibrinolysis is administered and is unsuccessful (i.e., “rescue PCI”).

Patient Self-Transport (Discouraged):

- If the patient arrives at a non-PCI-capable hospital, the door-to-needle time should be within 30 minutes of arrival at the emergency department.
- If the patient arrives at a PCI-capable hospital, the door-to-balloon time should be within 90 minutes.
- If the patient presents to a non-PCI-capable hospital, it is appropriate to consider emergency *interhospital transfer* of the patient to a PCI-capable hospital if
 - There is a contraindication to fibrinolysis.
 - PCI can be initiated within 90 minutes after the patient presented to the initial receiving hospital or within 60 minutes compared with when fibrinolysis with a fibrin-specific agent could be initiated at the initial receiving hospital.
 - Fibrinolysis is administered and is unsuccessful (i.e., “rescue PCI”).

*The medical system goal is to facilitate rapid recognition and treatment of patients with STEMI so that door-to-needle (**or medical contact-to-needle**) for initiation of fibrinolytic therapy can be achieved within 30 minutes or door-to-balloon (**or medical contact-to-balloon**) for PCI can be achieved within 90 minutes. These goals should not be understood as “ideal” times but rather the longest times that should be considered acceptable for a given system. Systems that are able to achieve even more rapid times for treatment of patients with STEMI should be encouraged.

Note “medical contact” is defined as “time of EMS arrival on scene” after the patient calls EMS/9-1-1 or “time of arrival at the emergency department door” (whether PCI-capable or non-PCI-capable hospital) when the patient transports himself/herself to the hospital.

**EMS Arrival → Transport to non-PCI-capable hospital → Arrival at non-PCI-capable hospital to transfer to PCI-capable hospital → Arrival at PCI-capable hospital-to-balloon time = 90 minutes.

EMS indicates emergency medical system; PCI, percutaneous coronary intervention; and STEMI, ST-elevation myocardial infarction.

Modified with permission from (90) and from (15).
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