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Guidelines for STEMI

We commend Peter Bogaty and colleagues[1] for their Canadian adaptation of the ST-elevation myocardial infarction (STEMI) guidelines. They have appropriately emphasized the importance of time to reperfusion, whether thrombolysis or primary percutaneous coronary intervention (PCI) is used. Although primary PCI may be superior to thrombolysis when performed in a timely manner, this benefit may be attenuated or lost altogether when PCI is delayed more than 60 minutes.[2] However, it may be possible to derive the benefits of primary PCI without the inherent treatment delay by administering thrombolysis followed by immediate transfer for PCI. This strategy, termed "facilitated PCI," may be the optimal mode of reperfusion for many patients in Canada, where interventional centres are regionalized. Although early studies failed to show a benefit of routine PCI immediately after thrombolysis,[3] PCI technology has changed considerably in recent years. More recent studies have indicated that facilitated PCI may indeed be safe and effective,[4] but larger studies are needed to provide definitive answers.

The TRANSFER-AMI trial, initiated by Canadian investigators and funded by the Canadian Institutes of Health Research, will randomly assign approximately 1200 high-risk STEMI patients treated with thrombolysis in non-PCI hospitals to be transferred immediately for facilitated PCI or to receive standard care. This study could have a significant impact on the treatment of STEMI in Canada, and we strongly encourage Canadian centres to participate (for further information, see the Web site of the Canadian Heart Research Centre, www.chrc.net).

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Peter Bogaty and colleagues,[1] in their review of the American College of Cardiology/American Heart Association STEMI guidelines from a Canadian perspective, recommend transfer of STEMI patients with Killip class 3/4 or other high-risk features of acute myocardial infarction for PCI, if such intervention is reliably available within 60 minutes. However, achieving a 60-minute transfer imposes significant challenges for emergency medical services (EMS) that the authors have not considered. Several studies examining interfacility transfer for primary PCI, operating under rigorous study protocols, were able to achieve randomization-to-balloon times of 80 to 122 minutes,[2–5] which suggests that meeting a 60-minute target may be difficult in everyday practice.

The following recommendations would help to safely achieve this target:

- The paramedics caring for the patient should be capable of advanced life support (ALS) interventions, as some of the patients may experience the complications of STEMI while in transit.[4] Therefore, EMS dispatch should provide an ALS-crewed vehicle in the same time frame as would apply for a critical 9-1-1 call (in our system, this would be 8 minutes, 59 seconds). Alternatively, the same ambulance that brought the patient to the emergency department, if its crew is capable of providing ALS, should be used to transfer the patient.
- A PCI "hot link" should exist between the referring and receiving institutions. The PCI centre should accept referrals without question and should reassess for PCI suitability on arrival.
- Patients should be taken directly to the catheterization suite, without a stop in the receiving emergency department.

We feel that a 60-minute target for transfer is unlikely to be met without specific optimization of EMS and hospital systems. The absence of such optimization will inevitably lead to failure and abandonment of a strategy that has the potential to lessen morbidity and mortality.

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[Four of the authors respond:]

Although Warren Cantor and Laurie Morrison suggest that primary PCI may be superior to fibrinolysis, the converse may be true in the early hours after symptom onset, and this remains an important and unresolved issue.[1,2] Facilitated PCI should encompass a broader definition than prior fibrinolytic therapy alone, as articulated in the recent guidelines: "Facilitated PCI refers to a strategy of planned immediate PCI after an initial pharmacologic regimen such as full dose fibrinolysis, half dose fibrinolysis, a GP [glycoprotein] IIb/IIIa inhibitor or a combination of reduced dose fibrinolytic therapy in a platelet GP IIb/IIIa inhibitor."[3]

We commend Cantor and Morrison for their involvement in the TRANSFER-AMI study and await with interest its results, as well as those of the large ASSENT IV (**As**sessment of the **S**afety and **E**fficacy of a **N**ew **T**reatment Strategy for Acute Myocardial Infarction) and FINESSE (**F**acilitated **In**tervention with **E**nhanced Reperfusion **S**peed to **S**top **E**vents) studies, as they relate to the issue of facilitated PCI.[4] If these studies demonstrate positive results, it will be important to consider the resource implications and ensure, at a minimum, the targeting of high-risk patients.

Cathal O'Donnell and Richard Verbeek opine that we have not considered the challenges for emergency services related to achieving a 60-minute transfer for PCI. Unfortunately, *CMAJ* space restrictions precluded discussion of this issue in our case-based report,[5] but our broader discussion of the topic has recently been published elsewhere.[1] We agree that enhancement of EMS should occur *pari passu* with enhanced tertiary and quaternary care for such patients. For maximal resource efficiency, we believe that the STEMI algorithm in Fig. 2 of our *CMAJ* article[5] provides a useful destination template.

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Correction

In a recent article in the Practice section,[1] the chemical structures of hydroquinone and homogentisic acid should have been drawn as 6-membered rings, and not as 8-membered rings.

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