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Door-to-Balloon Time as a Function of Mode of Referral: Results from the Ontario Provincial Cardiac Care Network Database

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Background: Door-to-balloon times strongly correlate with survival in patients referred for primary PCI. Guidelines have recommended that regions develop STEMI systems that quickly triage patients for primary PCI. We sought to evaluate door-to-balloon time amongst patients referred for primary PCI according to different referral pathways in the province of Ontario.

Methods: We used the provincial primary PCI registry database developed by the Cardiac Care Network of Ontario Catch/PCI Working Group. We identified all patients who underwent primary PCI between July 2009 and December 2011 at 14 PCI capable centers. We evaluated time to reperfusion according to the following referral pathways: i) Field directly to the PCI center catherization laboratory; ii) Field to the PCI center emergency department (ED); iii) Field to a non-PCI center ED; iv) Self-transport (Self-T) to a PCI capable center ED; v) Self-T to a non-PCI capable center ED. We excluded in-hospital patients presenting with STEMI on the wards. The primary endpoint was the first hospital door-to-balloon-time.

Results: 6198 patients were referred for primary PCI. PCI was performed in 5678 patients. Data was available to calculate door-to-balloon times in 4763 patients. Amongst these patients, 63% were transported initially from the field, and 37% self-transported to the ED. The median door-to-balloon time with interquartile range for each referral pathway is shown in the table. Patients referred directly to the cath lab had significantly faster door-to-balloon times.

Conclusions: Prehospital triage is associated with very short door-to-balloon times when patients are transported directly to the catheterization laboratory. Self-transport leads to significantly longer door-to-balloon time when the pt presents at a PCI center. These results are relevant to regions planning to develop STEMI systems.

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Impact of Multivessel Coronary Artery Disease With or Without a Concurrent Chronic Total Occlusion on Survival in Patients Treated With Rescue Angioplasty

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Background: The effect of multi-vessel disease (MVD) with or without a concomitant coronary chronic total occlusion (CTO) has never been investigated in patients treated with rescue percutaneous coronary intervention (PCI). This study evaluates whether there is an increased rate of death at 1-year follow-up in patients undergoing rescue PCI with angiographic pattern of MVD and a concurrent CTO in comparison with single vessel disease (SVD) and MVD without CTO.

Methods: Among 551 consecutive patients undergoing rescue PCI, we compared the 1-year survival rates of 361 patients with SVD, 137 with MVD without a CTO and 53 with MVD and a CTO. Patients with MVD were older than SVD (62±10 vs 57±11 yrs, p<0.001) and more often admitted with cardiogenic shock (14% vs 3% p<0.001). Patients with MVD and CTO had more often previous myocardial infarction (9% vs 4% vs 4%, p<0.001), lower ejection fraction (42±11% vs 47±11% vs 49±11%) and longer pain to PCI time (8±6 vs 7±5 vs 7±5 hours, p<0.001) compared with patients with SVD and MVD without CTO, respectively. The Cox proportional hazard model identified the presence of MVD with CTO as a strong predictor of death at 1-year follow-up (HR: 3.4, 95% CI: 1.6 to 7.1, p<0.001) while MVD alone did not result as a predictor of outcome (HR: 1.9, 95% CI: 0.9 to 3.8, p=0.064). Adjusted 1-year overall survival rates were 96%, 91.4% and 83.4%, (p<0.001) in the groups with SVD, MVD without and with CTO, respectively.

Conclusions: Patients with MVD and concurrent CTO have higher mortality rates than those with SVD or MVD without CTO at 1-year follow-up after rescue PCI. MVD with CTO and not MVD alone is a predictor of death at 1-year follow-up.

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Stent Thrombosis after primary PCI for STEMI in relation to non-usage of dual antiplatelet therapy over time: Results of the HORIZONS-AMI trial

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Background: Rates of stent thrombosis (ST) may vary overtime and the relationship of this complication with non-adherence to dual antiplatelet therapy (DAPT) during long-term follow-up remains unclear.

Methods: We analyzed 2,997 patients who were treated with at least 1 stent and in whom a non-target vessel ST did not occur during follow-up from the large-scale HORIZONS-AMI trial of patients with STEMI undergoing primary PCI. Aspirin was prescribed indelinitely, and a thienopyridine for at least 6 months. DAPT usage was evaluated according to the development of ST in 4 time periods (<1 month, 1-6 months, 6-12 months and >1 year from index stent implantation).

Results: Rates of ST and DAPT usage are shown in the Table. DAPT non-usage was lowest within the first month, and we observed no relationship between continued discontinuation of antiplatelet therapy and stent thrombosis during the first month. During the 1-6 month period we observed a clear relationship between non-usage of DAPT and definite/probable ST. However, this relationship was absent in the 6-12 month period. Beyond one year, ST was associated with non-usage of aspirin but was paradoxically more common in patients taking a thienopyridine.

<table>
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<th>Time</th>
<th>Field to PCI center cath lab</th>
<th>Field to PCI center ED</th>
<th>Field to non-PCI center</th>
<th>Self-T to PCI center ED</th>
<th>Self-T to non-PCI center ED</th>
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<td>IQR</td>
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<td>58-111</td>
<td>95-184</td>
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