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IMPACT OF INTER-HOSPITAL TRANSFER FOR PRIMARY PERCUTANEOUS CORONARY INTERVENTION ON SURVIVAL (10 108 STEMI PATIENTS FROM THE LONDON HEART ATTACK GROUP)

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Background Primary percutaneous coronary intervention (PCI) is the preferred reperfusion strategy in patients with ST-segment elevation myocardial infarction (STEMI). We evaluated whether direct transfer to a cardiac centre performing primary percutaneous coronary intervention (PPCI) leads to improved survival compared with transfer via a non-PPCI performing hospital in STEMI patients in a regional network.

Methods This was an observational cohort study of 10 108 patients with STEMI treated with PPCI between 2004 and 2011 at eight tertiary cardiac centres across London, UK. Patient's details were recorded at the time of the procedure into the British Cardiac Intervention Society (BCIS) database. Outcome was assessed by all-cause mortality. Anonymous datasets from the eight centres were merged for analysis. The primary end-point was all-cause mortality at a median follow-up of 3.0 years (IQR range 1.2–4.6 years).

Results 6492 patients (64.2%) were transferred directly to a PCI performing centre (direct) and 3616, (35.8%) were transferred via a non-PCI performing centre (indirect). There were higher rates of previous MI and previous CABG in the indirect group, with higher rates of poor LV function in the direct group (table 1). Median time to reperfusion (symptom to balloon) in transferred patients was 58 min longer compared to patients admitted directly ($p<0.001$). However, symptom to first hospital door times were similar. Transferred patients had significantly lower rates of infarct-related artery (IRA) TIMI 0 flow (54.5% vs 62.9%,

Table 1

Variable	Direct	Indirect	p Value
Age	64.92±13.33	61.96±13.25	0.296
Previous MI	929 (14.3%)	640 (17.7%)	p<0.0001
Previous CABG	161 (2.5%)	136 (3.8%)	p<0.0001
Diabetes mellitus	993 (15.3%)	537 (14.9%)	0.683
Cardiogenic shock	384 (5.9%)	208 (5.8%)	0.724
Poor LV function (<30%)	397 (6.1%)	177 (4.9%)	p<0.0001
Call to door (PCI centre)	60 min IQR (45–78)	118 IQR (71–199)	p<0.0001
Door to balloon	47 min IQR (28–117)	43 min IQR (25–120)	0.590
IRA TIMI 0	3532 (62.9%)	1679 (54.5%)	p<0.0001

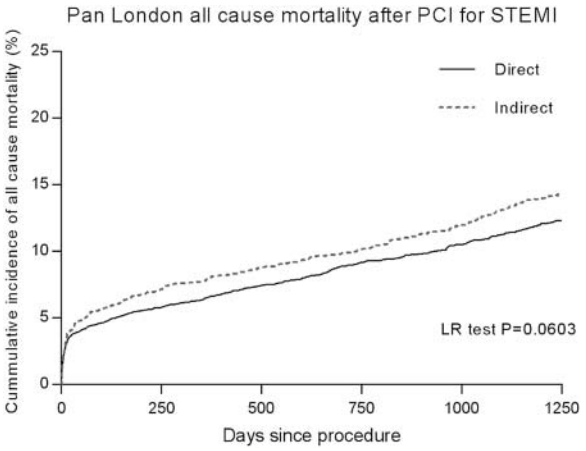

Figure 1 Kaplan-Meier curves showing cumulative probability of all-cause mortality after PPCI according to transfer strategy.

p<0.0001) and higher rates of IRA TIMI 3 flow (17% vs 10.7%, p>0.0001) at presentation compared to those transferred directly.

Kaplan-Meier analysis demonstrated no significant difference in mortality rates between patients with and without transfer (12.3% direct vs 14.3% indirect, p=0.060). Age-adjusted Cox analysis revealed inter-hospital transfer for PPCI was associated with all cause mortality (HR 0.89 (95% CI 0.79 to 0.99)), however this was not maintained after multivariate adjustment (HR 0.84 (95% CI 0.62 to 1.14)).

Conclusions In this large registry survival appear comparable in patients with STEMI admitted directly versus transferred for primary PCI. This is despite longer symptom to balloon times. This unexpected finding may reflect the earlier initiation of medical therapy (eg, anti-platelets and GpIIb/IIIa receptor inhibitors) and earlier pharmacological reperfusion, reflected by lower IRA TIMI 0 rates at angiography in the patients transferred from a non-PCI hospital.