National Audit Project (MINAP) database and patient notes. Mortality data was confirmed using the Office of National Statistics database with follow-up ranging from 3 to 44 months.
Results: The mean age was 60±14years and 80.3% patients were male. The incidence of previous coronary disease in the cohort was 27.8%, 32.8% patients were hypertensive, 37.7% smokers, 24.6% hypercholesterolaemic and 8.2% had known diabetes. 45% patients had a witnessed arrest and 43.4% were directly conveyed to the pPCI centre. Mean arrest-to-arrival time in the cohort was 115±24mins with a mean call-to-balloon time of 168±24mins. The rate of successful pPCI in the cohort was 85% with 21.7% having 3-vessel disease. Shock was present in 16% and severe left ventricular impairment in 25% patients. The in-hospital mortality within the cohort was 21%. Of the patients who died 14 were cardiovascular deaths, 3 being shortly after return of spontaneous circulation in the catheterisation laboratory, and 6 of all deaths were secondary to hypoxic brain injury in Intensive Care. 79% of all patients survived to discharge. Of the patients who survived 92% were discharged with no neurological deficit. At follow-up (12-44 months in 62% patients) 100% of patients who survived to discharge were still alive.
Conclusions: Here we present descriptive data of a large, contemporary cohort of STEMI admissions for pPCI that are complicated by OOHCA. Here we show a 79% survival rate to discharge, a higher proportion than previously reported, with good long term prognosis after discharge.

TCT-521

Predictors Of Outcome In Patients With ST-elevation Myocardial Infarction Presenting With Out Of Hospital Cardiac Arrest

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Background: ST elevation myocardial infarction (STEMI) complicated by out of hospital cardiac arrest (OOHCA) is associated with significant mortality. Small observational studies have shown survival benefit with primary percutaneous coronary intervention (pPCI) in this setting. We sought to identify clinical characteristics and predictors of outcome in STEMI complicated by OOHCA in a large patient cohort in the era of pPCI.
Methods: Between January 2008 and October 2011, STEMI admissions to a regional cardiac centre were retrospectively analysed. 122 patients with OOHCA in the context of STEMI were identified. Clinical and procedural data was collected from the UK Myocardial Ischaemia National Audit Project (MINAP) database and patient notes. All cause mortality data was confirmed using the Office of National Statistics mortality database with follow-up ranging from 3 to 44 months.
Results: The mean age of patients was 60±14years, 80.3% were male and 43% were direct admissions via the ambulance service, 57% being transferred from district hospitals. The in-hospital mortality within the cohort was 21% with 96/122 patients surviving to discharge. There were no significant differences in patient demographics, previous cardiac history, arrest rhythm or referral source between patients who survived to discharge compared with those who died. Patients who died had significantly higher incidence of cardiogenic shock (p=0.0289), 3-vessel coronary disease (p=0.0125), severe left ventricular (LV) impairment (p=0.0273) and renal dysfunction (p=0.0001). Shorter arrest-to-arrival time (p=0.001), shorter call-to-balloon time (p=0.015), successful pPCI (p=0.0247) and witnessed arrest were strongly associated with survival in this patient cohort.
Conclusions: We show that in this large, contemporary cohort of STEMI admissions for pPCI that are complicated by OOHCA, 79% of patients survive to discharge, a higher proportion than previously reported. Predictors of poor outcome include: unwitnessed arrest, delay from arrest to arrival, delay in call-to-balloon, cardiogenic shock, 3-vessel coronary disease, failure of pPCI, severe LV impairment and renal dysfunction.

TCT-522

National Trends in Case Fatality based on Anatomical Location of ST elevation Myocardial Infarction in Hospitalized Patients, 1993-2009

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Background: Although mortality due to ST elevation myocardial infarction (STEMI) has declined in the past few decades, it is unknown if this decline is uniform across anatomical locations of STEMI.
Methods: We examined temporal trends in STEMI case fatality related to anatomical location for United States from 1993 to 2009 using Nationwide Inpatient Sample (NIS), a weighted sample dataset that comprises almost 95 % of total discharges from US hospitals. In our study, we included all patients with first hospitalized STEMI with location specified based on ICD-9-CM (410.01- anterolateral, 410.11- anterior, 410.21 - inferolateral, 410.31- inferoposterior, 410.41-inferior, 410.51-lateral and 410.61- inferobasal). We estimated annual percent change using Joinpoint Regression Program (v 3.5, National Cancer Institute, Bethesda, Maryland) assuming Poisson regression.
Results: From 1993 to 2009, 449033 deaths were reported out of 5011979 admissions for STEMI. The overall estimated annual percentage change (EAPC) in case fatality was −2.9 (95 % confidence interval [CI] −3.2 to −2.6). EAPC in STEMI case fatality was −3 (95 % CI −3.5 to −2.5) for admissions with anterolateral, −3.3 (95 % CI −3.7 to −2.9) for anterior, −2.8 (95 % CI −3.3 to −2.3) for inferolateral, −2.4 (95 % CI −3.2 to −1.6) for inferoposterior, −2.7 (95 % CI −2.9 to −2.4) for inferior, −2.1 (95 % CI −2.8 to −1.5) for lateral and 0 (95 % CI −1 to 1.1) for inferobasal. Decline in STEMI case fatality was significant at $p < 0.05$ for all locations, except for inferobasal location.
Conclusions: Our findings indicate that in-hospital case fatality after initial presentation with inferobasal STEMI continues to remain high despite decline in overall STEMI case fatality in other locations. Unfavorable fatality trends in inferobasal STEMI warrants further investigation.

TCT-523

Complete Coronary Occlusion of the Infarct-Related Artery in Patients Presenting with Acute Non-ST-Elevation Myocardial Infarction: Role of the GRACE risk score

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Background: ST-segment elevation serves as a reliable electrocardiographic marker for complete coronary occlusion (CCO). However, we have recently shown that 34% of patients with acute non ST- elevation myocardial infarction also show CCO resulting in a poor prognosis due to late reperfusion. The role of the GRACE risk score in predicting CCO is unclear.
Methods: We evaluated data from 345 consecutive patients presenting with acute NSTEMI (symptom-to-door time < 24 hours) who were treated with coronary angioplasty as part of an early-invasive strategy. Complete coronary occlusion was defined as TIMI-flow grade 0 and 1 of the infarct-related artery upon angiography. Clinical, laboratory and electrocardiographic predictors of CCO including the GRACE risk score were identified by univariate and multivariate analysis.
Results: Demographic and clinical characteristics did not predict angiographic CCO. Patients with CCO, however, showed an increased number of leads with negative T-waves (3.1±2.3 vs. 2.1±2.0 p=0.013) as well as a greater infarct size measured by peak myocardial enzymes (peak Troponin-T: 1.53±2.36 ng/ml vs. 0.93±1.79 ng/ml; p=0.017). The mean GRACE risk score was higher in the CCO group, but did not differ significantly between both groups.
Conclusions: A high number of leads (≥3) with negative T-waves in the admission ECGs of patients presenting with acute NSTEMI identifies individuals at high risk for a CCO. The GRACE risk score, however, does not predict CCO.

TCT-524

Does the Zwolle Percutaneous Coronary Intervention Risk Index Identify Low Risk ST-Elevation Myocardial Infarction Patients for Early Discharge?

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Background: Recently, there has been a focus to lower both length of stay (LOS) and readmission in patients with ST-elevation myocardial infarction (STEMI) to decrease costs. STEMI patients in the United States have lower LOS but increased rates of hospital readmissions compared to other countries. The Zwolle PCI Risk Index is a validated score to identify low risk STEMI patients for early discharge.
Methods: We retrospectively applied the Zwolle PCI Risk Index to all STEMI patients presenting as part of a large regional STEMI system between January 2009 and December 2011. Cases were grouped into low risk (0-3) and high risk (≥4). Complication rates (based on NCDR definitions), LOS, total hospital costs, readmission rates, and 30-day and 1-year mortality rates were compared.
Results: Among 967 cases, high (427, 44%) and low risk patients (540, 56%) had statistically significantly different rates of median LOS, in-hospital, 30-day and 1-year mortality. Among the 598 cases with complete data on costs and complications, statistically significant differences in rates of any complication, cardiogenic shock, need for RBC transfusion, new dialysis, and total hospital costs (Figure).
Conclusions: A primary PCI Risk Index score can identify low risk STEMI patients following PCI and may provide an opportunity to safely employ early discharge strategies to reduce LOS and total hospital costs without compromising safety.

	All Patients	Low Risk	High Risk	
	n=967	n=540	n=427	p-value
Median LOS (25th, 75th percentile)	3 (2,4)	2 (2,4)	3 (2,6)	<0.001
% readmitted within 1 year	2.1% (20)	2.2% (12)	1.9% (8)	0.71
Median # days to readmission (25th, 75th percentile)	70.5 (28.5, 133.5)	107 (14, 137.5)	55 (35, 84.5)	0.82
In-hospital mortality	5.3%	0	12.0%	<0.001
30-day mortality	5.8%	0.2%	12.9%	<0.001
1-year	9.4%	3.9%	16.4%	<0.001
	n=598	n=306	n=292	
Any Complication	11.7%	6.5%	17.1%	<0.001
CHF	1.2%	0.3%	2.1%	0.063*
Cardiogenic Shock	2.7%	0.3%	5.1%	<0.001*
RBC Transfusion	6.5%	2.3%	11.0%	<0.001*
New Dialysis	0.8%	0%	1.7%	0.027*
Total hospital costs, mean(SD)	20,247 ± 31,265	16,968 ± 17545	23,683 ± 40,737	0.009
*Fisher's exact test used to assess statistical significance				

TCT-525

Reduction of Apolipoprotein B/A-I Ratio During Follow-Up Predicts Lower Adverse Event Rate at One Year After Percutaneous Coronary Intervention

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Background: It is known that apolipoprotein B/apolipoprotein A-I ratio (ApoB/A-I ratio) could be a risk factor for CAD. Moreover, there are growing evidences that ApoB/A-I can serve as an indicator of coronary plaque regression. However, there is lack of studies that showed causal relationship between plaque regression and clinical outcomes. The aim of this study was to assess the influence of the reduction of ApoB/A-I ratio, the surrogate of plaque regression, on the outcomes after percutaneous coronary intervention (PCI) in patients acute myocardial infarction (AMI).
Methods: Between November 2005 to September 2007, we measured serum Lp(a), ApoB and ApoA-I level on admission and six-month follow-up in 1,014 consecutive AMI patients (63.7±12.4 years, 723 men). We divided patients into two groups according to ApoB/A-I ratio reduction (PR Group [plaque regression group]: ApoB/A-I ratio on admission > six-month follow-up, non-PR Group [non-plaque regression group]: ApoB/A-I ratio on admission ≤ six-month follow-up).
Results: There were more men in PR Group (78.0% vs. 65.2%, p=0.188) but, no significant differences in age between groups. Particularly, non-PR group showed better left ventricular ejection fraction than PR group (56.2±11.1 vs. 57.3±14.3 %, p=0.003). There was a trend toward more TIMI 0 flows in PR Group (66.1% vs. 55.5%, p=0.057), while more TIMI 3 flows were observed (26.3% vs. 40.3%, p=0.018) in non-PR Group. CK (1541.0±1680.0 vs. 1770.0±2529.1 U/L, p=0.003) and CK-MB level (93.5±104.6 vs. 104.4±131.5 U/L, p=0.010) were higher in non-PR Group than PR Group. Lipoprotein (a) level was also higher in non-PR group (30.7±25.6 vs. 31.6±36.1 mg/dl, p=0.018). In analysis of clinical outcomes, one-year major cardiac adverse events (MACE) was higher in non-PR group (17.1 vs. 21.6 %, p=0.032). In Kaplan-Meier analysis, PR group showed more favorable MACE-free survival rate than that of non-PR group (p<0.001 by Log-Rank test).
Conclusions: The reduction of ApoB/A-I ratio during follow-up may predict favorable long-term outcome after PCI in patients with AMI. This may suggest that coronary plaque regression by intensive statin therapy can also be beneficial to clinical outcomes after PCI in these patients.

TCT-526

Is There Sufficient Evidence To Discourage The Use Of Multi-Vessel Angioplasty During STEMI? An Analysis of 35,008 Patients

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Background: Guidelines discourage multi-vessel angioplasty at the time of ST elevation myocardial infarction. This was apparently confirmed by a meta-analysis of predominantly registry data (Vlaar et al. J Am Coll Cardiol. 2011; 58(7):692-703). However, the results of this analysis may have been exposed to the inherent allocation bias within registries; if registry clinicians preferentially allocated STEMI patients with a higher risk of mortality to multi-vessel angioplasty, the mortality of this therapy would appear unfairly increased leading to misleading conclusions.
Methods: The 10 studies in the Vlaar analysis comparing culprit only to multi-vessel PPCI (35008 patients, 96% of the 'non-network' analysis by Vlaar et al, 4 registries excluded due to insufficient data) were re-analysed to determine if higher risk patients were more likely to be allocated to multi-vessel PPCI. A weighted random effects meta-regression was performed to determine if biased allocation of high risk patients could explain the difference in mortality between the two therapies (STATA Corp, Texas, USA).
Results: We demonstrate that higher risk patients are more likely to be allocated to multi-vessel PPCI (pooled OR 0.80, 95% CI 0.69-0.92); furthermore when we adjust for this difference in higher risk patient allocation across the studies there is no mortality difference between culprit only and multi-vessel angioplasty at the time of STEMI (adjusted OR 0.86, 95% CI 0.51-1.46).
Conclusions: Our findings highlight the limitations of using registry data for comparative efficacy research and suggest multi-vessel angioplasty at the time of STEMI should not be discouraged on the basis of current data. An adequately powered randomised controlled trial (RCT) should be performed to answer this question.

TCT-527

Contemporary Outcomes of ST-elevation Myocardial in Patients with Prior Bypass Graft

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Background: ST-elevation myocardial infarction (STEMI) patients with prior coronary artery bypass graft (CABG) have been reported to have worse outcomes but the majority of data comes from the thrombolytic era.
Methods: A comprehensive prospective regional STEMI program database was queried from 4/03 to 12/11. We sought to determine contemporary outcomes of STEMI patients with prior CABG in a large, prospective, regional STEMI system.
Results: Of 3552 consecutive STEMI patients, 250 (7.1%) had prior CABG. In these 250 patients, the culprit vessel was the SVG in 81 (32%), a native vessel in 99 (40%) and there was no clear culprit in 57 (23%). No patients had a LIMA as a culprit. Patients with prior CABG were older, more likely to be male and have diabetes and less likely to be current smokers. The prior CABG patients had lower EF and were less likely to have an intervention. In the prior CABG patients, a SVG culprit was more likely to present with cardiogenic shock and there was a trend toward less intervention (p=0.08) and increased in-hospital and 30 day mortality (p = 0.08) in the SVG-culprit group which narrowed at one year. In patients with a SVG culprit, absence of intervention conferred a greater risk of mortality up to one year (40% vs. 8.5%, p0.005).
Conclusions: In a large, prospective regional STEMI system with a PCI based reperfusion strategy, patients with prior CABG and a SVG culprit have similar outcomes despite being having prior CABG. Prior data have suggested worse outcomes in this group, but this may have reflected lower rates of PCI in patients with SVG culprit.

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