

in the MECC group and 3.4% in the OPCABG group ($P=0.99$). Residual perfusion defects on myocardial nuclear scans performed at 1 year were less frequent among patients in the MECC group than among those in the OPCABG group, but the difference was not significant.

The authors conclude that MECC might confer similar postoperative benefits to OPCABG, while facilitating revascularization in individuals with complex lesions.

Original article Mazzei V *et al.* (2007) Prospective randomized comparison of coronary bypass grafting with minimal extracorporeal circulation system (MECC) versus off-pump coronary surgery. *Circulation* **116**: 1761–1767

Survival of heart transplantation candidates is improving

The average amount of time spent on the waiting list for heart transplantation has increased in recent years, yet mortality among these patients has decreased. Lietz and Miller investigated the changing survival patterns among 48,982 US patients listed for transplant during the period 1990–2005 (subdivided for analytical purposes into three consecutive 5-year eras).

Survival among United Network of Organ Sharing status 1 patients ($n=18,004$) improved over the study period—just 49.5% of those listed during era 1 were alive 1 year later, whereas 69% of those listed during era 3 were still alive at 1 year of follow up ($P<0.001$). A similar trend was observed for status 2 patients ($n=30,978$)—1-year survival rates were 81.8% and 89.4% for those listed during eras 1 and 3, respectively ($P<0.001$). By the end of era 3, the 1-year survival rate of status 2 patients who did not undergo transplantation was approaching that of those who did, prompting questions about whether early listing is advisable among this patient group.

Among status 1 candidates who were listed but did not undergo transplantation, survival rates improved significantly but remained low, emphasizing the need for urgent treatment of these high-risk patients. The authors identify several independent predictors of death at 2 months, which could aid prioritization of patients on the waiting list.

Original article Lietz K and Miller LW (2007) Improved survival of patients with end-stage heart failure listed for heart transplantation: analysis of organ procurement and transplantation network/U.S. United Network of Organ Sharing data, 1990 to 2005. *J Am Coll Cardiol* **50**: 1282–1290

Why do dialysis patients with AMI have such poor outcomes?

Acute myocardial infarction (AMI) in dialysis patients is associated with high 1-year and 2-year mortality. Despite the introduction of reperfusion therapy, mortality has remained the same since the 1970s. In an attempt to elucidate factors that could be responsible for the poor long-term outcome of this patient population, Herzog *et al.* designed a collaborative retrospective cohort study with the National Registry of Myocardial Infarction (NRFMI) and the Cardiovascular Special Studies Center of the US Renal Data System (USRDS).

Cross-matching of AMI-related hospitalizations from the USRDS database with the NRFMI over a 2-year period identified 3,049 patients, who formed the study cohort. Dialysis and nondialysis patients with AMI exhibited significant clinical differences: 44.4% of dialysis patients presented with chest pain, versus 68.3% of nondialysis patients. Furthermore, 19.1% of patients undergoing dialysis had ST elevation, versus 35.9% of nondialysis patients. Unsurprisingly, therefore, 44.8% of dialysis patients were diagnosed as not having acute coronary syndrome on admission, compared with 21.2% of nondialysis patients. These misdiagnoses had serious consequences: cardiac arrest and in-hospital death were both twice as frequent in patients requiring dialysis than in those who did not undergo dialysis.

The authors conclude that dialysis patients hospitalized for AMI present with strikingly different signs and symptoms to nondialysis patients, which could explain their poor outcomes. They recommend intensive efforts for early, accurate recognition of AMI in patients undergoing dialysis.

Original article Herzog CA *et al.* (2007) Clinical Characteristics of Dialysis Patients With Acute Myocardial Infarction in the United States: a collaborative project of the United States Renal Data System and the National Registry of Myocardial Infarction. *Circulation* **116**: 1465–1472

Novel wireless technology reduces door-to-intervention time in STEMI

The US national campaign to reduce door-to-intervention (D2I) times in ST-segment elevation

myocardial infarction (STEMI) has seen a range of new initiatives introduced. Now, Dhruva and colleagues report initial results from the STAT-MI trial, which used a new wireless system to transmit prehospital electrocardiograms to the emergency department.

Using this fully-automated protocol, electrocardiograms acquired by emergency medical service personnel were converted to a PDF file and printed out. The file was then emailed to on-call cardiologists who, having also been notified by pager, were able to access and analyze the electrocardiogram by use of handheld smartphones.

During the 6-month study period, 20 patients with STEMI were evaluated. The median time between electrocardiography in the field and visualization on a smartphone was 4 min. Compared with control data from the preceding year ($n=29$), the mean D2I time during STAT-MI was reduced by 66 min (80.1 ± 35.4 min vs 145.6 ± 76.9 min; $P=0.001$), and the mean door-to-cardiologist notification time was reduced by 76 min (-14.6 ± 12.9 min vs 61.4 ± 76.7 min; $P<0.001$). The reduction in D2I time was consistent for presentation at different times of day.

This new technology seems to meet the ACC target of reducing D2I times to less than 90 min and could prove beneficial in the treatment of STEMI.

Original article Dhruva VN *et al.* (2007) ST-Segment Analysis Using Wireless Technology in Acute Myocardial Infarction (STAT-MI) trial. *J Am Coll Cardiol* **50**: 509–513

Pediatric metabolic syndrome predicts CVD in later life

The cardiovascular risk factors that contribute to the metabolic syndrome are associated with future cardiovascular disease (CVD) in adults; however, it is not known whether the presence of these risk factors in childhood predicts CVD in adult life. Morrison and colleagues used data from the Lipid Research Clinics (LRC) Princeton Prevalence Study (1973–1976) and the Princeton Follow-up Study (PFS; 2000–2004) to investigate this relationship.

Children aged 5–19 years from the Princeton School District of Greater Cincinnati were evaluated for lipid characteristics, BMI, blood chemistry values, blood pressure and family history of CVD in the initial LRC study period.

The PFS established the CVD status of 771 participants from the initial study.

The mean age of participants in the PFS was 38.4 years. Of the 31 patients who had pediatric metabolic syndrome in the LRC study, six (19.4%) experienced CVD during the intervening period compared with an incidence of 1.5% for participants who did not have metabolic syndrome in childhood. Multivariate analysis showed that pediatric metabolic syndrome (odds ratio [OR] 14.7, $P<0.0001$) and age at follow-up (OR 1.2, $P=0.03$) were significant predictors of CVD, whereas sex, race and family history of cardiovascular disease were not.

The authors conclude that pediatric metabolic syndrome predicts CVD during the subsequent 25 years of life. Their results highlight the importance of preventative interventions in childhood and early adult life, particularly with regards to weight and BMI control.

Original article Morrison JA *et al.* (2007) Metabolic syndrome in childhood predicts adult cardiovascular disease 25 years later: the Princeton Lipid Research Clinics Follow-up Study. *Pediatrics* **120**: 340–345

Diabetes and CVD: impact of antidiabetic agents on morbidity and mortality

Conflicting evidence currently exists on how best to achieve glycemic control in diabetic patients at risk of developing cardiovascular complications or in those with coexisting cardiovascular disease. This is illustrated by three recently published papers, one of which reviewed the outcomes with different antidiabetic agents in patients with diabetes and heart failure, whereas the other two evaluated the risk of cardiovascular morbidity and mortality in diabetic patients treated with thiazolidinediones.

The objective of a review and meta-analysis of eight clinical trials (five cohort studies, one randomized controlled trial and two post-hoc subgroup analyses from randomized trials) published by Eurich *et al.* was to evaluate the association between different antidiabetic agents (insulin, thiazolidinediones, sulfonylureas and metformin) and morbidity and mortality in patients ($n=24,758$) known to have both diabetes and heart failure. Three out of four trials evaluating the effects of insulin suggested an increased risk of mortality