

## IN BRIEF

**➤ DYSLIPIDAEMIA****No effect of PCSK9 inhibitors on cognitive function**

Use of PCSK9 inhibitors is not associated with adverse cognitive effects, even among patients who attain very low levels of LDL cholesterol, according to a study in a subgroup of 1,204 patients from the FOURIER trial, a randomized trial of the PCSK9 inhibitor evolocumab added to statin therapy. Data from previous clinical trials had led to concerns that use of PCSK9 inhibitors or the resulting low LDL-cholesterol levels might be associated with cognitive deficit. However, this study found no significant differences in the change in cognitive function test scores from baseline over a median of 19 months between the placebo and evolocumab groups, including the score on the spatial working memory strategy index of executive function (the primary end point;  $P < 0.001$  for noninferiority;  $P = 0.85$  for superiority), and the secondary end points of scores of working memory, episodic memory, or psychomotor speed. In addition, an exploratory analysis found no associations between LDL-cholesterol levels and cognitive changes.

**ORIGINAL ARTICLE** Giugliano, R. P. et al. Cognitive function in a randomized trial of evolocumab. *N. Engl. J. Med.* **377**, 633–643 (2017)

**➤ SURGERY****On-pump superior to off-pump CABG surgery**

A follow-up study including 2,203 patients from a US-based randomized trial shows that CABG surgery performed without cardiopulmonary bypass (off pump) is associated with lower rates of 5-year survival and event-free survival than CABG surgery with cardiopulmonary bypass (on pump). In all 5-year clinical outcomes evaluated, off-pump CABG surgery did not confer any advantage over on-pump CABG surgery: the rate of the primary outcome of death from any cause was higher with the off-pump approach than with the on-pump procedure (15.2% versus 11.9%; relative risk 1.28, 95% CI 1.03–1.58,  $P = 0.02$ ), as was the rate of the primary outcome of major adverse cardiovascular events (31.0% versus 27.1%; relative risk 1.14, 95% CI 1.00–1.30,  $P = 0.046$ ). No between-group differences were found for the 5-year secondary outcomes of nonfatal myocardial infarction, death from cardiac causes, repeat revascularization, and repeat CABG surgery.

**ORIGINAL ARTICLE** Shroyer, A. L. et al. Five-year outcomes after on-pump and off-pump coronary-artery bypass. *N. Engl. J. Med.* **377**, 623–632 (2017)

**➤ CARDIOPROTECTION****Anti-ageing effects of cardiosphere-derived cells**

Cardiosphere-derived cells (CDCs) from young animals can rejuvenate old animals. New research shows that intracardiac injection of neonatal rat CDCs in old rats improves heart function (reducing cardiac stiffness, hypertrophy, fibrosis, and diastolic dysfunction), increases exercise capacity by ~20%, and improves the levels of systemic biomarkers compared with vehicle injection. CDC therapy also induced a change in cardiac gene expression towards a youthful pattern, and telomeres of heart cells from CDC-treated animals were longer than vehicle-treated animals. *In vitro* studies with human heart progenitors from old donors (aged >55 years) exposed to human CDCs or exosomes secreted by CDCs from young donors (aged <2 years) showed that young CDCs secrete exosomes that increase telomerase activity and telomere length, and reduce the number of senescent human heart cells.

**ORIGINAL ARTICLE** Grigorian-Shamagian, L. et al. Cardiac and systemic rejuvenation after cardiosphere-derived cell therapy in senescent rats. *Eur. Heart J.* <http://dx.doi.org/10.1093/eurheartj/ehx454> (2017)