Major journals

The statin "CTT belt": Reducing the risk of MVEs

Vinod Patel, Associate Professor, Warwick Medical School, University of Warwick and Honorary Consultant in Diabetes and Endocrinology, George Eliot Hospital NHS Trust, Nuneaton

The important question, "what is the effect of statin treatment in individuals at low risk of vascular events?" can now be answered with a great deal of statistical and clinical confidence. The landmark CTT (Cholesterol Treatment Trialists') Collaboration paper published in *The Lancet* (2012; summarised alongside) presents clear evidence supporting the benefit of statin therapy on reducing the risk of major vascular and coronary events, even in low-risk individuals, following analysis of data from 17149 individuals from 27 randomised controlled trials.

The CTT group calculated that the relative risk reduction in major vascular events (MVEs), including non-fatal myocardial infarction, coronary death, coronary revascularisation and stroke, with statin treatment was 21% per 1 mmol/L reduction in LDL cholesterol (relative risk, 0.79 [95% confidence interval, 0.77–0.81]; $P<0.0001$). However, the number of people needed to treat (NNT) per year to prevent a single MVE varied according to the baseline 5-year MVE risk level (5-year MVE risk [NNT]: <5% [555], ≥5 to <20% [198], ≥20 to <30% [94], ≥30% [46]). Benefits of statin treatment on vascular mortality became significant at the ≥10% 5-year risk level, and overall the annual absolute risk reduction was 0.17%, which equated to an NNT of 588 individuals per year to prevent one vascular death. The all-cause mortality reduction was 0.093% (NNT=1071).

The researchers concluded that statin therapy reduced the risk of MVEs even in people with CVD risk of lower than 10%. Each 1.0 mmol/L reduction in LDL cholesterol led to 11 fewer MVEs per 1000 people treated for 5 years. This vastly outweighs the hazards of statin treatment, including an increased risk of diabetes.

So now to seat belts! In 2011, the American Centre for Disease Control and National Centre for Injury Prevention and Control stated that seat belt use had saved 13 000 lives amongst 190 million drivers in the US in 2009 (Centers for Disease Control and Prevention, 2011). One way of viewing this statistic is that all of these drivers were, in effect, "treated" to save 13000 lives, yielding an "NNT" of 14 615 people to save a single life. When considering this figure alongside the CTT study group all-cause mortality reduction NNT to save one life (14615 versus 1071), it would appear that the benefit of statin treatment is potentially 13.6 times greater than seat belt use at reducing overall mortality.

In conclusion, the comparison between lipid-lowering therapy and seat belt use made in this commentary may not seem an obvious one but it clearly highlights the clinical benefit of statin therapy in the primary prevention of vascular events. As a take-home message – please do not stop using seat belts – re-examine the potential of statin treatment in reducing vascular risk, even in low-risk individuals who are not currently represented in prescribing guidelines.

Centers for Disease Control and Prevention (CDC) (2011) *Policy Impact: Seat belts*. CDC, Atlanta, GA, USA. Available at: http://1.usa.gov/SR3ClV (accessed 29.08.12)

LANCET

Statins reduce risk of major vascular events in low-risk individuals

Readability	✓✓✓✓
Applicability to practice	✓✓✓✓✓
WOW! factor	✓✓✓✓✓

1 The authors set out to determine the effect of lowering LDL cholesterol on the risk of major vascular events (MVEs) in individuals at low vascular risk.

2 The meta-analysis, conducted by the Cholesterol Treatment Trialists' (CTT) Collaborators, analysed individual data from 27 trials (n=174 149), of which 22 compared statin treatment with a control, and five compared low-and high-intensity statin treatment. Studied outcomes included major vascular and coronary events, coronary revascularisation, stroke, cancers and cause-specific mortality.

3 Individuals were stratified by baseline 5-year risk of major vascular event (five categories ranging from <5% to ≥30%). The authors compared proportional risk reductions in the different subgroups. The effects of statin therapy were reported per 1.0 mmol/L reduction in LDL cholesterol.

4 Statin-mediated reduction of LDL cholesterol yielded a reduction in the risk of major coronary events independent of baseline LDL cholesterol and vascular risk, significantly reducing the risk of major coronary events and coronary revascularisations in the two lowest risk categories ($P<0.0001$ for both comparisons).

5 The authors concluded that in people with a 5-year MVE risk of <10%, for every 1.0 mmol/L reduction in LDL cholesterol, the estimated absolute reduction in risk of MVE was approximately 11 per 1000 over 5 years.

Cholesterol Treatment Trialists' (CTT) Collaborators (2012) The effects of lowering LDL cholesterol with statin therapy in people at low risk of vascular disease: meta-analysis of individual data from 27 randomised trials. *Lancet* **380**: 581–90

AMERICAN JOURNAL OF MEDICINE

HDPs increase the risk of postpartum diabetes

Readability	✓✓✓✓
Applicability to practice	✓✓✓
WOW! factor	✓✓✓

1 The authors of this retrospective cohort study evaluated the relationship between hypertensive disorders in pregnancy (HDPs; gestational hypertension and preeclampsia) and postpartum diabetes incidence.

2 National Health Insurance Research Database claims data from 1997–2003 identified women aged between 19 and 40 years with their first HDP and without prior diabetes or hypertension (n=1139). A comparison group consisted of women who had normal pregnancy without HDPs (n=4527). Women from both groups were followed up until 31 December 2008 for the onset of postpartum diabetes.

3 Hazard ratios (HRs) were calculated and adjusted for baseline comorbidities, age, occupation and income.

4 Women in the HDP group had a 5.08-fold greater incidence of diabetes compared with the non-HDP group, and the age-specific incidence of diabetes was significantly greater in women with HDPs than without (trend P<0.0001). The cumulative incidence of diabetes was 6% greater in the HDP group compared with women in the comparison group.

5 The HR for the HDP group was 3.42 following adjustment for comorbidities, age and income. Hyperlipidaemia and obesity were both strongly associated with diabetes development in both study groups.

6 The authors concluded that early identification of women with HDPs who are at high risk of developing diabetes is extremely important in the prevention of postpartum diabetes.

Wang IK, Tsai IJ, Chen PC et al (2012) Hypertensive disorders in pregnancy and subsequent diabetes mellitus: a retrospective cohort study. *Am J Med* **125**: 251–7

BMJ

QRISK2-2011: Independent and external validation

Readability	✓✓✓✓
Applicability to practice	✓✓✓
WOW! factor	✓✓✓✓

1 The authors set out to validate the QRISK2-2011 risk score, and to compare its performance with another cardiovascular disease (CVD) risk prediction model, the NICE version of the Framingham risk score.

2 Over 2 000 000 individuals aged 30–84 years from 364 UK GP practices were selected from The Health Improvement Network (THIN) database between June 1994 and June 2008. None had a previous diagnosis of CVD or had been prescribed statins.

3 The authors measured the time to the first diagnosis of CVD and used the QRISK2-2011 risk score to estimate the 10-year CVD risk for every individual in the THIN database cohort. Measures of calibration and discrimination were used to assess the predictive performance of QRISK2-2011.

4 The clinical usefulness of the QRISK2-2011 score and the NICE Framingham equation were compared using decision curve analysis.

5 A total of 93 564 CVD incidents occured during a mean of 5.75 years of observation, yielding a 10-year observed risk of CVD of 6.75% (95% confidence interval [CI], 6.50–6.64%) and 8.66% (95% CI, 8.58–8.75%) in women and men, repsectively.

6 Compared with the Framingham equation, the QRISK2-2011 score showed better calibration and agreement between predicted and observed CVD outcomes. However, when ≥20% CVD risk was used as a threshold for treatment, even QRISK2-2011 failed to identify 78% of women and 67% of men who went on to develop CVD.

Collins GS and Altman DG (2012) Predicting the 10 year risk of cardiovascular disease in the United Kingdom: independent and external validation of an updated version of QRISK2. *BMJ* **344**: e4181

JAMA

CVD health metrics and all-cause, CVD and IHD mortality

Readability	✓✓✓✓
Applicability to practice	✓✓✓✓
WOW! factor	✓✓✓✓

1 The authors examined the impact of meeting the American Heart Association (AHA) cardiovascular (CV) health metrics on the risk of all-cause, cardiovascular disease (CVD) and ischaemic heart disease (IHD) mortality in American adults.

2 Data for nonpregnant adults aged ≥20 years (n=44 959) were extracted from NHANES (The National Health and Nutrition Examination Survey; 1988–94, 1999–2004 and 2005–2010) and the NHANES III Linked Mortality File (through 2006).

3 The authors analysed the risk of all-cause, CVD and IHD mortality associated with each of seven health metrics (not smoking, being physically active, having normal blood pressure, blood glucose and total cholesterol levels and weight, and eating healthily) and a health metrics score. Hazard ratios (HRs) were adjusted for age, sex and ethnicity.

4 Fewer than 2% of the study cohort met all seven CV health metrics. Individuals who met a greater number of metrics tended to be younger, female, non-hispanic white people with a higher level of education.

5 When comparing individuals meeting ≤1 or ≥6 health metrics, adjusted HRs were 0.49 (95% confidence interval [CI], 0.33–0.74), 0.24 (95% CI, 0.13–0.47) and 0.30 (95% CI, 0.13–0.68) for all-cause, CVD and IHD mortality, respectively.

6 The authors concluded that having a lower risk of all-cause and CVD mortality was associated with meeting a greater number of the AHA CV health metrics but that the percentage of the study population who met all seven metrics was very low.

Yang Q, Cogswell ME, Flanders WD et al (2012) Trends in cardiovascular health metrics and associations with all-cause and CVD mortality among US adults. *JAMA* **307**: 1273–83

"Compared with the Framingham equation, the QRISK2-2011 score showed better calibration and agreement between precticted and observed cardiovascular disease outcomes."