

# 044 POPULATION HETEROGENEITY IN MIDLIFE TRAJECTORIES OF BLOOD PRESSURE

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**Background** Age related changes in blood pressure (BP) show increases around midlife. Such increases may be an early indication of arterial aging or a disease process. We investigated the presence of subpopulations with different underlying trajectories (latent classes) of midlife systolic (SBP) and diastolic blood pressure (DBP) in men and women.

**Design** Prospective UK birth cohort study.

**Participants** 1840 males and 1819 females.

**Outcome** BP at age 36, 43 and 53 years.

**Analysis** Unconditional linear growth mixture models were fitted to SBP and DBP to obtain latent classes. To examine the relevance of the extracted classes, we compared the distribution of early life body size, midlife body mass index (BMI) and weight change, lifetime socio-economic position (SEP), antihypertensive medication (HypRx) use and self reported angina in each class.

**Results** In men, 2 class models for SBP and DBP had the best fit in terms of the Bayesian information criterion. For SBP, the majority were in the "Normal" class characterised by a lower BP at age 36 and a gentle midlife increase (+0.9 mmHg per year). The other class ("Increaser") had a higher increase (+3.1 mmHg per year). Similar classes were found for DBP. A "Normal" and "Increaser" class were also observed among women, together with an additional class ("High") with high BP at age 36 (SBP=170; DBP=100 mmHg) and no evidence of a change with age. In both sexes, a smaller proportion were in the "Normal" SBP class compared to the "Normal" DBP class—for example, 94.3% of men were in the "Normal" SBP class vs 97.6% in the "Normal" DBP class. Individuals in the "Normal" classes were heavier at birth, taller at age 7, had a lower midlife BMI and midlife weight change, and were less likely to be on HypRx compared with those in other classes. Manual childhood SEP was associated with the "Increaser" SBP class in men. Undiagnosed angina (Rose Questionnaire) was more prevalent in the male "Increaser" SBP class. GP diagnosed angina (self-reported) and HypRx use were most prevalent in the "High" female SBP and DBP classes. Women in this group also had the lowest midlife weight change suggesting this was an extant morbid group.

**Conclusion** There was heterogeneity in the progression of midlife BP. This analytical approach may be useful for exploring determinants of BP and for identifying individuals at a high risk of future hypertension/CVD.

# 045 PREDICTING RISK OF STROKE FOLLOWING TIA: A SYSTEMATIC REVIEW OF THE VALIDATION OF ABCD<sup>2</sup> CLINICAL PREDICTION RULE

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**Introduction** Stroke is a leading cause of death and acquired disability in every society in which it has been studied. Stroke and transient ischaemic attack (TIA) arise from identical aetiologies and a number of studies have demonstrated that TIAs carry a significant risk of stroke. Several independent predictors of stroke have been incorporated into models such as the ABCD<sup>2</sup> clinical prediction rule, which is used to predict risk of stroke following TIA. This systematic review assessed the predictive value of the ABCD<sup>2</sup> rule in relation to 7 and 90 day risk of stroke.

**Methods** A computerised systematic literature search was performed to retrieve articles that validated the ABCD<sup>2</sup> rule. The original

derivation study was used as a predictive model and applied to all validation studies, with observed and predicted number of strokes at 7 and 90 days stratified by risk group (0-3 low, 4-5 moderate, 6-7 high). Results from the studies were pooled and risk ratios (RR) with 95% CI produced. Forest plots were used to graphically display the data. A RR score of 1 represents correct prediction by the ABCD<sup>2</sup> rule, <1 represents under-prediction and >1 over-prediction.

**Results** Nine validation studies (n=5626) predicted 7 day stroke risk. The ABCD<sup>2</sup> rule correctly predicted occurrence of stroke at 7 days across all three risk strata: low risk (n=1933) — RR 1.12, 95% CI (0.61 to 2.05); moderate risk (n=2640)—RR 1.11, 95% CI (0.74 to 1.68); high risk (n=1053)—RR 0.98, 95% CI (0.69 to 1.41). There were 318 strokes predicted and 288 strokes observed at 7 days across all three risk strata. Data on five studies (n=4897) were pooled to predict 90 day stroke risk. The ABCD<sup>2</sup> rule over-predicted the occurrence of stroke across all three risk strata — low risk (n=1660), RR 1.50, 95% CI (0.86 to 2.62); moderate risk (n=2214), RR 2.24, 95% CI (1.29 to 3.91); high risk (n=1033), RR 2.00, 95% CI (0.90 to 4.45). There were 268 strokes observed at 90 days in contrast to 404 predicted strokes. The chi-squared trend for analysis indicated that as the trichotomised ABCD<sup>2</sup> score increased, the rate of stroke increased (p<0.0001).

**Conclusion** The ABCD<sup>2</sup> score correctly predicts 7 day risk of stroke across all risk strata but over-predicts 90 day risk of stroke in all groups. The variation in the study setting and design needs to be considered in the interpretation of these findings. ABCD<sup>2</sup> is a useful CPR, particularly in relation to 7 day risk of stroke.

## Tuesday 7 September 2010 Parallel Session C

### Obesity

# 046 ASSOCIATION BETWEEN BIRTHWEIGHT AND OBESITY IN ADULT FEMALES

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**Objective** Adult obesity is associated with a variety of acute and chronic illnesses. Although high birthweight is known to predict obesity in middle age, the relationship between low birthweight and obesity is less clear. This study examines the association between birthweight and obesity in middle-aged women, and investigates whether the association is modified by other factors.

**Methods** The Million Women Study is a large population-based prospective cohort study of middle-aged UK women. This analysis is based on 372 542 women who reported their birthweight, current body size, and other information in a follow-up survey administered approximately 3 years after recruitment (mean age 58 years at follow-up). Logistic regression was used to estimate relative risk for being obese in adulthood (body mass index >30 kg/m<sup>2</sup>) by birthweight, both unadjusted and adjusted for reported adult height, parental heights, and a range of social and lifestyle factors, including socio-economic status, parental smoking at birth, being breast fed, reproductive history and health behaviours.

**Results** There was a U-shaped relationship between birthweight and adult obesity. Compared to women of intermediate birthweight (3.0–3.5 kg), the relative risk of being obese was 1.26 (95% CI 1.23 to 1.29) for women with low birthweight (<2.5 kg), and 1.33 (1.30 to 1.37) for women with high birthweight (>4.0 kg). After adjustment for height, the relative risk of being obese associated with low birthweight was attenuated (from 1.26 to 1.15), while the relative risk associated with high birthweight was increased (from 1.33 to 1.44). Other health and lifestyle characteristics did not substantially change the obesity-related relative risks at different birthweight.