027 CHANGING INFLUENCES ON CHILDHOOD OBESITY: A STUDY OF TWO GENERATIONS OF THE 1958 BRITISH BIRTH COHORT

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Objective: To investigate whether risk factors for childhood obesity have changed over time, either in their strength of influence or prevalence.
Design: Prospective cohort study.
Setting: Great Britain.
Participants: The 1958 birth cohort and a sub-sample of their offspring. Height and weight measures, and information on pre-natal and early life factors were collected on cohort members aged 7 years in 1965 (n = 8552) and on offspring aged 4–9 years in 1991 (n = 1889).
Main Outcome Measure: Body mass index (BMI) standard deviation scores (SDS) and overweight/obesity, derived using international standards.
Results: Prevalence of childhood overweight/obesity increased by more than 50% between generations. Higher parental BMI was associated with increased childhood BMI; for example, cohort members and offspring of obese mothers had more than double the risk of overweight/obesity, with adjusted odds ratios of 2.29 (95% CI 1.76 to 2.97) and 3.20 (1.85 to 5.54) respectively. Maternal smoking and smaller family size were associated with higher childhood BMI in both generations. There was evidence suggesting that social gap in childhood obesity was widening: indicators of lower socio-economic position showed either no association or a protective effect in cohort members, but tended to be associated with increased BMI in offspring. Full-time maternal employment was associated with greater BMI among offspring, for example by 0.42 kg/m^2 in boys, an effect that had strengthened between generations ($p<0.05$). Several risk factors had altered in prevalence: parental obesity and maternal employment had increased; socio-economic factors had improved; family size and maternal smoking had reduced.
Conclusions: Risk factors for childhood obesity had altered across two generations, either in terms of their strength of association, their prevalence or both. Parental obesity, maternal employment and socio-economic factors may be playing an increasingly important role in the childhood obesity epidemic.

028 DOES CHILDCARE INFLUENCE THE RISK OF OVERWEIGHT AND OBESITY IN THE EARLY YEARS? FINDINGS FROM THE UK MILLENNIUM COHORT STUDY

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Objectives: To explore whether childcare type (parent, informal, formal) is associated with overweight in children, and whether this differs by socio-economic background.
Design: Nationally representative prospective cohort study.
Setting: Children born in the UK in 2000–2002.
Participants: 12 354 children with information on childcare between 9 months and 3 years, and height and weight data at age 3.
Main Outcome Measure: Overweight (including obesity) at age 3 defined by the International Obesity Task Force cut-offs for body mass index.
Results: Children who were cared for in informal childcare were more likely to be overweight than those cared for by a parent (risk ratio (RR) 1.14, 95% CI 1.04 to 1.25), particularly if they were in full-time child care (RR 1.36, 1.16 to 1.59). The risk of overweight in children who were cared for in formal childcare did not differ from those cared for by a parent (1.05, 0.95 to 1.15). These associations remained after controlling for confounders. When stratifying by socio-economic background the increased risk of overweight in informal childcare (compared to parental care) was limited to children from more advantaged groups. Children were at increased risk of overweight if they were cared for in informal childcare and their mother was from a managerial or professional background (RR 1.24, 1.04 to 1.47), had a degree (RR 1.48, 1.19 to 1.84), or lived in a couple household (RR 1.16, 1.05 to 1.28), whereas there was no increased risk seen for informal childcare if the mother was from a routine or manual background, had no educational qualifications or was a lone parent. Further exploration revealed that the increased risk associated with informal childcare was experienced by children who were cared for by grandparents (1.15, 1.04 to 1.27) and not in other types of informal care. However, after taking into account hours per week spent in childcare, an increased risk was seen for full-time care by grandparents (RR 1.34, 1.12 to 1.56) (and not part-time care), and also for other full-time informal childcare (RR 1.41, 1.09 to 1.82).
Conclusions: Evidence from the US indicates that informal childcare is associated with a greater risk of childhood overweight. Our findings are consistent with this, although only for children from more advantaged groups. Whilst further research is required, these results suggest that the UK government's drive to support parents into paid employment should be accompanied by health related information and support for informal as well as formal carers such as nurseries. The recent announcement to provide grandparents with National Insurance credits for caring for grand-children provides a potential opportunity for health promotion.

Trends in CVD

029 STROKE MORTALITY TRENDS FOR ENGLAND: MODELLING THE PAST TO PREDICT THE FUTURE

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Background: In the UK, overall stroke mortality has declined. It is important to planners of health service provision to understand how trends in stroke mortality are changing and, given changes in population structure, how trends in stroke mortality will affect the future burden on the nation. We therefore aimed to investigate recent stroke mortality trends amongst those aged over 40 years in England and to make predictions of stroke mortality to 2015.
Methods: We obtained annual aggregated stroke death (ICD-10 I60 to I69) and population data for England from the Office of National Statistics for the years 1979–2005 and used these data to investigate time trends in gender-specific mortality rates for adults aged over 40 years. We applied log-linear modelling to identify effects attributable to age, linear ''drift'' over time, non-linear period and birth-cohort effects; discontinuities in ''drift'' were also considered. Different forms of model were compared for relative goodness-of-fit using Akaike's Information Criterion and residual analysis was used to identify specific aspects of lack of fit of individual models. Predictions to 2015 were made for the best-fitting models.
Results: Stroke mortality predictions were not particularly sensitive to many of the aspects of the underlying choice of model, with, for example, the more complex models including different age and period effects for males and females providing similar predictions to simpler models. However, predictions were highly sensitive to varying assumptions about potential discontinuities in

the ''drift''. Our predictions are that stroke deaths are likely to continue to decrease up to at least 2015. For 2015, our predictions of deaths from stroke varied from 34 429 to 46 538 (compared with 47 213 deaths in 2005) under the different plausible model scenarios. We also noted that there were some potentially interesting trends in mortality amongst recent birth cohorts. In particular, mortality was higher in older age groups, but the difference between the older and younger age groups appears to have decreased over time for both sexes. Modelling of the subgroup aged 40–69 suggested a relative rate increase in mortality amongst those born since the mid-1940s compared with earlier cohorts; this trend appears to have been sustained in men.

Conclusions: Downward trends in stroke mortality are set to continue overall to at least 2015. However, these trends appear to be levelling off in middle-aged people, particularly men. This raises concerns that stroke mortality might increase as these cohorts grow older.

030 CHOOSING METRICS IN PUBLIC HEALTH ASSESSMENTS: ATTRIBUTING CREDIT FOR THE RECENT LARGE CORONARY HEART DISEASE MORTALITY DECLINE IN THE US POPULATION

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Background: Most explanations of falls in coronary heart disease (CHD) mortality limit themselves to event based metrics (such as fewer deaths). However, time based metrics (such as life-years gained (LYG)) promise to capture more of the social value attached to the deaths averted. We have assessed the sensitivity of conclusions about the relative contributions of treatments and risk factor changes to the choice of metric.

Methods: Using a validated CHD mortality model (IMPACT), we integrated data on the number of CHD patients, treatment uptake, treatment effectiveness, risk factor trends, and median survival among US adults aged 25–84 between 1980 and 2000, in order to estimate fewer deaths and LYGs. LYG were estimated using the US general population life expectancy for CHD onsets averted in 2000 and the median survival rates from Medicare for the additional survivors after CHD onset. (All the latter gains are currently attributed to treatments). We examined how uncertainty within the model may vary according to choice of metric.

Results: Between 1980 and 2000, CHD mortality-rates halved resulting in approximately 341 745 fewer deaths in 2000; approximately 47% of the fall was attributed to treatments in patients (after clinical presentation) and 44% to population-wide risk factor reductions (independent of medication). However, this split was altered to 35%/65% when LYG was used. Taking smoking as an example, those who did not experience a smoking attributable CHD death in 2000 because they did not smoke have been given the average US life expectancy (at the age of averted death) in 2000. The life-expectancy of the hypothetical non-smoker, however, would be expected to be higher. Applying these extended years to those deaths avoided by not smoking can add more than 50 000 more life years attributable to the decline of smoking in the population. Furthermore, while the model attributes all gains from increased survival post CHD onset to improved treatments, an increasing proportion of non-smokers among CHD patients could result in additional LYG attributable to smoking reduction.

Discussion and Conclusions: Using life-years gained rather than deaths avoided strengthens the case for primary prevention by risk factor reduction, because it captures more fully the social gains that result. The additional assumptions required are all relatively minor. It seems that past versions of the model may understate the relative importance of risk factor changes when better assessed using the metric of life-years gained.

031 EXPLAINING THE MASSIVE DECLINE IN CORONARY HEART DISEASE MORTALITY IN ICELAND BETWEEN 1981 AND 2006

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Background: Coronary heart disease mortality rates have been decreasing in Iceland since the 1980s. We used the validated IMPACT model to examine how much of the 80% decrease in Iceland between 1981 and 2006 could be attributed to medical and surgical treatments and how much to changes in cardiovascular risk factors.

Methods: The previously validated IMPACT mortality model was used to combine and analyse data on uptake and effectiveness of cardiological treatments and risk factor trends in the entire Iceland population. The main data sources were official statistics, national quality registers, published trials and meta-analyses, clinical audits and a series of national population surveys. Sensitivity analyses were then conducted.

Results: Between 1981 and 2006, coronary heart disease mortality rates in Iceland decreased by 80% in men and women aged 25 to 74 years. This fall resulted in 295 fewer deaths in 2006. Approximately one quarter of this decrease (27%) was attributable to treatments in individuals (including some 11% to secondary prevention, 5% to heart failure treatments, 5% to initial treatments of acute coronary syndrome, 2% to hypertension treatments and less than 1% to lipid reduction). Almost three quarters of the mortality decrease (72%) was attributable to population risk factor reductions (principally cholesterol, 35%; smoking, 22%; systolic blood pressure, 22% and physical activity, 5%). Adverse trends were seen for diabetes (−5%), and obesity (−4%).

Conclusions: Almost three quarters of the large coronary heart disease mortality decrease in Iceland between 1981 and 2006 was attributable to reductions in major cardiovascular risk factors in population (mainly decreases in total serum cholesterol, smoking and blood pressure levels). Very little was attributable to primary prevention medications. These findings emphasise the value of a comprehensive strategy that promotes tobacco control and a healthier diet. It also highlights the potential importance of effective, evidence based medical treatments.

032 20-YEAR TRENDS IN MAJOR CORONARY RISK FACTORS IN OLDER BRITISH MEN: ASSESSING THE IMPACT OF MEDICATION USE

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Background: Favourable trends in blood pressure (BP) and blood lipids have contributed to the falling incidence of coronary heart disease (CHD) in recent decades. The role of medication in the BP and blood lipid trends is unknown.