area level measure of relative deprivation. Life tables by year, sex and deprivation quintile were constructed. Lifespan variation was calculated using $e^{\dagger}$. The magnitude of inequalities were estimated using the slope and relative indices of inequality. 95% confidence intervals were produced using Monte-Carlo simulation. The lifespan variation gap between the most and least deprived at (1) the same time point and (2) a comparable level of life expectancy was decomposed. The sensitivity of the results to starting at age 0 were tested by repeating the analysis starting at age 35.

Results Lifespan variation for males from the most deprived quintile was 12.2 years (12.1 years–12.3 years) in 1981 and increased to 12.3 years (12.1 years–12.4 years) in 2011. For the least deprived lifespan variation decreased from 11.2 years (11.0 years–11.3 years) to 10.4 years (10.3 years–10.6 years). This caused the socioeconomic gap to widen over time in absolute and relative terms. In 2011 there was a 2.1 year (1.9 year–2.4 year) difference or a 19% (17%–21%) difference. The gap widened because of increasing differences in mortality rates across working ages from external causes. In 1981 external causes explained 55.1% of the gap and by 2011 they explained 69.5% of the gap. Deaths from circulatory disease explain less of the lifespan variation gap over time. At a shared level of life expectancy the most deprived quintile experience higher mortality rates from external causes of death despite arriving at this life expectancy thirty years later in time. Substantive conclusions were unchanged during sensitivity analysis.

Conclusion The lifespan variation gap widened because of deaths across working ages from external causes. Scotland must reduce deaths across working adult ages from external causes if it is to reduce the gap and improve its ranking within Western Europe. Routinely monitoring lifespan variation inequalities is valuable for extending our understanding of the changing nature of mortality inequalities and is relevant for countries considering which public health strategies will reduce mortality inequalities.

OP06

SOCIO-DEMOGRAPHIC INEQUALITIES IN CARDIOVASCULAR RISK MANAGEMENT AND EARLY DETECTION OF VASCULAR CONDITIONS BY THE NHS HEALTH CHECK: A DIFFERENCE-IN-DIFFERENCES MATCHING ANALYSIS

¹K Chang*, ²JT Lee, ¹E Vamos, ¹R Palladino, ¹M Soljak, ¹A Majeed, ¹C Millett. ¹Department of Primary Care and Public Health, School of Public Health, Imperial College London, London, UK; ²Saw Swee Hock School of Public Health, National University of Singapore, Singapore, Singapore

10.1136/jech-2017-SSMAbstracts.6

Background England's National Health Service (NHS) Health Check is a nationwide cardiovascular risk assessment and management programme implemented with aims to prevent cardiovascular disease (CVD), type 2 diabetes mellitus (T2DM) and chronic kidney disease, as well as to reduce inequalities in health. We aimed to compare the impact of the NHS Health Check on: i) Early detection of vascular conditions among population subgroups of age, sex, ethnicity and deprivation; and ii) The management of cardiovascular risk among high-risk population subgroups of age, sex, and deprivation.

Methods We obtained retrospective electronic medical records from the Clinical Practice Research Datalink for a randomly selected sample of 1 38 788 patients aged 40–74 years,

without known CVD or diabetes, and were registered with 462 English general practices between 2009 and 2013. We estimated programme impact for each subgroup using a difference-in-differences matching analysis that compared changes in outcome over time and between Health Check attendees and non-attendees.

Results 21.4% (29,672/138,788) of the study population attended a Health Check. The programme was associated with increased detection of hypertension and T2DM among Health Check attendees. A significantly greater number of hypertension and T2DM incident cases were detected in male than female attendees (e.g. an additional 4.02%, 95% CI: 3.65% to 4.39%, and 2.08%, 1.81% to 2.35% male and female attendees were detected with hypertension respectively). A significantly greater number of T2DM incident cases were detected among attendees living in the most deprived area (1.60%, 1.23% to 1.97%) compared with those living in the least deprived area (0.79%, 0.52% to 1.06%).

The programme was associated with significant reductions in 10 year CVD risk scores, total cholesterol and systolic blood pressure while statin prescribing increased among high-risk attendees. However, no major differences in programme impact on cardiovascular risk management were observed between subgroups (e.g. programme impact on 10 year CVD risk score was –1.13%, –1.48% to –0.78% in male and –1.53%, –2.36% to –0.71% in female attendees).

Conclusion The NHS Health Check may have narrowed inequalities in the diagnosis of hypertension and T2DM but inequalities in the management of CVD risk remained unchanged. Proactive strategies may be required to address known inequalities in CVD outcomes.

OP07

IMPACT OF AN INTEGRATED HEALTH AND WELLBEING APPROACH TO ADDRESSING MULTIPLE LIFESTYLE RISKS AND REDUCING HEALTH INEQUALITIES: A MIXED METHODS STUDY

¹S Visram*, ²F Thirlway, ³N Akhter, ⁴N Walton, ⁴S Lewis. ¹School of Medicine, Pharmacy and Health, Durham University, Stockton-on-Tees, UK; ²Department of Anthropology, Durham University, Durham, UK; ³Wolfson Research Institute for Health and Wellbeing, Durham University, Durham, UK; ⁴Department of Geography, Durham University, Durham, UK

10.1136/jech-2017-SSMAbstracts.7

Background The return of public health to local government in England in 2013 created an opportunity to integrate preventive services with agencies that act on the wider determinants of health. A number of local authorities subsequently developed integrated health and wellbeing approaches, in recognition that the previous 'silo' approach to the provision of single-issue lifestyle services had made little impact on inequalities. These integrated services often involve targeting the most disadvantaged geographical and non-geographical communities locally. One example is the Wellbeing for Life (WFL) service in County Durham.

Methods The impact of WFL was evaluated using a mixed methods study design, involving: i) ethnographic observations plus interviews and focus groups with clients (n=58), staff (n=47), volunteers (n=15) and external stakeholders (n=10); ii) secondary analysis of intervention monitoring data at baseline (n=1461 clients), three (n=1201), six (n=380) and 12 months (n=133); and iii) a value for money assessment. Primary outcome measures were the EQ-5D and short Warwick

Edinburgh Mental Wellbeing Scale (SWEMWBS). Secondary outcome measures were BMI, fruit and vegetable intake, physical activity, alcohol consumption, smoking and self-efficacy.

Results Clients reported positive experiences of engaging with the service and described making lifestyle changes, such as reducing portion sizes or trying new activities. Many would have liked a longer intervention (usually 8–12 weeks) and staff agreed that the duration was often insufficient for those with more complex physical, mental and/or social needs. Pre/post analysis of the intervention data revealed significant improvements across all outcome measures, with the largest changes observed in clients with the least positive results at baseline. These changes were largely maintained at both follow-up periods. Furthermore, reductions in the differences in EQ-5D and SWEMWBS scores between clients from the 30% most deprived communities and all other clients at the six-month follow-up stage implied that inequalities had narrowed over time. The value for money assessment indicated an estimated cost per quality-adjusted life year (QALY) of £3900 and a social return on investment of around £3.59 for every £1 spent on WFL.

Discussion An integrated health and wellbeing approach can be acceptable to members of the target communities, encourage them to make and maintain lifestyle changes, and potentially reduce health inequalities. The WFL service appeared to represent good value for money, although the reliance on self-report data and lack of a control group were limitations of the study design. Further research is needed to establish the effectiveness of this approach over other intervention models.

Lifecourse later life

OP08

EXPLAINING TRENDS IN CORONARY HEART DISEASE MORTALITY AND SOCIOECONOMIC INEQUALITIES IN DENMARK 1991–2007: IMPACT_{SEC} MODEL ANALYSIS USING ROUTINE DATA

¹AM Joensen*, ^{2,3,4}T Joergensen, ⁵S Lundbye-Christensen, ⁵MB Johansen, ⁶M Guzmán-Castillo, ⁶P Badosz, ⁷J Hallas, ⁸EIB Prescott, ⁵S Capewell, ⁶M O'Flaherty. ¹Department of Cardiology, Aalborg University Hospital, Aalborg, Denmark; ²Research Centre for Prevention and Health, The Capital Region, Glostrup, Denmark; ³Department of Public Health, University of Copenhagen, Copenhagen, Denmark; ⁴Department of Clinical Medicine, Aalborg University, Aalborg, Denmark; ⁵Unit of Clinical Biostatistics and Bioinformatics, Aalborg University Hospital, Aalborg, Denmark; ⁶Department of Public Health and Policy, University of Liverpool, Liverpool, UK; ⁷Clinical Pharmacology, Department of Public Health, University of Southern Denmark, Odense, Denmark; ⁸Bispebjerg University Hospital, Capital Region of Denmark, Copenhagen, Denmark

10.1136/jech-2017-SSMAbstracts.8

Background Coronary heart disease (CHD) mortality has declined substantially during recent decades but is still one of the leading causes of death, morbidity and healthcare costs in Denmark. Furthermore, socioeconomic inequalities persist. Quantifying the contributions of prevention and treatment to these recent declines might help to identify the most successful health policies, particularly for reducing inequalities.

Methods We used IMPACT_{SEC}, a previously validated policy model, to apportion the recent decline in Danish CHD mortality to changes in major cardiovascular risk factors, and to increases in treatments in nine non-overlapping patient groups. Participants: All Danish adults aged 25–84 years, stratified by gender, age group and quintiles of financial income. Main

outcome measure: Deaths prevented or postponed (DPP), stratified by socio-economic circumstance (SEC).

Results There were 11 110 fewer CHD deaths in 2007 than would be expected if the 1991 mortality rates had persisted. This reflected a dramatic 74% fall in CHD mortality rates (from 433 to 113 deaths per 100,000). Improved treatments accounted for approximately 24% (95% confidence interval=21%–28%). This contribution was higher in more affluent quintiles (approximately 26%) and least in the most deprived group (19%). The biggest contributions came from the treatment of congestive heart failure in the community (630 DPPs=5.7% of all DPPs) and in hospital (410 DPPs=3.7%).

Risk factor improvements accounted for approximately 40% (37%–44%) of the mortality fall. This contribution was higher in the central quintiles –approximately 51% (47%–58%) and least in the most deprived quintile – approximately 36% (29%–39%). The largest contribution came from population falls in cholesterol levels approximately 24% (22.7%–25.4%) of all DPPs; and decreases in smoking, some 10% (8.4%–12.2%).

Overall, the IMPACTSEC model could explain two thirds of the mortality fall. The 36% gap most likely reflects deficiencies in data, notably in population blood pressure and income.

Conclusion Denmark has benefited from one of biggest falls in CHD mortality in high income countries. The treatment uptake rate in Denmark was comparable with that in other countries and treatments accounted for approximately one third of the total mortality fall, much as in other, comparable populations. The largest contributions came from population-wide, non-pharmacological reductions in major risk factors, notably cholesterol and smoking. Future strategies should therefore prioritise population-wide prevention policies.

OP09

CHILDHOOD COGNITIVE ABILITY AND STANDING BALANCE IN MID TO LATER LIFE: FINDINGS FROM THE MRC NATIONAL SURVEY OF HEALTH AND DEVELOPMENT

JM Blodgett*, D Kuh, DHJ Davis, R Cooper. MRC Unit for Lifelong Health and Ageing, UCL, London, UK

10.1136/jech-2017-SSMAbstracts.9

Background Physical performance indicators, such as standing balance, grip strength and walking speed, are increasingly being used as markers of healthy ageing. This is based on growing evidence that poor performance on these tests is associated with adverse health outcomes including falls, disability, hospitalisation and mortality. Individual variation in the levels of performance on each of these tests may be due to diverse contributing factors across life. Previous research has suggested that neurodevelopmental pathways may be particularly important for balance performance; however the few published studies on this have only examined balance at one age. We aimed to examine the associations between childhood cognitive ability, a marker of neurodevelopment, and standing balance at three ages in mid and later life.

Methods Up to 2785 participants from the MRC National Survey of Health and Development, a British cohort study followed since birth in 1946, were included in analyses. Standing balance was assessed at ages 53, 60–64 and 69 using the one-legged stand test with eyes closed up to a maximum of 30 s.