

encourage screening for established cerebrovascular risk factors in this high-risk, vulnerable group.

OP100

THE COST-EFFECTIVENESS AND EQUITY OF THE NHS HEALTH CHECKS CARDIOVASCULAR DISEASE PREVENTION PROGRAMME: A MICROSIMULATION USING REAL-WORLD DATA FROM A DEPRIVED NORTHERN CITY

¹B Collins*, ¹C Kyridemos, ²P Parvulescu, ²R Gosling, ¹S Capewell, ¹M O'Flaherty. ¹Department of Public Health and Policy, University of Liverpool, Liverpool, UK; ²Public Health Department, Liverpool City Council, Liverpool, UK

10.1136/jech-2017-SSMAbstracts.99

Background The NHS Health Check Programmes' stated objective is the early identification of otherwise healthy people at high risk of cardiovascular disease (CVD) and diabetes. However, the programme's effectiveness, cost-effectiveness, and equity are still contested. This study therefore aimed to determine whether Health Checks (HCs) are cost-effective and equitable in a city with high levels of deprivation and CVD.

Methods IMPACT_{NCD} is a previously validated, R-based dynamic stochastic microsimulation policy model. We calibrated this model to Liverpool demographics, risk factor exposures, and CVD epidemiology. We modelled the current implementation of HCs using local and national data on effectiveness, costs, and participant risk profiles. Disease costs and health state utilities were drawn from standard sources and discounted at 3.5% annually using a healthcare perspective. We quantified the uncertainty of model outputs using second-order Monte Carlo simulation, and report 95% uncertainty intervals.

We modelled three fifteen year scenarios from 2017 to 2031:

- A) continuing the current implementation of HCs;
- B) an optimal implementation of HCs assuming optimal coverage, uptake, treatment and lifestyle change;
- C) combining scenario A with structural policies targeting dietary consumption of salt, sugar, fruit and vegetables.

We compared all three scenarios with a counterfactual of no HCs, and conducted a rigorous sensitivity analysis.

Results The model suggested that over 15 years the CVD cases prevented or postponed would be approximately 310 (40–734) for scenario A, 870 (327–1,397) for scenario B, and 1740 (815–2,939) for scenario C.

Cumulative discounted net costs and quality-adjusted life years (QALYs) gained for the three scenarios respectively would be +£2.1 m (£1.5 m – +£4.8 m) and +90 QALYs (–124 – +376) for A; +£1.4 m (£6.1 m – +£6.6 m) and +434 QALYs (–76 – +1,133) for B; or £16.9 m (£33.2 m – £5.9 m) and +2,871 QALYs (+1,355 – +4,830) for C.

We estimated the probability of scenarios A and B being cost-effective by 2031 at 25% and 74% respectively, valuing each QALY at £20 000.

Scenario C would become cost saving by 2030.

Scenario A may increase existing health inequalities; B is likely to be neutral, while C would substantially decrease inequalities.

In extensive sensitivity analyses, the direction of the results did not change when the discount rate was varied from 0%–6%, nor when the time horizon was increased to 20 years.

Conclusion Current NHS Health Checks implementation appears neither equitable nor cost-effective. The addition of structural policies proved equitable and cost saving. Future research might now seek to identify the optimal combination of structural policies at local level.

SSM annual scientific meeting 2017

Plenary (PL) presentations

PLO1

THE IMPACT OF CO-LOCATED WELFARE ADVICE IN PRIMARY HEALTHCARE SETTINGS ON MENTAL HEALTH AND HEALTH SERVICE USE: A MIXED METHODS EVALUATION

¹C Woodhead*, ²M Khondoker, ¹R Raine. ¹Applied Health Research, University College London, London, UK; ²Medicine and Health Sciences, University of East Anglia, Norwich, UK

10.1136/jech-2017-SSMAbstracts.100

Background Co-locating welfare advice services in primary healthcare settings has been one approach to tackling health inequalities by increasing income among socially deprived individuals. It is also hoped to relieve pressure on general practices in supporting patients with 'non-clinical' needs. Previous evaluations have been methodologically limited and lack theoretical underpinning. We aimed to examine the impact of co-located welfare benefits and debt advice on mental health and primary care service use, and to develop theory linked to pathways of effect.

Methods A prospective, controlled quasi-experimental study with an embedded qualitative component was carried out (December 2015–December 2016) in eight intervention and nine comparator sites across North Thames, London. Before-and-after quantitative data were collected via self-report questionnaires. Comparison group members were propensity score weighted for analyses. Outcomes included change in symptoms of common mental disorder (CMD) (12-item General Health Questionnaire), well-being (Shortened Warwick and Edinburgh Mental Well-being Scale), three-month GP consultation rate and financial strain. Data from qualitative interviews with 24 primary care staff, funders and advice providers were analysed using a modified realist evaluation approach to understand how co-located welfare advice could influence practice outcomes.

Results For the quantitative study, n=285 and n=633 individuals were recruited into advice and comparison groups respectively at baseline. 72% and 84% were retained at 3 month follow-up. Relative to controls, CMD caseness reduced significantly among female and Black/Black British advice recipients. Individuals whose advice resulted in positive outcomes demonstrated significantly improved well-being scores. Significant reduction in financial strain overall but no change in three-month consultation rate was found. Per capita, advice recipients received £15 per £1 of funder investment. Qualitative findings were used to inform underlying theory linking service activity to general practice outcomes. These were reduced GP consultations for 'non-clinical' issues and reduced practice staff time supporting patients with such issues. The findings revealed key implementation, context and agency factors that facilitated or hindered the potential for co-located advice to influence these outcomes.

Conclusion Recipients of co-located welfare benefits and debt advice experience reduced financial strain and for sub-groups short term mental health is improved. Co-located advice services have the potential to support general practice work but not if co-location is limited to a physical sharing of space. Suggestions are made to facilitate joint working.

PL02

TOBACCO CONTROL IN ENGLAND: USING MICROSIMULATION MODELLING TO QUANTIFY THE POTENTIAL IMPACT OF A TOBACCO-FREE GENERATION OR A TOTAL BAN

¹C Kypridemos*, ²J Reeve, ³I Buchan, ^{4,5}A Gilmore, ¹S Capewell, ¹M O'Flaherty. ¹Department of Public Health and Policy, University of Liverpool, Liverpool, UK; ²WMS–Social Science and Systems in Health, University of Warwick, Coventry, UK; ³Farr Institute @ HeRC, University of Manchester, Manchester, UK; ⁴Department for Health, University of Bath, and the UK Centre for Tobacco and Alcohol Studies, Bath, UK; ⁵UK Centre for Tobacco and Alcohol Studies (UKCTAS), Bath, UK

10.1136/jech-2017-SSMAbstracts.101

Background In 2015, almost one-fifth of English adults continued to smoke. Tobacco control policies in the UK are amongst the strongest in Europe, yet smoking prevalence remains stubbornly high, especially in deprived groups. Novel and radical approaches may be needed to control tobacco effectively. The British Medical Association backs a tobacco ban for those born after 2000, and a population-wide tobacco ban has already been implemented in Bhutan. We use microsimulation modelling to quantify the effectiveness and equity of these two radical tobacco policies.

Methods IMPACT_{NCD} is a previously validated dynamic stochastic microsimulation developed in R. It simulates the life course and smoking histories of synthetic individuals under alternative scenarios. We used IMPACT_{NCD} to estimate the potential impact of two proposed changes to tobacco control policy in England – a sales ban restricted to those born in or after 2000 and a total sales ban – on a simulated English population over a 30 year time frame. Extrapolating from Bhutan's implementation, we assumed 50% reductions in smoking initiation rate, active to ex-smoking ratio, and cigarette consumption. We compared both scenarios with a counterfactual that assumed current declining trends in smoking will continue in the future. We conducted a rigorous sensitivity analysis using second-order Monte Carlo simulation, and we report the median and interquartile range of the output distributions.

Results The model suggested that under the tobacco-free generation caps scenario, smoking prevalence would fall to 12.4% (12.1% to 12.6%) for men and 7.9% (7.7% to 8.1%) for women, by 2045. This could prevent or postpone approximately 3500 (-4,200 to 11,000) cardiovascular disease cases and some 230 (-3,100 to 3,600) lung cancer cases; resulting in approximately 190 (-2900 to 3400) fewer cardiovascular disease deaths, and 220 (-2,700 to 3,200) fewer lung cancer deaths.

Under the total caps scenario, the English smoking prevalence would fall to 7.2% (7.0% to 7.4%) for men and 4.3% (4.1% to 4.5%) for women, by 2045. This could prevent or postpone approximately 90,000 (70,000 to 120,000) cases of cardiovascular disease, some 79,000 (55,000 to 120,000) cases of lung cancer, approximately 14,000 (3,000 to 25,000) fewer cardiovascular disease deaths and some 54,000 (38,000 to 73,000) fewer lung cancer deaths.

Both scenarios could reduce socioeconomic health inequalities in cardiovascular disease and lung cancer morbidity and mortality.

Conclusion Strengthening existing English tobacco control policies through limiting access could substantially improve effectiveness and equity. Further research is now needed to explore the political and legal feasibility issues.

PL02

PL03 HOSPITAL TREATED DELIBERATE SELF-HARM AND RISK OF SUICIDE AND DEATH FROM OTHER EXTERNAL CAUSES IN THE REPUBLIC OF IRELAND – A NATIONAL REGISTRY COHORT STUDY

IB O'Farrell*, IJ Perry*, P Corcoran. *Epidemiology and Public Health, University College Cork, Cork, Ireland*

10.1136/jech-2017-SSMAbstracts.102

Background Suicide is a major public health problem. The prediction of suicide is difficult, however research has identified that deliberate self-harm (DSH) is one of the strongest predictors of future suicide. To date, the risk of suicide in individuals who DSH is not well established internationally as relatively few countries have accurate data on DSH. This is the first registry based study to examine the risk of mortality on a national cohort of all individuals presenting to hospital due to DSH in Ireland.

Methods A national prospective cohort of 26,168 DSH patients attending the 40 hospital emergency departments in Ireland from 2009 to 2011, were followed up until to the end of 2011 using national death recording systems. Gender specific age adjusted European standardised rates for external cause mortality were calculated. Additionally, Poisson regression was used to generate incidence rate ratios (IRRs). Potential risk factors were investigated using Cox Models.

Results During the study follow-up 437 patients died from external causes. The average 1 year cumulative incidence for suicide, non-suicide external cause mortality and all external causes combined were 0.8%, 0.5% and 1.3% respectively. The risk of suicide within the first year after DSH was 46 times greater in DSH population compared to the general population. Risk of other non-suicide external cause mortality was also greater in the DSH population compared to the general population (females; IRR=30, males; IRR=20). While the relative risk of death was higher in the female DSH population compared to the female general population, the absolute risk of death was found to be higher in males than females. Older age and male gender were associated with an elevated risk of death. Risk of death from suicide varied depending on method of DSH. Compared with overdose alone attempted hanging had the greatest risk of suicide, particularly in females (females; HR=6.8, males; HR=2.6), major self-cutting was also associated with a 2-fold increased risk. DSH repetition was also found to be a strong predictor of subsequent death.

Conclusion The findings from the world's first national DSH Registry highlight the extremely high risk of death from suicide and other external causes following hospital treated DSH. Older age, male gender, DSH repetition (especially for females) and persons presenting with attempted hanging or major self-cutting are at a particular risk. The findings from this study highlight the need for well-structured, specialist and organised care for this vulnerable group attending emergency departments.