CI:24.0–26.6); p<0.001], USA; 24%(95%CI:21.9–25.3) vs. 16%[(15.4–16.9); p<0.001]), and in males (Ireland; 8%[(95% CI:5.3–10.8) vs. 7%[(95%CI:6.1–7.9); p=0.644], England; 30%(95%CI:25.8–33.9) vs. 17%(95%CI:15.7–18.3); p<0.001], USA; 16%(95%CI:14.4–17.7) vs. 11%[(95%CI:10.6–12.2); p<0.001]. After adjusting for all model variables, people with diabetes had 1.5 increased odds of depression compared to people without diabetes [(95%CI:1.4–1.6), p<0.001].

Conclusion In older people in three countries with different health systems, depressive symptom prevalence was (1) consistently higher among men and women with diabetes than non-diabetes counterparts and (2) varied across health systems. While use of self-report data may limit the accuracy of the results, use of the CESD to categorise depression and of large nationally representative datasets strengthens the study. Interrogation of additional country-level factors associated with depression will further explain variation in depressive symptom prevalence across health systems.

OP96 ARE WOMEN WITH CHRONIC POOR MENTAL HEALTH LESS LIKELY TO ATTEND BREAST SCREENING AND DOES THIS EXPLAIN THE SOCIAL AND GEOGRAPHIC VARIATIONS IN UPTAKE? A POPULATION-WIDE RECORD LINKAGE STUDY

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Background Research from the United States (US) provides compelling evidence of disparities in breast screening uptake for women with mental illness, yet few attempts have been made to examine this association in the United Kingdom (U. K) where healthcare is free at the point of use. It is well established that mental illness is not evenly distributed across the population. For example, mental illness is more prevalent in individuals who are unmarried, socially deprived, and residing in urban areas. Interestingly, these attributes are also strong predictors of lower attendance at breast screening, and it is possible that this may be explained by the increased prevalence of mental illness in these individuals. This study aims to examine the impact of self-reported poor mental health on attendance at breast screening in the United Kingdom (UK), and to what extent this explains socio-demographic inequalities in uptake.

Methods Breast screening records were linked to 2011 Census data within the Northern Ireland Longitudinal Study (NILS). This identified a cohort of 57,328 women who were followed through one complete three-year screening cycle of the National Health Service (NHS) breast screening programme. Poor mental health was identified using responses to question 23 of the Northern Ireland 2011 Census which asked, 'Do you have any of the following conditions, which have lasted, or are expected to last, at least 12 months?' to which 'An emotional, psychological or mental health condition (such as depression or schizophrenia)' was a possible response. Information on individual and household-level attributes was also derived from Census records. Logistic regression was employed to calculate odds ratios (ORs) and 95% confidence intervals of attendance at breast screening.

Results 10.7% of women in the cohort reported poor mental health, and in fully-adjusted analyses, these individuals were 23% less likely to attend breast screening (OR 0.77: 0.73–0.82). Although poor mental health was a strong predictor of screening uptake, it only explained a minimal degree of the observed inequalities in uptake by socio-economic status and marital status, and did not explain any of the variation by area of residence. Furthermore, there was no evidence of effect modification between poor mental health and any other socio-demographic determinant of screening uptake.

Conclusion This study provides novel evidence of inequalities in breast screening uptake for women with self-reported poor mental health in the UK. Targeted interventions are required to improve screening uptake in individuals with mental illness to optimise the mortality benefits achieved through population-wide screening.

Friday 6 September

Tobacco Control

OP87 A COMPREHENSIVE EVALUATION OF THE IMPACT OF RECENT ENGLISH TOBACCO CONTROL POLICY USING SECONDARY DATA

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Background Smoking is the biggest avoidable cause of death and disability in England. A range of laws and policies aimed at preventing this harm have been introduced in England to try to prevent young people from becoming smokers, and encourage existing smokers to quit and to protect others from the harmful effects of cigarette smoke. This Study aimed to evaluate the effects of these policies using publically available data.

Methods We developed logic models for each policy that indicated the anticipated causal pathways for each policy and used these to develop hypotheses for our analysis. Interrupted time series analysis was carried out systematically and using a consistent approach across policies, datasets, outcomes and populations. Outcome measures were adult smoking prevalence, quitting behaviour and consumption. Models were adjusted for sociodemographic factors, e-cigarette prevalence and mass media expenditure. Datasets included the Smoking Toolkit Study (STS) and the Health Survey for England (HSE).

Results Following a point of sale display ban in large shops in April 2012, based on the STS data, there was a significantly steeper declining trend in adult smoking prevalence. This finding was supported by results from the HSE. A similar result was found when analysing quit attempts. Following a point of sale ban in small shops in April 2015, there was a significantly steeper decline in trend in adult prevalence. There was also a significant decline in trend in quit attempts. No significant impact of the smoke-free policy on smoking prevalence was found and we found no evidence of a combined impact of three policies that were implemented in October 2015 (proxy purchase ban, minimum age of purchase for e-cigarettes and smoking ban in cars carrying children) on adult prevalence.

Discussion Both display ban policies were followed by a decline in the trend for smoking prevalence and quitting attempts in adult smokers. A key strength in this study was its consistent and theory-based approach which allowed us to assign impacts to a certain policy with more confidence.This novel approach to policy analysis could also be applied in other public health disciplines.

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OP88 EVALUATING THE MOVE TO, AND IMPLEMENTATION IN 2018 OF, SMOKE-FREE PRISON POLICY IN SCOTLAND: THE TOBACCO IN PRISONS STUDY (TIPS)

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Background Until recently, prisons had partial exemption from UK policies which banned smoking in most enclosed public spaces and were one of few UK workplaces in which staff were exposed to secondhand smoke (SHS) and in which smoking remained normative. In 2016 the Tobacco in Prisons (TIPs) study documented high SHS concentrations in prison residential and other areas, informing new policy, implemented in November 2018, to prohibit smoking throughout all Scottish prisons. Although smoking bans have been introduced in prison systems elsewhere (e.g. England, New Zealand, parts of Australia and the USA), TIPs forms the most comprehensive study internationally of the process and impact of introducing smokefree prisons.

Methods This three-Phase study utilised mixed methods including: 1) surveys with staff and prisoners, focus groups and interviews with prison and NHS staff, and qualitative interviews with prisoners - to assess health, smoking status, beliefs about smoking, e-cigarettes, smoking cessation provision, and the perceived desirability, benefits and challenges of smokefree prison policy; 2) objective measures of SHS before, during and 6 months after smokefree policy was implemented; and 3) use of routinely collected data (e.g. sickness absence, prisoner 'canteen' purchases and medication use) to assess impact of the policy.

Results Phase 1 surveys with prisoners confirmed very high levels of prisoner smoking pre-ban (72%). Phase 1 and 2 survey and interview data demonstrated that prisoners were less in favour of smokefree policies than staff, but supported the introduction of e-cigarettes in the move to smokefree prisons. Survey and interview data from staff and prisoners indicated concerns about the challenges of introducing smokefree policy. Phase 2–3 data showed air quality improved in all prisons comparing Phase 1 (2016) data with the first full working day (3rd December 2018) post-implementation (overall median reduction -81% inter-quartile range -76 to -91%). Post-implementation indoor $PM_{2.5}$ concentrations suggested minimal smoking activity during the period of measurement. Immediately prior to the introduction of smokefree policy, prisoners and staff largely reacted favourably to the introduction of e-cigarettes, whilst still voicing some reservations about their use and safety.

Discussion This is the first comprehensive evaluation of changes in SHS concentrations, and the attitudes, perceptions, health and behaviours of people living and working across all prisons within a country that has introduced nationwide prohibition of smoking in prisons. Early Phase 3 results suggest that a smoke-free prison policy reduces the exposure of prison staff and prisoners to SHS and can be implemented despite considerable challenges.

OP89 THE IMPACT OF SMOKE-FREE LEGISLATION IN IRELAND ON LUNG CANCER INCIDENCE AND MORTALITY

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Background In 2004, Ireland became the first country to institute a comprehensive workplace smoking ban. Previous research has found that comprehensive smoking bans are associated with public health benefits. However, given the relative recency of smoking bans and the long latency of the effect of cigarette smoke on lung cancer, the effect of smoking bans on lung cancer has not been well explored.

Methods An appropriate lag time for the smoking ban was calculated (2010 for lung cancer incidence, 2006 for lung cancer mortality). Using these breakpoints, a one-sample, Poisson-based, interrupted time series analysis was used to compare lung cancer incidence and mortality before and after the modelled interruptions. An identical analysis was applied to brain cancer, a cancer with no known link to smoking or secondhand smoke exposure, as a validity check.

Results Each year following the modelled interruptions, lung cancer incidence and mortality in Ireland decreased 2% (95% CI 1–3, $p<0.01$) and 1% (95%CI 0–2, $p=0.02$) relative to the modelled counterfactual. In absolute terms, the smoking ban was associated with 32 (95%CI 14–52) fewer lung cancer incident cases per year and 113 (95%CI 96–131) fewer lung cancer deaths per year, equivalent to 1.36% of the post-interruption lung cancer incident cases and 6.03% of the post-interruption lung cancer deaths.

Discussion The 2004 Irish Workplace Smoking Ban avoided approximately 195 incident lung cancer cases and 1,125 lung cancer deaths to by 2015. This is among the first quasi-experimental studies to examine the effect of a comprehensive smoke-free policy on lung cancer.

OP90 USING LOGIC MODELS TO INFORM TOBACCO CONTROL POLICY OUTCOME EVALUATION

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Background A key challenge in the evaluation of population-level public health policies is understanding how each policy is likely to work and in whom. This is particularly challenging in settings where several policies are implemented in a short period. Logic models are a visual representation of the anticipated causal pathway of an intervention and are useful in