Aim To estimate the impact of achieving alternative average population alcohol consumption levels on chronic disease mortality in England.
Methods A macro-simulation model (PRIME-Alcohol) was built to simultaneously estimate the number of deaths from coronary heart disease, stroke, hypertensive disease, diabetes, liver cirrhosis, epilepsy and five cancers that would be averted or delayed annually as result of changes in alcohol consumption among English adults. Counterfactual scenarios assessed the impact on alcohol-related mortalities of changing a) the median alcohol consumption of drinkers; b) the percentage of non-drinkers.
Results The optimum median consumption level for drinkers in the model was 5 g/d (about half a unit), which would avert or delay 4,579 (2,544–6,590) deaths per year. Approximately equal numbers of deaths from cancers and liver disease would be delayed or averted (~2,800 for each), while there was a small increase in cardiovascular mortality. The model showed no benefit in terms of reduced mortality when the proportion of non-drinkers in the population was increased.
Conclusions The level of alcohol consumption likely to minimise chronic disease risk for the English population is well below both current consumption levels and government recommendations. Public health targets should aim for a reduction in population alcohol consumption in order to reduce chronic disease mortality.

OC 6.1.4

Timing of birth and mode of delivery after spontaneous labour onset

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Background High caesarean rates are a matter of concern and the influence of hospital functioning in such rates has been debated.
Objectives To understand the hourly pattern of deliveries after spontaneous labour onset, and to compare the trajectories of the mean number of deliveries on working days with those on weekends, according to the mode of delivery.
Methods Between April/2005 and August/2006, women (n = 8,495) delivering a live birth in public hospitals (level III) were consecutively recruited during the procedure of assembling a birth-cohort in the North of Portugal. For this purpose we selected those with a singleton pregnancy and admitted with spontaneous labour (n = 4,087). For eligible subjects, date, hour and mode of delivery were collected from medical records. Statistical modeling used unidimensional cubic splines with hour, ranging from 0 to 23, as predictor and the mean number of vaginal and caesarean deliveries as dependent variables. These splines are functions defined on the domain of the independent variable and that consist of a finite junction of local cubic polynomial regressions. Fitting and selection of the models was assessed through the percentage of explained deviance, generalized cross-validation score and residuals inspection. Comparison of curves was based on the 95 % pointwise prediction confidence intervals.
Results The percentage of explained deviance in the models was 85 and 68 % for vaginal and 90 and 51 % for caesarean deliveries, on working days and weekends, respectively. On working days, a pattern of relative deficit of nocturnal deliveries with a minimum between 5 a.m. and 6 a.m. was observed for both vaginal and caesarean deliveries. The hourly variation in diurnal births was different according to the mode of delivery. Vaginal deliveries steadily increased from 6 a.m. onwards, reaching a peak at 6 p.m. Caesarean deliveries presented two diurnal peaks; the first at 11 a.m. and the second in the late afternoon, between 6 p.m. and 7 p.m. The hourly pattern of vaginal deliveries on weekends and working days was quite similar, but a significant difference in the mean number of vaginal deliveries was observed between 10 p.m. and 11 p.m., which is lower on weekends. The peaks for caesarean deliveries on working days disappeared on weekends, the only pattern similarity being the decrease observed overnight.
Conclusion There was no evidence of the weekend effect in the mean number of caesarean deliveries. Nonetheless, the differences observed in the hourly pattern of vaginal and caesarean deliveries on working days suggest the influence of hospital functioning in the time when caesarean is performed.

OC 6.1.5

Analysis of data collected by RDS among female sex workers in 10 Brazilian cities, 2009: Estimation of HIV prevalence and associated risk factors*

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Background Respondent-driven sampling (RDS) is a chain-referral method that is being widely used to recruit most at risk populations. Since the method is respondent-driven, observations are dependent.
Objectives In this paper, we propose a method for analyzing RDS data. The method was applied to a female sex workers (FSW) study carried out in 10 Brazilian cities in 2009.
Methods The proposed method for estimating the variance of the HIV prevalence rate was based on the Markov transition probabilities and within recruitment cluster variation. The approach lends itself to logistic regression, permitting multivariate models. Both the inverse of network size and the size of the city were considered in the estimation of overall sampling weights. The study included a behavior questionnaire and rapid tests for HIV and syphilis. Variables included sociodemographic characteristics, access to condoms, sexual behavior, health care and STI signs, discrimination and violence, and the use of alcohol and drugs. Multivariate logistic regression models were used, taking into account the dependency structure of observations.
Results 2,523 interviews were conducted successfully, excluding the seeds. Results show a positive homophily between recruits for those HIV+: HIV- recruiters selected HIV+ recruits 4 % of the time; HIV+ recruiters selected other HIV+ recruits 19.6% of the time, about 5 times higher. The prevalence rate was estimated at 4.8 % (95 % CI 3.4–6.), with a design effect of 2.63. As to multivariate analysis results, the longest period of prostitution (OR = 1.040), the lowest price charged for sex (OR = 0.713), other STI such as syphilis (OR = 2.186) and the possibility of not using condom on client's request (OR = 3.735) were the most important associated risk factors to HIV infection among FSW. Purchase of condoms (OR = 0.503) was a relevant preventive factor.
Conclusions Using statistical methods for complex sample designs, it was possible to estimate HIV prevalence, standard error and the design effect analytically. The stratification in cities has proved suitable for reducing the effect of design and can be adopted in other RDS studies, provided the weights of the strata are known. Additionally, the use of RDS proved to be appropriate for multivariate analyses, as long as the statistical analysis takes into account the dependency structure of observations. The HIV infection predictors here depicted can support public health policies focused on this population group in Brazil.

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