

protocol for defining MetS does not exist and some studies have shown MetS definitions to be inferior at predicting diabetes compared to a single measurement of fasting glucose. In this study we examined the ability of five proposed MetS definitions to discriminate incident cases in order to determine whether MetS more accurately predicts type 2 diabetes.

**Methods** This was a prospective study involving a random sample of 1,754 men and women aged 46–73 years. Receiver operating characteristic curve and net reclassification improvement (NRI) analyses were used to evaluate the ability of MetS definitions and components to accurately classify high-risk subjects.

**Results** A model including proposed MetS components displayed a significantly ( $P=0.02$ ) higher area under the curve (AUC) to discriminate diabetes (AUC=0.90, 95% CI: 0.87–0.93) compared to fasting glucose alone (AUC=0.88, 95% CI: 0.83–0.92). Models using the European Group for the Study of Insulin Resistance MetS criterion, and which included glucose as a mandatory component, demonstrated significant overall NRI when compared to recommended and optimal fasting glucose cut-offs. A final model had a sensitivity of 0.91 and a specificity of 0.73.

**Conclusion** In this population there is evidence that a combination of MetS components may help predict diabetes beyond that which is measured by glucose alone. Proposed MetS definitions should include fasting glucose as a mandatory component.

#### P41 DEVELOPING A HEALTHY LIFESTYLE INDEX FOR ASTHMA AND ALLERGY PREVENTION IN CHILDHOOD

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**Background** Although asthma is currently the most common chronic disease in childhood worldwide, it is not the key focus of prevention strategies. Diverse modifiable parental and child lifestyle factors has been individually associated with the risk of asthma and allergy symptoms in childhood; however, the quantification of their joint effect is lacking. A healthy lifestyle index (HLI) was developed to examine the combined effect of modifiable lifestyle factors on asthma, rhinoconjunctivitis, and eczema using data from the multicentre International Study of Asthma and Allergies in Childhood (ISAAC) Phase Three. We used this multidimensional lifestyle approach to estimate the impact of potential prevention strategies (mainly recommended for non-respiratory diseases) upon the population burden of asthma, rhinitis, and eczema in childhood.

**Methods** Information on symptoms of asthma, rhinoconjunctivitis, eczema and several lifestyle factors was obtained from children aged 6–7 years through written questionnaires. The HLI combined five lifestyle factors: no parental smoking, child's adherence to Mediterranean diet, child's healthy body mass index, high physical activity and non-sedentary behaviour. The HLI was modelled as a continuous and categorical variable with four categories (0 or 1 factor, 2 factors, 3 factors, and 4 or 5 factors), using 0 or 1 factor as the reference category. The association between the HLI and risk of asthma,

rhinoconjunctivitis, and eczema was evaluated using multilevel mixed-effects logistic regression models. To estimate the proportion of cases in the entire study population that could be prevented had all children been following four or all five healthy lifestyle factors (i.e. lowest-risk exposure group), we derived centre-specific population-attributable risk fractions.

**Results** Data of 70795 children from 37 centres in 19 countries were analysed. Each additional healthy lifestyle factor was associated with a reduced risk of current wheeze (OR=0.87, 95% CI 0.84–0.89), asthma ever (OR=0.89, 95% CI 0.87–0.92), current symptoms of rhinoconjunctivitis (OR=0.95, 95% CI 0.92–0.97), and current symptoms of eczema (OR=0.92, 95% CI 0.92–0.98). Theoretically, if associations were causal, a combination of four or five healthy lifestyle factors would result into a reduction up to 16% of asthma cases (ranging from 2.7 to 26.3% according to region of the world).

**Conclusion** These findings should be interpreted with caution given the limitations to infer causality from cross-sectional observational data. Efficacy of interventions to improve multiple modifiable lifestyle factors to reduce the burden asthma and allergy in childhood should be assessed.

#### P42 RECRUITMENT STRATEGIES AND LESSONS FROM THE WE CAN QUIT2 TRIAL – A SMOKING CESSATION COMMUNITY-BASED CLUSTER RANDOMISED CONTROLLED TRIAL FOR WOMEN LIVING IN DISADVANTAGED AREAS OF IRELAND

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**Background** Recruitment is a challenge in community-based randomised controlled trials (RCTs). Evidence on recruitment efforts are not routinely available although they help predict rates and manage risk. This study aims to describe recruitment strategies used in the We Can Quit2 (WCQ2) study, and successes and barriers.

**Methods** WCQ2 trial is a pilot, pragmatic, parallel-group cluster RCT delivered to women living in disadvantaged areas in Ireland. It tests the WCQ2 programme, a smoking-cessation behavioural support intervention delivered through 12-weekly group sessions, with free Nicotine Replacement Therapy, against a form of usual care.

Four Local Area Advisory Groups (LAGs) were established which consist of local area stakeholders, for example the Irish Cancer Society, the HSE, community organisations, and community workers. LAGs identified four matched pairs of districts within their region (eight clusters) from which eligible women could be recruited. LAGs and the study researcher recruited participants. The recruitment target was 24–25 women in each cluster (97 per arm; 194 in total). Consent was obtained prior to cluster randomisation.

**Results** Participants were recruited through a variety of methods including leafleting, posters in local shops and community services, information stands at local public events and in facilities like creches, and through traditional and social media, e.g. local radio and targeted Facebook advertisements. The trial was promoted at community employment schemes, and parenting groups.

Barriers to recruitment included certain times of year, like public holidays. We employed the National Adult Literacy Agency to improve readability of participant documents but later, to comply with GDPR guidelines, we lengthened our Participant Information Leaflet, which some women found off-putting. The trial was co-ordinated at a prestigious university and some eligible women expressed concern that they might be judged by researchers. In response, advertising through the university's website was discontinued.

Several strategies were successful. LAG members applied in-depth knowledge of local communities to target recruitment to eligible women. Advertising via social media helped recruit younger women. Using a centrally-located, well-known building within each district, with good transport links, improved attendance at consent meetings, particularly important for those with mobility issues. Recruitment occurred over four waves, allowing the application of iterative learning.

**Conclusion** Recruitment strategies in the WCQ2 trial had variable success. Community-based trials have specific challenges such as the availability and suitability of local resources and the regulatory environment. The early and active engagement of local stakeholder groups with in-depth knowledge of communities is important, as well as the application of iterative learning.

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#### DEVELOPMENT OF A CARDIOVASCULAR DISEASE RISK PREDICTION MODEL FOR POPULATION HEALTH PLANNING IN JAPAN: EPOCH-JAPAN STUDY

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**Background** Cardiovascular disease (CVD) risk prediction models are primarily used in clinical settings, but may also have potential applications in population health. For example, these models can be used to estimate 10-year CVD mortality within a region. In order to expand the applications of such models, we developed a CVD risk prediction model for population health planning that can account for temporal changes in mortality.

**Methods** The Evidence for Cardiovascular Prevention from Observational Cohorts in Japan (EPOCH-JAPAN) study is an individual participant data meta-analysis of cardiovascular epidemiology in the Japanese population. This project comprises 15 cohort studies involving 147,465 Japanese people, with a total of 5,543 CVD deaths. Before constructing the CVD risk prediction model for the population, we grouped these cohort studies into three categories according to their year of cohort initiation (1990–1994, 1995–1999, and 2000 or later), and used two groups for model construction (Group 1: 1990–1994; Group 2: 1995–1999). First, we constructed a group-specific CVD risk prediction model based on a Cox model that included age (year), systolic blood pressure (SBP; mmHg), total cholesterol (TC; mg/dl), diabetes (DM), smoking status, and study cohort as independent variables. Next, we checked the homogeneity of the model parameters using hazard ratios, and developed a common parameter using weighted mean values. Finally, to eliminate the temporal discrepancies between the model results and contemporary mortality (as of 2015),

we calculated calibrating factors using government vital statistics of Japan.

**Results** Among the 15 cohort studies included in EPOCH-JAPAN, seven were categorized into Group 1 and three were categorized into Group 2. For CVD in men, the results showed similar hazard ratios for age (1.12), SBP (1.01), and TC (1.00); furthermore, the hazard ratios were similar in both groups for DM (Group 1: 1.43, Group 2: 1.64) and current smokers (Group 1: 1.52, Group 2: 1.55). This homogeneity in model parameters was also observed in women (age: 1.14, SBP: 1.01, TC: 1.00, DM [Group 1: 1.56, Group 2: 2.27], and current smokers [Group 1: 1.63, Group 2: 1.37]), and a common parameter was developed and included in the final CVD risk prediction model. The calibrating factors to adjust for contemporary mortality in 2015 were calculated to be 0.74 in men and 0.55 in women.

**Conclusion** We constructed a CVD risk prediction model for population health planning that can be used to estimate current mortality in the Japanese population.

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#### SEX DIFFERENCES IN THE RELATIONSHIP BETWEEN SOCIOECONOMIC STATUS AND HYPERTENSION IN FRANCE: RESULTS FROM A CROSS-SECTIONAL ANALYSIS OF THE CONSTANCES COHORT

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**Background** There is ample evidence that hypertension prevalence increases when socioeconomic status (SES) decreases. However, sex differences in this relationship has been less studied. Investigating potential sex differences could help understand the mechanisms of social health disparities. The aim of this work was to explore the pattern of associations between several indicators of SES and hypertension across sexes in a large sample of French adults.

**Methods** In this cross-sectional analysis, participants are adults aged between 18 and 69 years old recruited to the CONSTANCES cohort over the period 2012–2015 in 16 recruitment centers. SES was estimated using education (individual level), income (household level) and an indicator of residential socioeconomic deprivation, FDep (municipal level). Log-binomial and Poisson regressions with robust variance estimations were used to estimate the Risk Ratios (RR) comparing the extreme levels of SES and to test for interaction of sex in the associations between SES and hypertension prevalence.

**Results** A total of 62,247 individuals (53% women, mean age 48±13 years) were included. Age-standardized prevalence of hypertension was 30.1% [95%CI=29.7–30.6], higher in men (37.3% [95%CI=36.6–38.0]) than in women (23.2% [95%CI=22.7–23.8]).

Globally, we found steep socioeconomic gradients of hypertension in both genders. Education showed the strongest association with hypertension prevalence, especially among women (p for interaction between sex and education <0.001): age-adjusted RR comparing the lowest versus highest level of education were 1.57 [95%CI=1.47–1.68] in women and 1.26 [95%CI=1.21–1.31] in men. Income and FDep also displayed strong associations with hypertension, but we found no