psychiatric illness were more likely to be female, younger and have non-shockable rhythms compared to patients without psychiatric illness. No study reported on the distribution of comparison groups by socioeconomic status, which is known to be linked to both psychiatric illness and poorer OHCA survival. The only study on OHCA survival reported lower odds of 30-day survival in patients with versus without psychiatric illness.

Conclusion This review highlights the paucity of studies reporting on psychiatric illness in relation to OHCA incidence and outcome. History of psychiatric illness may be a risk factor for OHCA incidence and poorer outcome, but further studies are needed in this clearly under-researched, yet very important, area.

P77 MODELLING THE SPREAD OF BEHAVIOURAL RISK FACTORS FOR CARDIOVASCULAR DISEASE IN A UK COMMUNITY USING AN AGENT-BASED MODEL

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Background Tobacco use, unhealthy diet, physical inactivity, and harmful use of alcohol are key behavioural risk factors for non-communicable diseases, including cardiovascular disease. Individuals’ behaviours and attitudes are affected by their social environment, which can lead to the spreading of a behavioural risk factor through social connections. Understanding the spread of behavioural risk factors through social networks may allow us to identify targets amenable to intervention to reduce risk factor prevalence and ultimately death and suffering from non-communicable disease. Agent-based models are under-utilised as a tool to give insight into the epidemiology of non-communicable diseases.

Methods We propose an agent-based model of the spread of four behavioural risk factors through social networks (defined as friendships and household relationships), based on the linear threshold cascade model. We created a synthetic community of agents each assigned a unique ID, an age (in three age-groups: 18–34, 35–64 and 65+ years), sex, and a number of connections in the relevant communities (friendships and household relationships), as well as a level ((0–2), based on increasing risk of CVD) for each of the behaviours modelled. Parameters were evidence-informed estimates, based on epidemiological data published in the literature and expert opinion. Where possible nationally representative data from the UK or England were used to estimate parameters. We used the Python package NetworkX to create the network.

Results The method was applied to find the population risk of cardiovascular disease over 10 years for a population size of 10,000. Our model estimated rates of cardiovascular disease from 1.3 events per 1000 person years in 18–39 year old women to 83.1 events per 1000 person years in 65+ year old men which are consistently smaller than rates from observed data. We found that the model was most sensitive to the estimates of influence of spouse behaviour on agent behaviour. It was also sensitive to the average number of household contacts, particularly for the 18–34 age-group.

Conclusion Future work is needed to address our model’s limitations which include that the model only considers two communities for each agent: its household and its friendships. Other communities such as workplaces and neighbourhoods could be integrated in the future. Future improvements will also be to add ethnicities and deprivation level to agents. Interactions between multiple behaviours are also relevant here. Our simplistic model assumes no interactions between concepts but integrating this in future versions will be necessary to model closer to reality.