The underlying systematic review was conducted according to the PRISMA guidelines. Eligible studies were decision models for full health economic assessment (HEA) in obesity, applying the PRISMA guidelines. For each included study, we extracted information about the event simulation approach including type of obesity associated events, event specific base risk, impact of obesity program/intervention on the event base risk, time horizon, model type and others. RESULTS: In total 4,293 studies were identified, 4,304 abstracts were reviewed (database search plus n=11 additional references). Out of the 87 decision models identified 72 (83% of the total) simulated obesity associated events; and 68 (78% of the total) simulated T2D and 48 decision models (55% of the total) that simulated stroke; only 39 (45% of the total) that simulated cardiovascular disease (CVD). Based on epidemiological data and simulation approaches we identified a wide range of event simulation approaches to model obesity associated disease and CVD incidence. Furthermore a comparison of these outcomes to epidemiological long-term studies (external validation) would be very informative. Although we have identified a huge variation in the base risk and the intervention effect simulation approaches we were not able to compare the outcomes of these key event simulation approaches when simulating comparable patient populations and comparable intervention effects. Furthermore a comparison of these outcomes to epidemiological long-term studies (external validation) would be very informative in order to inform on the decision makers on the predictiveness of the identified event simulation approaches.

CONCLUSION: Future work on the comparison of these event simulation approaches (cross validation & external validation) is encouraged in order to guide future modeling in the field of obesity.

Figure 1: Overview of CVD event modelling approaches

CVD incidence calculation / Intervention effect (n=460; 100%)

Table: Incidence calculation based on different factors - most often age & gender; CVD = Cardiovascular Diseases; BMI = Body Mass Index; RR = Relative Risk; RCT = Randomized Controlled Trial

We have identified a wide range of event simulation approaches to model obesity associated events.

This highlights the need to develop recommendations and/or minimal requirements for model-based HEAs in the context of obesity prevention and therapy.

Future work on the comparison of these event simulation approaches (cross validation & external validation) is required in order to guide future modeling in the field of obesity.

References