

Forecasting diabetes incidence in Belgium: a microsimulation

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Abstract

Objective: To estimate the incidence of type 2 diabetes [T2D] in Belgium over ten years from 2018-2028.

Methods: A microsimulation model [MSM] was developed as a discrete-event state transition model with annual updates of incident T2D and death. A synthetic population of Belgium was created using data from a representative [age, sex, and province] survey of adult population [18-80 years], complemented with prevalence of cardiometabolic risk factors from the latest [2018] Belgian Health Interview Survey and Belgian Health Examination Survey, using the R package SimPop and Multiple Imputation by Chained Equations. Starting in 2018, synthetic individuals transition annually from health to death, with or without developing T2D as predicted by the Finnish Diabetes Risk Score's concise model with prevalent risk factors [e.g. hypertension, BMI] updated via age-sex-specific transition probabilities. Information on mortality was retrieved from the Belgian Standardized Procedures for Mortality Analysis database and used to calculate annual death probabilities.

Results: A total of 3275 [95%UI: 3263, 3287] incident cases T2D per 100,000 inhabitants are expected between 2018 and 2028 in Belgium, with higher rates among older individuals. A modest gender-related gap in T2D incidence is estimated to increase over the 10 years of analysis, with total of 393 [387, 400]/100,000 new cases among females compared to 378 [371, 384]/100,000 in males in 2028. Mortality rates attributed to T2D are estimated to remain relatively low (119 [117, 122]/100,000) and stable up to 2028.

Conclusion: The incidence of T2D in Belgium is expected to remain high over the next years. Preventive strategies should be emphasized to decrease the burden of T2D in Belgium.