

Trends in mortality and morbidity and the effects of smoking and obesity

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Introduction

The Dutch Public Health Status and Foresight Report (PHSF) 2014 provides an overview of the most important future trends in public health and care. The PHSF covers a broad range of projections for various health impacts, including determinants, morbidity and mortality. Smoking is the major cause of death and illness by far (causing 13%

Figure 1: Contributions of various determinants to the Dutch disease burden

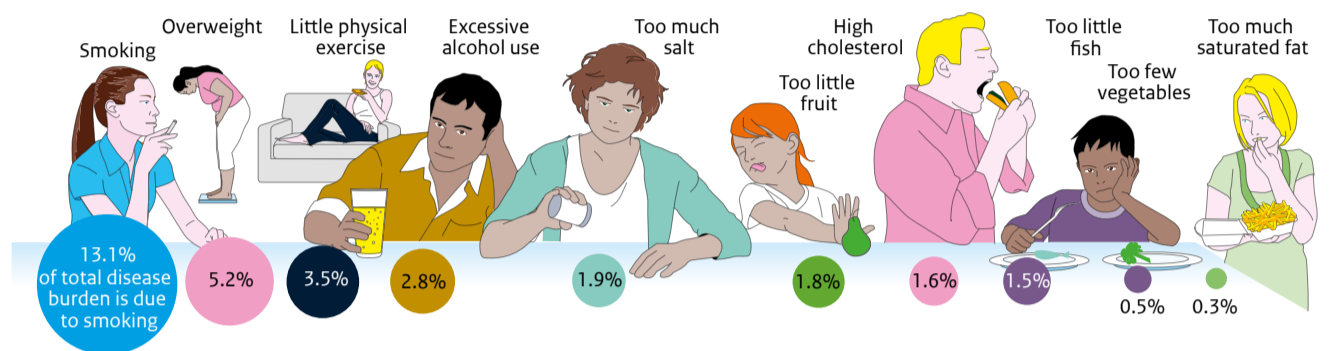
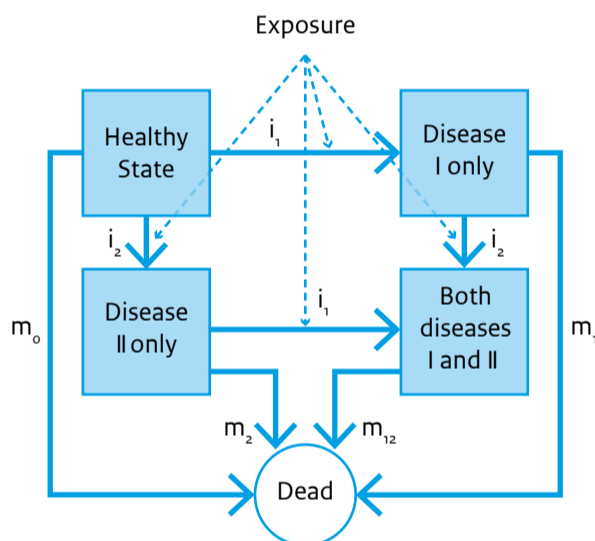


Figure 2: Dynamo-Hia



of the disease burden) and it is followed by overweight (5.2%) (figure 1). For these two determinants, we analyzed the impact on morbidity for different scenarios in which more or less people are smoking or obese in the future

Methods

The projections in the PHSF are obtained out of different analysis and approaches. Dynamic modelling and regression techniques are used to analyze historical and future trends for mortality and morbidity. With DYNAMO-HIA (DYNAmic MODELing for Health Impact Assessment), the impact on morbidity for different scenarios for obesity and smoking is calculated (Lhachimi et al., 2012). DYNAMO-HIA is a Markov-based model which quantifies the impact of risk-factor changes on multiple diseases and in turn on

overall population health, comparing one reference scenario with one or more intervention scenarios (figure 2).

Results

Lung cancer was the leading cause of death in 2011. For the future, we anticipate a continued decline in mortality from coronary heart disease and stroke, and by 2030, dementia will be the leading cause of death. The changes in causes of death in the Netherlands are strongly influenced by demographic developments. The Dutch population will grow from 16.7 million in 2012 to 17.6 million by 2030. The percentage of people aged 65 or older was 16% in 2012, and it will increase to 24% in 2030, after which it is expected to stabilize at around 26%. The impacts of the scenarios on morbidity are shown in figure 3 and 4.

Figure 3: Scenario Smoking with Dynamo-Hia

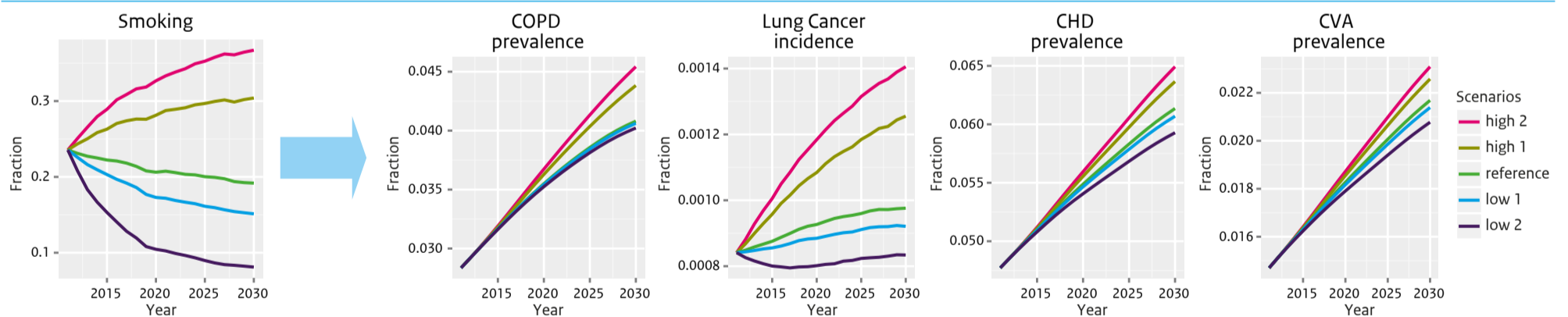
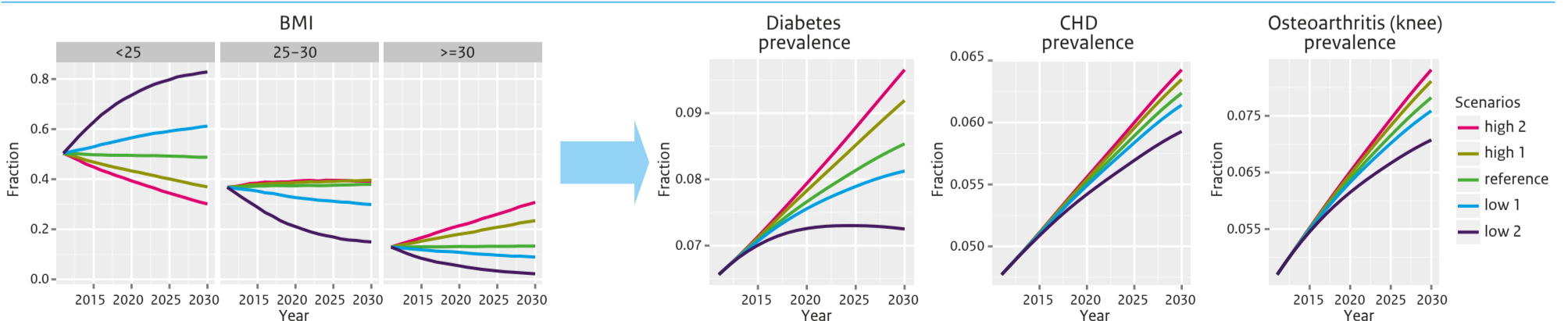


Figure 4: Scenario BMI with Dynamo-Hia



Conclusion

This study provides insights into the future trends of determinants and their impacts on health. In different scenarios, the effects on morbidity are analyzed for changes in smoking and obesity. If more people smoke or are overweight in the future, more people will develop COPD, lung cancer, CHD, CVA, diabetes and osteoarthritis. However, if less people smoke or are overweight, the prevalence of these diseases will still rise, although not as fast. Only if more than 80% of the people will get a healthy weight, the prevalence of diabetes will eventually decline.