MODELING THE IMPACT OF CHANGES IN TOBACCO USE ON INDIVIDUAL DISEASE RISKS


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Introduction

Philip Morris International has developed a Population Health Impact Model (PHIM) to estimate the effects that marketing of Reduced Risk Products (RRPs)2 has on population health. It was designed to assess the impact of an RRP on population harm as a function of the risk or toxicity of the product to the individual user, and the prevalence of use in the population.

This modeling exercise aims at understanding the impact of harm reduction to smokers who quit or switch to RRP products versus continued smoking or never smoking across different age groups (20+, 30+, 40+ and 50+ years old) evaluated as changes in relative and absolute risk over time for the four main smoking-related diseases: lung cancer (LC), ischemic heart disease (IHD), stroke and chronic obstructive pulmonary disease (COPD).

Results

- Work described in here covers the series of modeling simulations (1-4) on different age groups (20+, 30+, 40+ and 50+ years old) to understand the:
  1) Impact of quitting tobacco smoking - CESSATION
  2) Impact of switching to an RRP with low and high effective dose - RRP (f=0.3) and RRP (f=0.1)
  3) Impact of continuing to smoke cigarettes - CONTINUE SMOKING
  4) Impact of never smoking - NEVER SMOKING

- All individuals initiated smoking at 20 years old. Cessation and switching to RRP take place 1 year after entering the simulation. The effective dose for RRP are estimates derived from non-clinical and clinical data in PMI.

- Simulated profiles for LC in a 50+ year old male shows the reduction in relative and absolute risk over time follow a negative exponential decay. Switching to an RRP brings a noticeable reduction in relative and absolute risk of LC versus continued smoking and therefore can be considered as an alternative to smoking.

Overview of Results

Conclusions

The research described in this poster was sponsored by Philip Morris International

Comparison Financial Interest

REFERENCES

[2] Sources for half-lives: Lung cancer: (Fry 2013); COPD: (Lee 2014a); IHD: (Lee 2012b); Stroke: (Lee 2014b).