DEVELOPMENT OF A DYNAMIC SIMULATION MODEL TO ESTIMATE POPULATION MORTALITY EFFECTS RESULTING FROM THE AVALABILITY OF SMOKELESS PRODUCTS

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ABSTRACT

This paper describes the development of a dynamic simulation model to estimate mortality effects at the population level when proportions of potential or actual smokers switch to smokeless tobacco (ST) use. The model incorporates both ST use and cigarette exposure histories, and permits transition from smoking to ST use, and vice versa. The model was used to estimate the health benefits and risks associated with availability of ST products.

RESULTS

The model predicted that the availability of ST products would have a significant impact on smoking behavior and mortality at the population level.

CONCLUSIONS

The model provides a valuable tool for assessing the health effects of ST availability, and can be used to inform policy decisions.

BACKGROUND

Smokers are at increased risk of death from causes attributable to smoking (Thorpe et al., 2009). Cigarette smoking causes numerous serious diseases (Thun et al., 2000). Cessation is critical for reducing smoking-attributable deaths.

METHODS

The model is a dynamic simulation model that uses a hierarchical approach to estimating the numbers of deaths and survivors from smoking and ST use. The model is based on the assumption that ST use is a gateway for cigarette smoking.

Model Evaluation

The model was evaluated using empirical data from the Tobacco Use Supplement to the 2006 Behavioral Risk Factor Surveillance System (BRFSS) and the National Health Interview Survey (NHIS) for 2006.

RESULTS

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CONCLUSIONS

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