

SMOKELESS TOBACCO AND CIGARETTES: GATEWAYS, CAUSAL PATHWAYS, AND HARM REDUCTION

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Several articles claim to demonstrate that smokeless tobacco (ST) is a substantial "gateway" to cigarette smoking; other articles have disputed this. Largely absent from the discussion is a clear examination of what actually constitutes a gateway. For the concept to have force, it must refer to situations where the use of ST is a *necessary cause* of someone's later use of cigarettes. Using causal modeling methods from epidemiology, I characterize conditions where this would be the case and what we would expect to observe. This causal modeling clearly illustrates the scenarios where ST use causes subsequent smoking, where ST is an "exit gate" from smoking, and where serial use involves no necessary causality.

A review of the gateway studies from this perspective shows that the evidence better supports the claim that there are people who are particularly likely to use tobacco and switch between different forms, rather than the claim that one form of tobacco is a gateway to another. This suggests that there is a subpopulation of smokers who might be amenable to the harm reducing behavior of switching to ST use.

The question of a gateway is important because the direct health risk from ST is so small compared to cigarettes that a gateway to smoking, if it does exist, would probably lead to most of the total health effects of ST use. If such a gateway exists, it would likely be reduced if ST users knew that smoking was immensely more dangerous. Similarly, that knowledge might encourage certain smokers to use ST as an exit gate.

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