THE ONTARIO TOBACCO RESEARCH UNIT
UNITÉ DE RECHERCHE SUR LE TABAC DE L'ONTARIO
Generating knowledge for public health

OTRU Update

October 2014

Real World Effectiveness of Varenicline and Other Smoking Cessation Medications

Key Finding: Survey findings show that varenicline and the nicotine patch may be effective aids to help people quit.

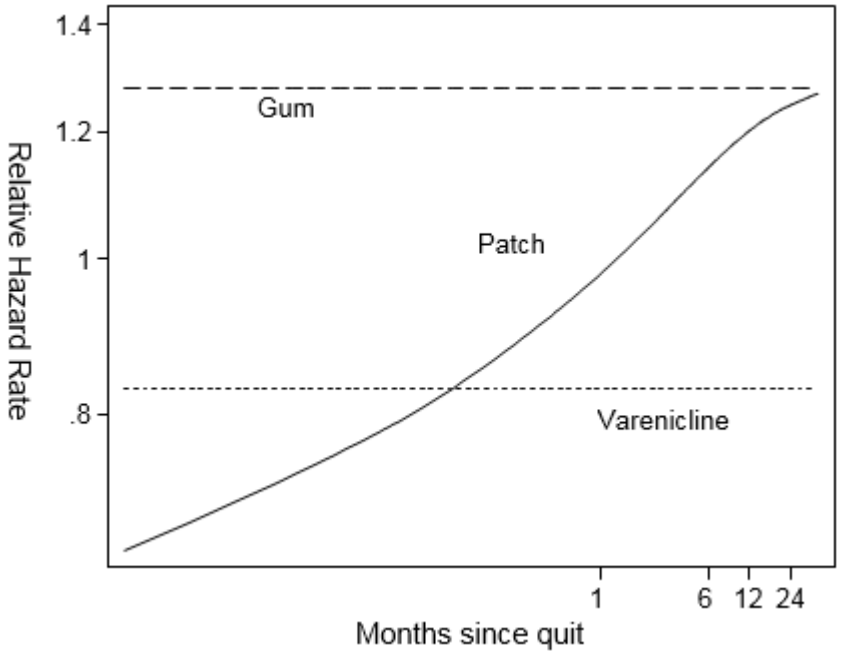
There is strong evidence from randomized control trials that cessation medication can help people quit smoking;[1] however, real world studies of smoking cessation aid effectiveness have shown mixed results. For instance, Kotz and colleagues[2] found that smokers who used nicotine replacement therapy bought over the counter were *less* likely to quit successfully. Moreover, few studies have examined the effectiveness of varenicline in a representative population sample. Real world studies are important as they demonstrate the generalizability of the intervention and the potential to promote population-wide changes in smoking prevalence. This study examines the real world effectiveness of varenicline in preventing relapse compared to the nicotine patch, gum, and bupropion among smokers in Ontario.

Data from the Ontario Tobacco Survey, a population-based longitudinal survey of adult smokers in Ontario were used to examine these questions. Smokers were recruited through random digit dialing between July 2005 and June 2008; and followed for up to three years at approximately six-month intervals with the final longitudinal panel ending in 2011. The distribution of sample characteristics was consistent with census data; further details of the sampling and recruitment processes of the survey are documented elsewhere.[3] Length of abstinence for the first quit attempt observed in the study was derived from survey responses. A time to relapse model was developed to examine factors that affect relapse. This model allowed the factors to have effects that could change depending on the length of the quit attempt. All analyses controlled for demographic and smoking characteristics that could have acted as potential confounders.

Smokers who used varenicline were less likely to relapse (Hazard Rate (HR) =0.71; 95%CI: 0.58, 0.87); suggesting that varenicline was effective at helping people quit in this population (Figure 1). On the other hand, the use of buproprion did not appear to affect the rate of relapse (HR=1.03; 95% CI: 0.81, 1.84). Those who used gum were, in fact, more likely to relapse (HR=1.22; 95% CI: 1.06, 1.41). Use of the nicotine patch was found to be highly effective early in the quit attempt (HR=0.74; 95%CI: 0.64, 0.86), but that effect diminished over time (HR=1.20; 95% CI: 1.09, 1.33). Effectiveness of the nicotine patch has been shown to be related to the duration of use[4] which may explain the change in effectiveness over time.

This analysis demonstrates that varenicline and the nicotine patch may be effective aids to help people quit at the population level.

Figure 1: Relative Hazard Rate[a] Over Time Since the Initiation of a Quit Attempt Among Smokers Reporting a Quit Attempt



[a] Hazard of relapse while using a quit aid divided by hazard of those not using the quit aid
Source: the Ontario Tobacco Survey

Straight lines over time represent a constant relative hazard. Relative hazard rates less than one suggest that the intervention effectively reduces the hazard of relapse. Estimates are modelled from a time varying flexible parametric survival regression model: n=1821 smokers on their first reported quit attempt during the course of the survey with complete covariate information and who were current smokers at the previous point of contact.

Authors: Chaiton M, Diemert L, Bondy S, Cohen J, Ferrence R

References

[1] Stead LF, Perera R, Bullen C, Mant D, Hartmann-Boyce J, Cahill K, Lancaster T. Nicotine replacement therapy for smoking cessation. *Cochrane Database of Systematic Reviews* 2012 Nov 14;11:CD000146

[2] Kotz D, Brown J, West R. 'Real-world' effectiveness of smoking cessation treatments: A population study. *Addiction* 2014 Mar;109 (3):491–499.

[3] Diemert L, Victor JC, Chaiton M, Bondy SJ. *Ontario Tobacco Survey Technical Report 1: Baseline Data*. Toronto, ON: Ontario Tobacco Research Unit, April 2010. Available at: http://otru.org/wp-content/uploads/2012/07/OTS_Technical_Report.pdf

[4] Zhang B, Cohen JE, Bondy SJ, Selby P. Use duration of nicotine replacement therapy and smoking cessation: A population-based longitudinal study. *American Journal of Epidemiology.* In press.