

WILLY PEDERSEN¹ & TORBJØRN SKARDHAMAR²

Department of Sociology and Human Geography, University of Oslo and Norwegian Institute for Alcohol and Drug Research, Pb. 1096—Blindern, Oslo NO-0317, Norway¹ and Statistics Norway, Pb 8131 Dep, 0033 Oslo, Norway.²
E-mail: willy.pedersen@sosiologi.uio.no

References

1. Bretteville-Jensen A. L., Rossow I. Questionable conclusions on cannabis and crime. *Addiction* 2011; **106**: 449–50.
2. Farrington D. Commentary on Pedersen and Skardhamar (2010): does cannabis use predict non-drug offending? *Addiction* 2010; **105**: 119–20.
3. Pedersen W., Skardhamar T. Cannabis and crime: findings from a longitudinal study. *Addiction* 2010; **105**: 109–18.

AUSTRALIA'S EXPERIENCE WITH VARENICLINE: USAGE, COSTS AND ADVERSE REACTIONS

In January 2008, varenicline (Champix) was listed on the Australian Pharmaceutical Benefits Schedule (PBS) [1,2]. Listing means that smokers pay between \$0 and \$64.00 for 12 weeks' treatment, dependent upon their income. During 2008, 368 924 PBS prescriptions (252 618 4-week initiation, 116 306 8-week continuing) were filled [1]. Initiating users were approximately 28% higher than the PBS prediction [2]. Over the 4-year period to 2010–11, the PBS cost estimate was \$74 million [1], however, the actual cost from January 2008 to October 2009 was approximately \$93 million [3]. This figure excludes all patient costs and any Medicare costs related to extra medical consultations. Unlike bupropion, where prescribing declined steadily in 2002, the year after listing [1], varenicline prescriptions have increased, stabilizing at more than 40 000 (\$4.9 million) per month [3].

The \$93 million cost over 20 months represents approximately 58% more than the Australian Government's allocation (\$59 million) to social marketing campaigns against tobacco for the 4-year period to 2012–13 [4]. Given the high share of tobacco control spending on varenicline, it is vital to consider the potential impact on population smoking prevalence. Estimates prepared prior to PBS listing are unavailable due to in-confidence restrictions applied to drug company submissions [1].

Meta-analysis of continuous abstinence data (mainly 52 weeks) from five trials found the absolute difference in cessation between varenicline and placebo was 10.8% [5]. Similar to over-the-counter nicotine replacement therapies [6], there are a number of reasons why varenicline may be less effective under 'real world' conditions than in research trials. Typically, varenicline trials have involved motivated smokers thoroughly screened to

ensure they had no major comorbidities [7]. In addition to receiving free varenicline, subjects are commonly paid compensation for time and travel [8]. More importantly, the intensity of counselling and assessment in such trials is much higher than in most primary care settings. For example, in the influential Jorenby *et al.* trial [9], subjects had a total of 28 contacts (eight telephone, 20 personal) with study personnel, of which 18 involved some counselling. Another typical trial [8] involved 24 contacts including counselling on 13 occasions. In Australia, PBS guidelines state that varenicline should be restricted to patients entering a comprehensive counselling programme; however, no compliance data are available.

PBS data support the view that 'real world' experience with varenicline is different to that under research conditions. First, 44–50% of PBS patients failed to commence the last 8 weeks of treatment [1]. It is unknown what proportion of the remainder completed the last 8 weeks. Compliance is much higher in trials; for example, 69% [8] and 76% [9] completed 12 weeks' treatment. Secondly, data on adverse reactions also suggest that differences exist. To October 2008, of 339 Australian adverse reaction reports with varenicline, 72% included psychiatric symptoms [10]. This compares with 29.9% [8] and 29.5% [9] of adverse events in two trials for similar symptoms. The number of adverse reactions represents a tiny fraction of total patients prescribed varenicline, even allowing for the Therapeutic Goods Administration's identification of under-reporting as one of the main limitations of their monitoring system.

Given the documented cost overrun and the differences in compliance and adverse reaction composition, which suggest cessation rates among PBS patients may be lower than in industry-funded trials, a number of policy implications arise. Clearly, there is a need for high-quality research to evaluate the probable population impact of this cessation intervention. Unfortunately, the PBS evaluation is of a global nature with no data collection from individuals [1]. Allocating a tiny proportion of varenicline prescription spending could have established a robust cohort study. More accurate estimates of the long-term effects of varenicline on cessation rates and on Australia's smoking prevalence could then have been made.

In the absence of more accurate estimates, policy makers must still consider whether the balance between treatment and prevention spending described above, all funded by the Commonwealth Government, appears appropriate. The evidence that the Australian National Tobacco Campaign reduced smoking prevalence by 1.4% and produced 190 000 quitters for the modest outlay of \$8.6 million suggests that a shift to further increased expenditure on prevention should be examined [11]. Whether this is achieved by an overall increase in the

tobacco control budget or a reduction in PBS outlays on varenicline needs debate. For example, a reduced subsidy for patients on a second course of varenicline might be an option, given the evidence that recycling failed quitters onto a second course of nicotine replacement therapy appears largely ineffective.

Another policy implication centres around possible ways of improving cessation outcomes among PBS patients receiving varenicline without major cost additions. For example, clearer evidence could be required that patients have been referred to a comprehensive counselling programme, as already required in the PBS guidelines. One option could involve referral to proactive telephone counselling services for varenicline users delivered by existing state quit lines. Finally, a thorough evaluation should be published of Pfizer's web-based patient support programme.

Declaration of interest

The Hunter Medical Research Institute receives funding from the alcohol industry. The author has strongly opposed this funding at Board level and has not personally accepted such funds.

Keywords Nicotine medications, smoking, smoking cessation, varenicline.

RAOUL A. WALSH^{1,2}

*Centre for Health Research & Psycho-oncology,
The Cancer Council New South Wales/University of
Newcastle, Callaghan, NSW, Australia¹ and Hunter Medical
Research Institute, New Lambton Heights, NSW, Australia².*
E-mail: raoul.walsh@newcastle.edu.au

References

1. Drug Utilisation Sub-Committee. *Item 7.1 Varenicline: review of first 12-months of usage*. Department of Health and Ageing: Canberra, October 2009.
2. Roxon N. *New PBS listing for January 2008. Media release NR08/01*. Canberra, 1 January 2008.
3. Drug Utilisation Sub-Committee. *Drug Utilisation Database*. Department of Health and Ageing: Canberra, 3 March 2010.
4. Council of Australian Governments. *National Partnership Agreement on Preventive Health: Overview*. Canberra, 29 November 2009.
5. Eisenberg M. J., Filion K. B., Yavin D., Bélisle P., Mottillo S., Joseph L. *et al.* Pharmacotherapies for smoking cessation: a meta-analysis of randomized controlled trials. *Can Med Assoc J* 2008; **179**: 135–44.
6. Walsh R. A. Over-the-counter nicotine replacement therapy: a methodological review of the evidence supporting its effectiveness. *Drug Alcohol Rev* 2008; **27**: 529–47.
7. Daubney Garrison G., Dugan S. E. Varenicline: a first line treatment option for smoking cessation. *Clin Ther* 2009; **31**: 463–91.
8. Niaura R., Hays J. T., Jorenby D. E., Leone F. T., Pappas J. E., Reeves K. E. *et al.* The efficacy and safety of varenicline for smoking cessation using a flexible dosing strategy in adult smokers: a randomized controlled trial. *Curr Med Res Opin* 2008; **24**: 1931–41.
9. Jorenby D. E., Hays J. T., Rigotti N. A., Azoulay S., Watsky E. J., Williams K. E. *et al.* Efficacy of varenicline, an $\alpha 4\beta 2$ nicotinic acetylcholine receptor partial agonist, vs placebo or sustained-release bupropion for smoking cessation. *JAMA* 2006; **296**: 56–63.
10. Adverse Drug Reactions Advisory Committee. 1. Varenicline: the Australian experience so far. *Aust Adverse Drug React Bull* 2008; **27**: 22.
11. Hurley S. E., Matthews J. P. Cost-effectiveness of the Australian National Tobacco Campaign. *Tob Control* 2008; **17**: 379–84.