

POST-PRINT

This is a post-print (post-refereed, final accepted) version of the manuscript that has been published in *Addiction*. The citation details and the link to the final publisher version are below.

Gartner, C. (2014) Commentary on Pedersen & von Soest: Increasing snus use among Norwegian adolescents—evidence of harm reduction effects? *Addiction*, Volume 109, Issue 7; July 2014
Pages 1163–1164 <http://onlinelibrary.wiley.com/doi/10.1111/add.12586/full>

First published: 6 June 2014
DOI: 10.1111/add.12586

Commentary on Pedersen & von Soest (2014): Increasing snus use among Norwegian adolescents—evidence of harm reduction effects?

Authors: Coral Gartner

Pedersen and von Soest report an impressive reduction (from 23.6 to 6.8%) in adolescent daily smoking in Norway between 2002 and 2010 that coincided with increased snus use among this age group [1]. Does this mean that snus use has replaced smoking among Norwegian adolescents? The answer depends critically on who the new snus users are.

If we assume that all current daily snus users in 2010 would have been daily smokers without access to snus, then smoking prevalence in this age group would have only fallen to 17.6%, rather than 6.8%. This assumption is probably optimistic, because it is more likely that current snus users include a mixture of ‘would-be smokers’ who used snus instead of smoking as well as some ‘would-be non-smokers’ who took up snus because of its perceived lower risk profile.

Pedersen and von Soest address this issue by comparing the attributes of adolescent snus users with those of tobacco smokers and non-tobacco users. As in other countries [2, 3], Norwegian adolescent snus users shared many characteristics with their smoking peers, suggesting that snus use replaced cigarette smoking in this population. There were also some differences which suggest that a proportion of new snus users are more like non-smokers. Some tobacco control advocates will be disturbed by any evidence that young non-smokers are using alternative nicotine products. This concern needs to be balanced against the very large population health benefit from a smoking prevalence that is probably much lower than it would have been without snus.

Modelling the health risks of snus use against cigarette smoking and no tobacco use suggests that snus would need to be enormously more attractive to non-smokers than smokers to offset the substantial health gains achieved when snus use replaces smoking [4]. For overall population health to be harmed by snus use, 14–25 young people who were not at risk of smoking would need to take up snus to offset the benefits for every young person who used snus instead of smoking cigarettes.

These estimates do not include other potential adverse impacts; namely, snus maintaining cigarette smoking via dual use, or snus serving as a potential gateway to smoking among those not otherwise likely to smoke. Pedersen and von Soest's study adds to other evidence that provides reassurance about dual use and gateway effects. Despite a substantial increase in snus use (+9% for daily or non-daily use), there was only a very small increase in dual use of cigarettes and snus (+1%) and a much larger decline in daily and non-daily smoking during this time (–21%) [1]. Studies in Sweden also suggest that snus use is not a significant gateway to smoking [5].

There are similar debates about the risks and benefits of increased electronic cigarette use. In the United States, increased use by young people has generated considerable concern [6]. However, like snus, e-cigarettes appeal most to those who are at risk of smoking. The highest rates of e-cigarette use in young people in the United States occur in those who have also smoked cigarettes: 57% had ever tried and 24% had used in the past month [6]. Rates of e-cigarette use were far lower among young people who had never smoked: 4% had ever tried and 1% had used in the past month. Similar results have been reported for e-cigarette use among young people in Poland: only 3.2% of non-smokers had tried an e-cigarette compared to 29.5% of those who had ever smoked [7]. In the UK, less than 1% of 11–18 year olds who had never smoked a cigarette had ever tried an e-cigarette 'once or twice' and current use was confined to those who had already tried smoking cigarettes [8].

It remains to be seen whether these patterns of use persist after the e-cigarette market matures. The public health outcome will depend upon whether e-cigarettes fully replace cigarettes for most smokers; whether smokers understand that gaining a health benefit depends upon replacing smoking rather than only using e-cigarettes where smoking is banned (and smoking where it is not); and how these products are promoted, regulated and taxed compared to combustible cigarettes.

Any alternative nicotine product that is attractive to a large proportion of smokers is also likely to attract young people, particularly those with a propensity to use substances and engage in risky

behaviour. If these products are seen to be much less harmful than cigarettes, then some young people who do not smoke because of health concerns may take up a lower risk product. The policy challenge is to find ways of regulating these products that maximize the undoubted benefits from reducing smoking prevalence while limiting any potential adverse impacts of uptake among non-smokers. One way to reduce long-term dual use with cigarettes and any hypothetical gateway to smoking would be to commit to phasing out all combustible cigarette sales (e.g. over 10–15 years) while allowing smokers ready access to alternative nicotine products that are taxed and regulated in ways that reflect their risk profiles.

Declaration of interests

Coral Gartner is supported by a National Health and Medical Research Council Career Development Fellowship (GNT1061978).

References

- 1 Pedersen W., von Soest T. Tobacco use among Norwegian adolescents: from cigarettes to snus. *Addiction* 2014; 109: 1164–1172.
- 2 Timberlake D. S., Huh J., Lakon C. M. Use of propensity score matching in evaluating smokeless tobacco as a gateway to smoking. *Nicotine Tob Res* 2009; 11: 455–462.
- 3 O'Connor R. J., Flaherty B. P., Edwards B. Q., Kozlowski L. T. Regular smokeless tobacco use is not a reliable predictor of smoking onset when psychosocial predictors are included in the model. *Nicotine Tob Res* 2003; 5: 535–543.
- 4 Gartner C. E., Hall W. D., Vos T., Bertram M. Y., Wallace A. L., Lim S. S. Assessment of Swedish snus for tobacco harm reduction: an epidemiological modelling study. *Lancet* 2007; 369: 2010–2014.
- 5 Galanti M. R., Rosendahl I., Wickholm S. The development of tobacco use in adolescence among 'snus starters' and 'cigarette starters': an analysis of the Swedish 'BROMS' cohort. *Nicotine Tob Res* 2008; 10: 315–323.
- 6 Dutra L. M., Glantz S. A. Electronic cigarettes and conventional cigarette use among US adolescents: a cross-sectional study. *JAMA Pediatr* 2014. Published online 6 March 2014. doi:10.1001/jamapediatrics.2013.5488.
- 7 Goniewicz M. L., Zielinska-Danch W. Electronic cigarette use among teenagers and young adults in Poland. *Pediatrics* 2012; 130: e879–e885.
- 8 Action on Smoking and Health. ASH briefing: electronic cigarettes March 2014. 2014. Available at http://www.ash.org.uk/files/documents/ASH_715.pdf.