

# TOBACCO HARM REDUCTION (THR)

## POSSIBLE THREATS

## Tobacco harm reduction: an alternative cessation strategy for inveterate smokers

Brad Rodu\*<sup>1</sup> and William T Godshall<sup>2</sup>

### Abstract

According to the Centers for Disease Control and Prevention, about 45 million Americans continue to smoke, even after one of the most intense public health campaigns in history, now over 40 years old. Each year some 438,000 smokers die from smoking-related diseases, including lung and other cancers, cardiovascular disorders and pulmonary diseases.

Many smokers are unable – or at least unwilling – to achieve cessation through complete nicotine and tobacco abstinence; they continue smoking despite the very real and obvious adverse health consequences. Conventional smoking cessation policies and programs generally present smokers with **two unpleasant alternatives: quit, or die**

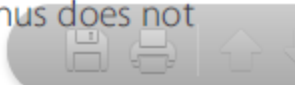
A third approach to smoking cessation, tobacco harm reduction, involves the use of alternative sources of nicotine, including modern smokeless tobacco products. A substantial body of research, much of it produced over the past decade, establishes the scientific and medical foundation for tobacco harm reduction using smokeless tobacco products.

This report provides a description of traditional and modern smokeless tobacco products, and of the prevalence of their use in the United States and Sweden. It reviews the epidemiologic evidence for low health risks associated with smokeless use, both in absolute terms and in comparison to the much higher risks of smoking. The report also describes evidence that smokeless tobacco has served as an effective substitute for cigarettes among Swedish men, who consequently have among the lowest smoking-related mortality rates in the developed world. The report documents the fact that extensive misinformation about ST products is widely available from ostensibly reputable sources, including governmental health agencies and major health organizations.

The American Council on Science and Health believes that strong support of tobacco harm reduction is fully consistent with its mission to promote sound science in regulation and in public policy, and to assist consumers in distinguishing real health threats from spurious health claims. As this report documents, there is a strong scientific and medical foundation for tobacco harm reduction, and it shows great potential as a public health strategy to help millions of smokers.



**Figure 1 Snus smoke-free tobacco.** Snus is an oral tobacco product that comes in a pouch of some sort, designed to be placed between the gums and upper lip. Snus is not chewed and requires no spitting. The standard pouch holds 1 gram of finely ground tobacco. Snus is regulated as a food in Sweden, and thus held to strict quality standards. Swedish snus was developed to greatly reduce TSNA content, and research shows that snus does not increase the risks of cancer of any type.



# TOBACCO HARM REDUCTION

Ramström and Wikmans *Tobacco Induced Diseases* 2014, 12:14  
<http://www.tobaccoinduceddiseases.com/content/12/1/14>



TOBACCO INDUCED  
DISEASES

SHORT REPORT

Open Access

## Mortality attributable to tobacco among men in Sweden and other European countries: an analysis of data in a WHO report

Lars Ramström<sup>1\*</sup> and Tom Wikmans<sup>2</sup>

**Table 2 Ratios of death rates attributable to tobacco**

Age group	Cause of death		
	All causes	Lung cancer	All cardiovascular
45-59	0.15	0.24	0.13
60-69	0.27	0.38	0.19
70-79	0.42	0.49	0.33

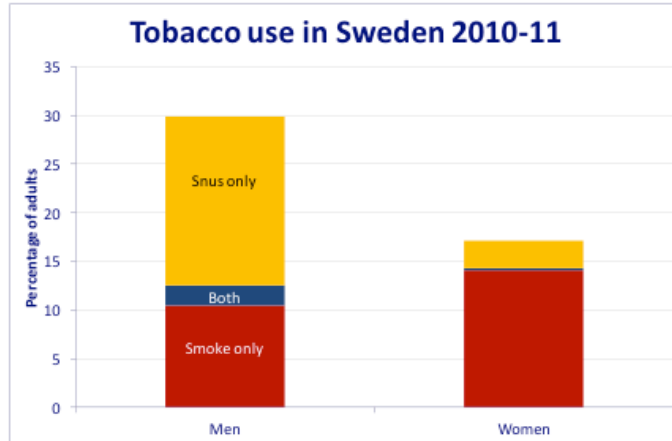
Men in Sweden vs. men in Europe as a whole 2004.

**Table 3 Tobacco use changes among men in Sweden**

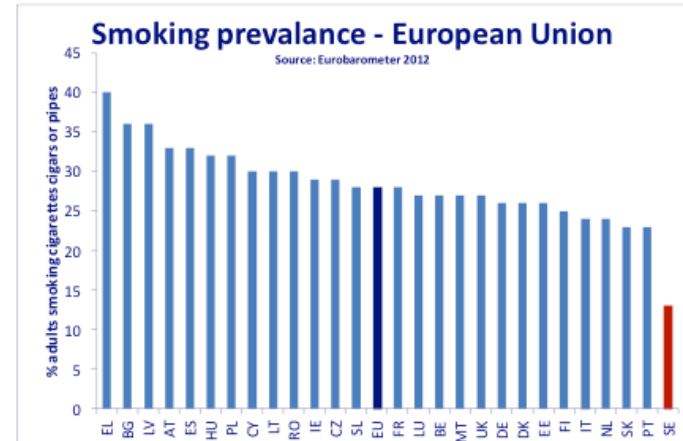
Age group	Prevalence of			
	Daily smoking		Daily snus use	
	1988/89	2004/05	1988/89	2004/05
35-44	33%	13%	19%	31%
45-54	32%	21%	11%	24%
55-64	28%	21%	9%	18%

Source: Mortality attributable to tobacco among men in Sweden and other European countries: An analysis of data in a WHO report. *Tobacco Induced Diseases*, 2014, 12:14.

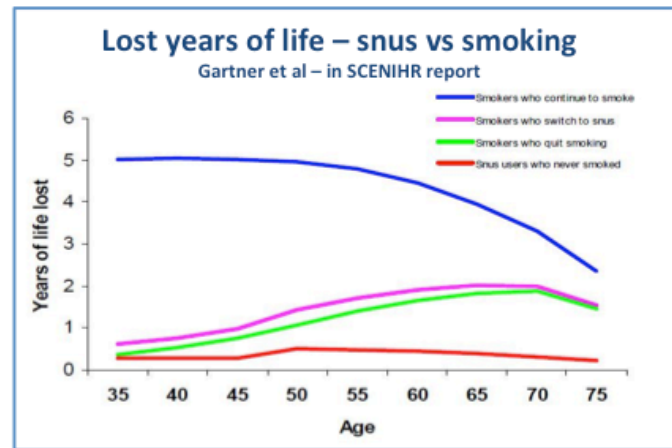
# TOBACCO HARM REDUCTION



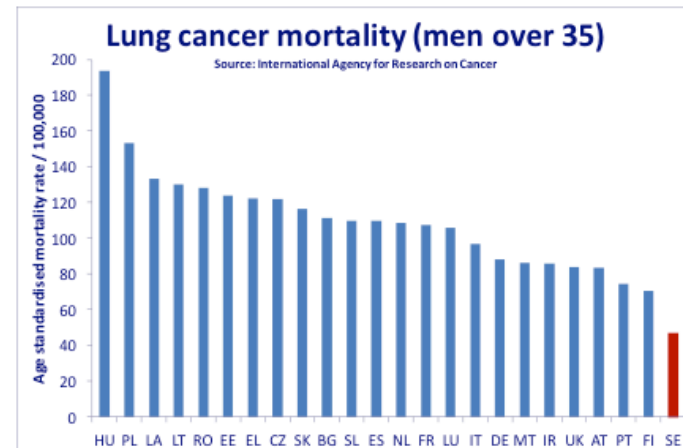
1. In Sweden, especially among men, nicotine is consumed through use of smokeless tobacco or 'snus' instead of cigarettes.



2. This means that Sweden has a very low rate of smoking – an outlier compared to the rest of the European Union.



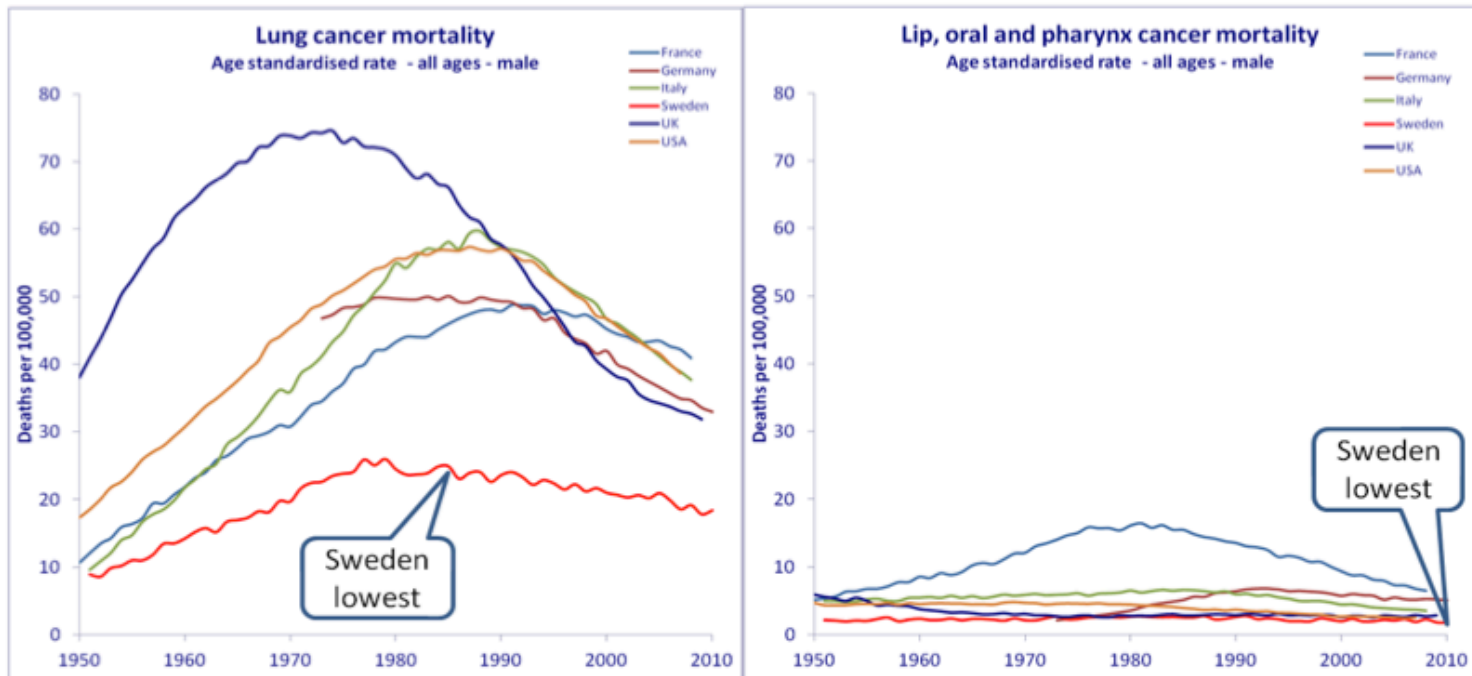
3. Research modelling reported by the EU's scientific panel (SCENIHR) shows that snus use has a *much* lower impact on life expectancy than smoking



4. Sweden shows exceptional results for smoking related disease. Today's low smoking rates will mean lower cancer rates in Sweden in future.

# TOBACCO HARM REDUCTION

## Cancer mortality



5. Smoking related cancer rates track smoking rates with a lag, as it takes many years for cancer to form. So Sweden has benefitted for many decades relative to other European countries .

6. Some people think that switching to smokeless tobacco just moves cancer from the lung to the mouth. This is wrong: the lung risks are much higher for smoking and cigarettes also cause oral cancers.

# TOBACCO HARM REDUCTION

Polosa et al. *Harm Reduction Journal* 2013, **10**:19  
<http://www.harmreductionjournal.com/content/10/1/19>



HARM REDUCTION  
JOURNAL

**REVIEW**

**Open Access**

## A fresh look at tobacco harm reduction: the case for the electronic cigarette

Riccardo Polosa<sup>1,2\*</sup>, Brad Rodu<sup>3</sup>, Pasquale Caponnetto<sup>1</sup>, Marilena Maglia<sup>1</sup> and Cirino Raciti<sup>1</sup>



# TOBACCO HARM REDUCTION

## Abstract

Smokers of any age can reap substantial health benefits by quitting. In fact, no other single public health effort is likely to achieve a benefit comparable to large-scale smoking cessation. Surveys document that most smokers would like to quit, and many have made repeated efforts to do so. However, conventional smoking cessation approaches require nicotine addicted smokers to abstain from tobacco and nicotine entirely. Many smokers are unable – or at least unwilling – to achieve this goal, and so they continue smoking in the face of impending adverse health consequences. In effect, the status quo in smoking cessation presents smokers with just two unpleasant alternatives: quit or suffer the harmful effects of continuing smoking. But, there is a third choice for smokers: tobacco harm reduction. It involves the use of alternative sources of nicotine, including modern smokeless tobacco products like snus and the electronic cigarette (E-cig), or even pharmaceutical nicotine products, as a replacement for smoking. E-cigs might be the most promising product for tobacco harm reduction to date, because, besides delivering nicotine vapour without the combustion products that are responsible for nearly all of smoking's damaging effect, they also replace some of the rituals associated with smoking behaviour. Thus it is likely that smokers who switch to E-cigs will achieve large health gains. The focus of this article is on the health effects of using an E-cig, with consideration given to the acceptability, safety and effectiveness of this product as a long-term substitute for smoking.

**Keywords:** Tobacco, Harm reduction, Snus, Electronic cigarettes



# TOBACCO HARM REDUCTION

**Table 1 Summary data of maximum tobacco-specific nitrosamine levels in various cigarettes and nicotine-delivery products including electronic cigarettes (ng/g, except for nicotine gum and patch that are ng/gum piece and ng/patch) – Modified by Khan Z et al. J Public Health Policy 2011**

Product	NNN	NNK	NAT	NAB
Nicorette gum (4 mg)	2.00	ND	ND	ND
NicoDerm CQ patch (4 mg)	ND	8.00	ND	ND
Electronic cigarettes	3.87	1.46	2.16	0.69
Swedish snus	980.00	180.00	790.00	60.00
Winston (full)	2200.00	580.00	560.00	25.00
Marlboro (full)	2900.00	960.00	2300.00	100.00
Camel (full)	2500.00	900.00	1700.00	91.00
Marlboro (ultra-light)	2900.00	750.00	1100.00	58.00

NNN, 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone;

NNK, N'-nitrosonornicotine.

NAT, N'-nitrosoanatabine; NAB, N'-nitrosoanabasine.

ND, Not detected.

# TOBACCO HARM REDUCTION

**Table 2 Positive and negative aspects of e-cigarettes**

Positive	Negative
Beneficial effects on health (improved exercise tolerance, and less cough)	Small percent of the population is sensitive to propylene glycol (dry mouth and throat)
No tobacco smoke odor or bad breath	Some flavors (e.g. piña colada) have a lingering smell
Much less toxic than conventional cigarettes	Trace amounts of contaminants and metals present in some products
Mimics the "throat hit" sensation of inhaling smoke	"Throat hit" sensation dependent on hardware used and liquid composition
Replicates gestures or actions associated with smoking behavior	Equipment is heavier than traditional cigarette and puffing technique requires some training
Facilitates smoking abstinence	Not all users manage to quit smoking or reduce consumption of conventional cigarettes
Relieves withdrawal symptoms and craving for conventional cigarettes	Relief of withdrawal symptoms varies, affected by quality of equipment and nicotine strength of liquid
No risk to bystanders.	Due to few studies on potential risk to bystanders, some communities are outlawing indoor use
No ash, dirt, or burned clothes	Environmental concern about safe disposal of cartridges and batteries
Accessible prices (in the long run cheaper than conventional cigarettes)	The intricacies of their use and maintenance may hinder widespread adoption
Much improved self-regulatory framework by e-cigarettes industry	Impending medicinal regulation in many countries

# TOBACCO HARM REDUCTION

**APPEL DES 100 EN FAVEUR DE LA CIGARETTE ELECTRONIQUE**

**Initié et coordonné par le Dr Philippe Presles  
Médecin tabacologue**

Pour rejoindre l'appel : [www.philippepresles.com](http://www.philippepresles.com)

# TOBACCO HARM REDUCTION

- individual level
  - beyond any doubt: THR-approach beneficial
  - e-cig: very good candidate
- population level
  - e-cig uptake in non-smokers?
  - e-cig uptake in “children”/adolescents?
  - “gateway-effect” to tobacco smoking?
  - “renormalization” of “smoking”-behaviour?

# GATEWAY & “THE CHILDREN”

October 2014



## Use of electronic cigarettes in Great Britain

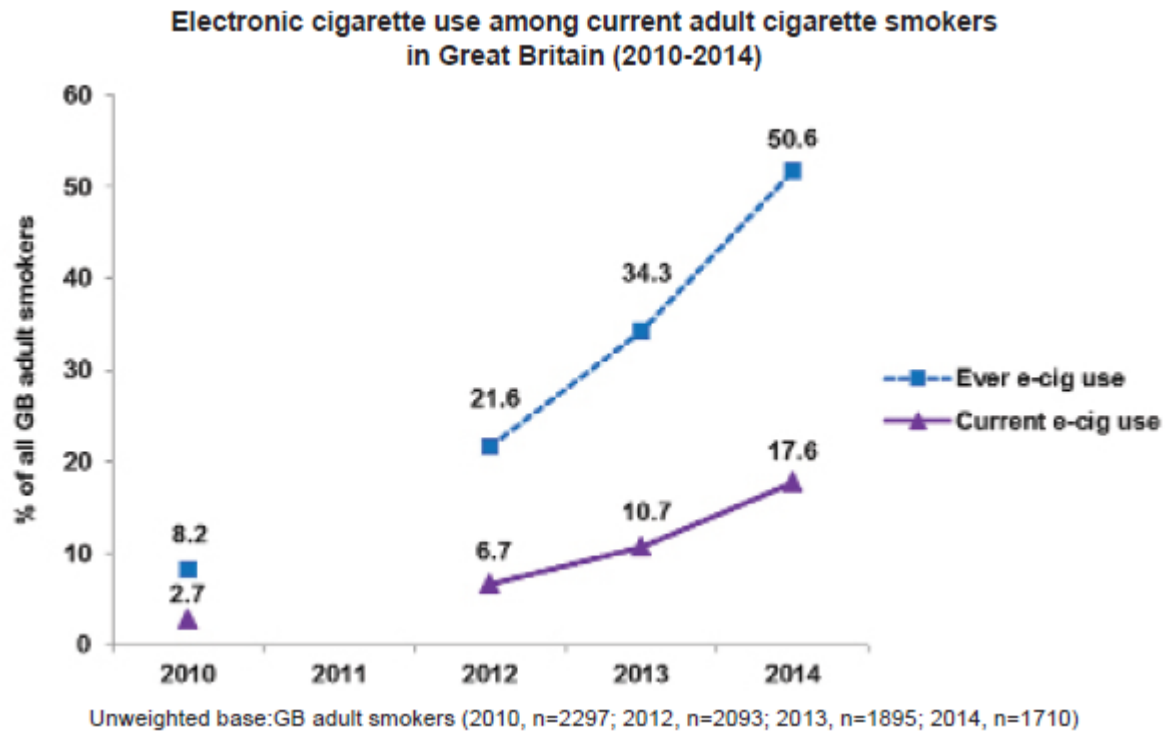
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[www.ash.org.uk](http://www.ash.org.uk)

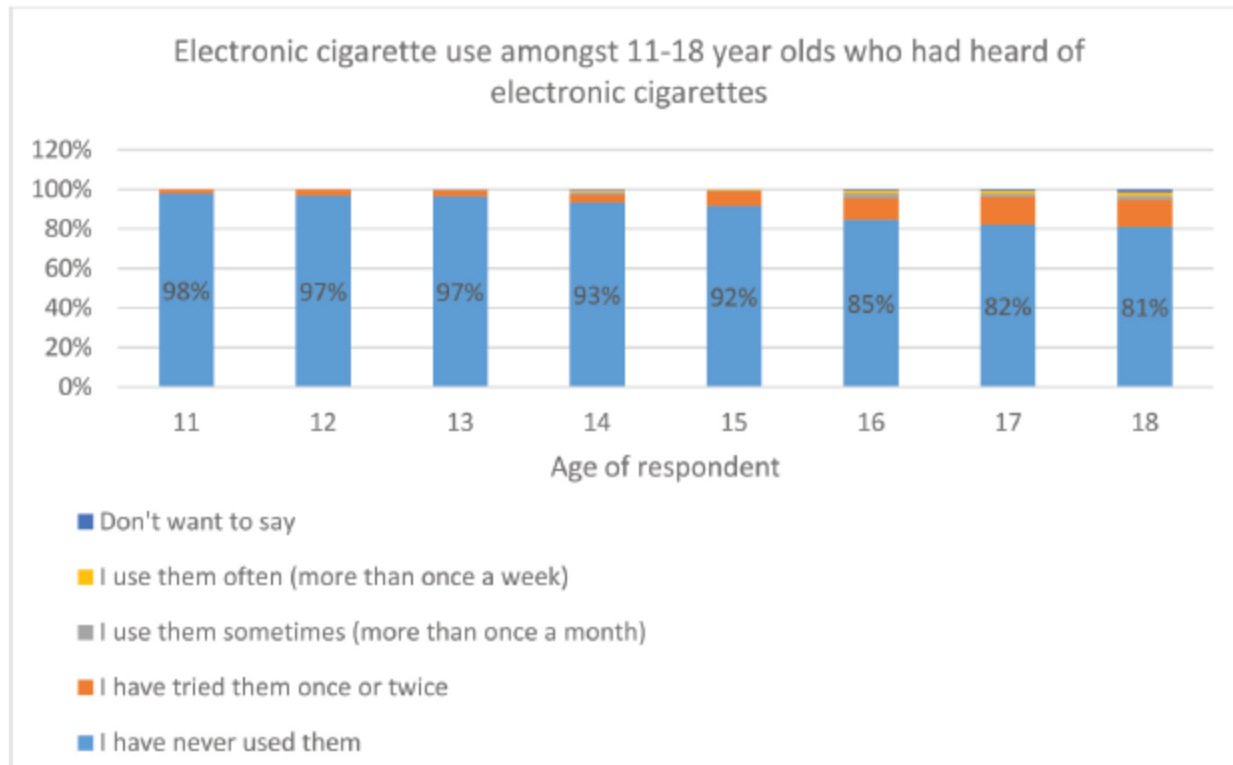
### Summary of findings

- An estimated 2.1 million adults in Great Britain currently use electronic cigarettes.
- About one third of users are ex-smokers and two-thirds are current smokers.
- The main reason given by current smokers for using the products is to reduce the amount they smoke while ex-smokers report using electronic cigarettes to help them stop smoking.
- Regular use of electronic cigarettes amongst children and young people is rare and is confined almost entirely to those who currently or have previously smoked.

# GATEWAY & “THE CHILDREN”



# GATEWAY & “THE CHILDREN”





# GATEWAY & “THE CHILDREN”

**Table 2.** History of tobacco use as a function of first product ever tried, *n* (%) unless otherwise noted

	n	Cigarettes	SLT	ETPs			Hookah
				e-Cigarettes	Snus	Dissolvables	
<b>First tried cigarettes</b> 326							
Never tried		N/A	205 (62.9)	203 (62.3)	262 (80.4)	304 (93.3)	104 (31.9)
Only tried		245 (75.2)	93 (28.5)	110 (33.7)	54 (16.6)	17 (5.2)	154 (47.2)
Occasionally use		60 (18.4)	14 (4.3)	9 (2.8)	4 (1.2)	1 (0.3)	65 (19.9)
Daily use		20 (6.1)	12 (3.7)	0 (0.0)	0 (0.0)	0 (0.0)	2 (0.6)
<b>First tried SLT</b> 97							
Never tried		37 (38.1)	N/A	67 (69.1)	58 (59.8)	88 (90.7)	36 (37.1)
Only tried		41 (24.3)	52 (53.6)	27 (27.8)	38 (39.2)	9 (9.3)	42 (43.3)
Occasionally use		15 (15.5)	23 (23.7)	3 (3.1)	1 (1.0)	0 (0.0)	18 (18.6)
Daily use		3 (3.1)	16 (16.5)	0 (0.0)	0 (0.0)	0 (0.0)	1 (1.0)
<b>First tried ETPs</b> 59							
Never tried		38 (64.4)	50 (84.7)	48 (81.4)	49 (83.1)	52 (88.1)	14 (23.7)
Only tried		18 (30.5)	6 (10.2)	9 (15.3)	9 (15.3)	5 (8.5)	31 (52.5)
Occasionally use		2 (3.4)	3 (5.1)	2 (3.4)	2 (3.4)	1 (1.7)	14 (23.7)
Daily use		1 (1.7)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
<b>First tried hookah</b> 156							
Never tried		110 (70.5)	133 (85.3)	124 (79.5)	146 (93.6)	148 (94.9)	N/A
Only tried		40 (25.6)	21 (13.5)	28 (17.9)	5 (3.2)	6 (3.8)	94 (60.3)
Occasionally use		4 (2.6)	1 (0.6)	3 (1.9)	2 (1.3)	1 (0.6)	49 (31.4)
Daily use		1 (0.6)	0 (0.0)	0 (0.0)	1 (0.6)	0 (0.0)	3 (1.9)
<b>NRT</b> 6							
Never tried		5 (83.3)	6 (100)	4 (66.7)	6 (100)	6 (100)	5 (83.3)
Only tried		1 (16.7)	0 (0.0)	2 (33.3)	0 (0.0)	0 (0.0)	1 (16.7)
Occasionally use		0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Daily use		0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)

ETPs: e-cigarettes, tobacco snus, dissolvables; N/A: not applicable; NRT: nicotine replacement therapy; SLT: smokeless tobacco

Source: Which nicotine products are gateways to regular use? First-tried tobacco and current use in college students. *Am J Prev Med* 2015, 48(1S1):S86–S93.