Appendices to WHO report (FCTC/COP/7/11)

"Electronic Nicotine Delivery Systems and Electronic Non-Nicotine Delivery Systems (ENDS/ENNDS)"

Appendix 1. Other health risks related to ENDS/ENNDS

Other health risks to be considered include those related to:

1. The simultaneous use of ENDS/ENNDS and combustible tobacco products.
   a. There is a debate about whether simultaneous dual use of ENDS/ENNDS and cigarettes translates to lower quantity of cigarettes smoked with lower intake of smoke toxicants and if ultimately dual users quit smoking and switch entirely to ENDS use.
   b. Almost no research has examined whether dual use is a transitional stage to quitting or rather a lingering sign of failure to quit and relapse to exclusive smoking.
   c. Dual use may lead to some reduction on number and duration of smoking, depending on the degree of substitution and age of initial dual use with all other factors - user behavior, type of ENDS and e-liquids – being equal. However, its translation into reduction of lifetime risk it is not expected to be significant. Initial data on the impact of reduce cigarette consumption might have raised some hope.[1] Nevertheless, the most recent data indicates that reduction of smoking reduces very little if any the lifetime risk.[2,3,4]

2. The defective design or packaging, and adulterated or manipulated e-liquid.
   a. Defective design of devices includes batteries causing accidental fires. Overcharging of the lithium ion batteries or use of the wrong charger or battery resulted in 25 known fire incidents in the USA between 2009 and 2014 causing 9 injuries and no deaths.[5] Fire in checked baggage claim areas of US airports resulted in US Federal Aviation Authority (FAA) banning ENDS in checked baggage in February 2016.[6]
   b. Reckless packaging of e-liquid has led to child poisonings and death.[7] According to the American Association of Poison Centers the number of calls on poisoning among infants and young children rose from 268 in 2011 to 1,214 by 2013 and 3,831 by 2014.[8]
   c. Adulteration of e-liquid has been cited[9,10] as concern given the lack of manufacturing regulatory control. In fact, there have been reports were ethylene glycol was the dominant compound in the solvent.[11]

Appendix 2. Table - Pooled prevalence of ENDS/ENNDS use during the period 2013-2015 among youth ≤20 years

		Non-smokers	Smokers
Ever use of ENDS/ENNDS	*N*	13 studies from 8 countries	13 studies from 8 countries
	Range	0.7% (Italy)–14.0% (N Zealand)	26.3% (Italy)–72.5% (Canada)
	Pooled	7% (95%CI: 5.1%-9.3%)	54.7% (95%CI: 45.9%-60.5%)
Current[1] use of ENDS/ENNDS (≥1 last 30 days)	*N*	11 studies from 6 countries	10 studies from 6 countries
	Range	0.0% (Italy) – 19.0% (USA Fl)	2.7% (US Fl) – 57.4% (Poland)
	Pooled	2.2% - 95%CI: 0.3%-5.6%	17.2% - 95%CI: 5.8%-32.6%

Appendix 3. Role of commercial/tobacco industry in research on ENDS/ENNDS

In a review[12] of 105 studies analyzing the composition of liquids and emissions, on which ENDS/ENNDS safety assessments have been mostly based until now, 30% had authors that had received funding from ENDS/ENNDS interests –including the tobacco industry - for the studies analyzed or for previous studies (25% declared and 5% undeclared). Another 5% declared interests from the pharmaceutical industry. While this in itself does not necessarily invalidate the results of studies, in the past, studies linked to commercial interests of the tobacco and pharmaceutical industries have been found to be biased.[13,14]

Responsible academics should be able to use scientific journals to raise concerns about how commercial interests have biased the design of the research and/or interpretation of the data. A mere declaration of interests may be insufficient to clarify potential biases. Some ENDS critics have complained about the refusal of well-established peer-reviewed journals to publish their critiques of how declared commercial interest of some authors might have been minimized or reflected in the results of some published studies.[15,16] ENDS advocates and authors linked to the industry have complained about the limited value of journal peer review when it comes to articles on harm reduction,[17] or ENDS research,[18,19] with some of them charged in turn with undue influence.[20,21,22,23,24] There is a clear need to safeguard research from conflicts of interest and to promote a transparent, paused debate of results in order to maximize the contribution of ENDS research to evidence-based policy.

[1] Defined as at least once in last 30 days. There is now some agreement that current use should better measured as use a least once in the last 7 days. However, most studies reviewed can only be compared for frequency of use in the last month.

Appendix 4. Public support for policies on use of ENDS/ENNDS in indoor public places or workplaces where smoking is not permitted

Banning ENDS/ENNDS use in smoke-free public places or indoor public and workplaces is opposed by a relatively low proportion of the few studied general adult populations: between 5% and 25% in the USA[25,26,27,28] and between 20% (schools) and 41% (bars) in Spain[29] depending on the type of public place. This policy option is opposed by a higher proportion of smokers and former smokers with smokers more reticent than former smokers: between 25% and 40% in the USA[30,31] and 45% in the UK.[32] Some experts, although opposed to banning ENDS/ENNDS use in indoor places, recognize that reasons other than the health risk to bystanders may exist for prohibiting their use in all or part of a public place or workplace.[33]

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