

# QUESTIONS ON NOTICE

INJURY MATTERS RESPONSE

11 DECEMBER 2018

SELECT COMMITTEE ON PERSONAL CHOICE AND COMMUNITY SAFETY

**The CHAIR:** Thank you very much. I note in your submission you state that the 2014 study by European Addiction Research—that would be the Nutt et al paper, I believe—that reported that e-cigarettes were 95 per cent less harmful than tobacco cigarettes has largely been discredited. Can you provide any information on studies which formed that view?

E-cigarettes are handheld, battery-powered devices invented to emit doses of nicotine in the form of vapour for their users. Injury Matters provides our response in relation to the following article. "Estimating the Harms of Nicotine-Containing Products Using the MCDA Approach" D. J. Nutt, L. D. Phillips, D. Balfour, H. V. Curran, M. Dockrell, J. Foulds, K. Fagerstrom, K. Letlape, A. Milton, R. Polosa, J. Ramsey and D. Sweanor. (1) There are a variety of reasons associated with why the above report was discredited. They include the use of the Multi Criteria Decision Analysis research method which some claim is opinion based, that the report was an estimate based on limited evidence available at the time, and the conflict of interest of some of the authors. In August 2015, UK based Public Health England (PHE) came under fire for basing, in part, some of its advice on the safety of e-cigarettes on research funded by organisations with links to the tobacco industry – (some of the Nutt et.al authors had previously declared conflicts of interest – linked to tobacco companies). A suite of National Health Service Directors of Public Health, said at the time that there was not enough evidence to justify the PHE stance, supporting the Nutt et al. and further feared it would be taken as an official endorsement of the safety of e-cigarettes.

The World Health Organisation also weighed in on the potential health risks of e-cigarettes claimed by announcing in 2016 that "no specific figure about how much 'safer' the use of these products is compared to smoking can be given any scientific credibility at this time." (2)

Closer to home the National Health and Medical Research (NHMRC), referenced the Nutt at al. research as being discredited as it was based solely on the opinion of the authors. In April 2017, NHMRC recognised the need for high-quality research announcing a number of studies investigating the effects of e-cigarettes. (3) When looking at the potential health risks of EC the NHMRC paper cited two articles, one in *The Lancet* the other in the *British Medical Journal* (BMJ).

"E-Cigarettes: Public Health England's Evidence-Based Confusion" *The Lancet*, vol. 386, p. 829, 2015. (4)

The Lancet points out that the Nutt et al. paper states that there was a "lack of hard evidence for the harms of most products on most of the criteria". Additionally, it stated that "the reliance by PHE on work that the authors themselves accept is methodologically weak, and which is made all the more perilous by the declared conflicts of interest surrounding its funding, raises serious questions not only about the conclusions of the PHE report, but also about the quality of the agency's peer review process."

"Evidence about electronic cigarettes: a foundation built on rock or sand?" *BMJ* 2015; 351. (5)

The BMJ article listed some of the organisations that criticized the PHE at the time, which included the British Medical Association, the UK Faculty of Public Health, the US Centers for Disease Control and Prevention, the American Lung Association, the World Health Organization, the European Commission, and other leading international health bodies. Injury Matters considers the available evidence about e-cigarettes suggests that the debate is far from over and that questions remain still about their benefits and harms.

- (1) D. J. Nutt, L. D. Phillips, D. Balfour, H. V. Curran, M. Dockrell, J. Foulds, K. Fagerstrom, K. Letlape, A. Milton, R. Polosa, J. Ramsey and D. Sweanor, "Estimating the Harms of Nicotine-Containing Products Using the MCDA Approach" *European Addiction Research*, vol. 20, no. 5, pp. 218-225, 2014.
- (2) World Health Organisation, "Electronic Nicotine Delivery Systems and Electronic Non-Nicotine Delivery Systems (ENDS/ENNDs)" WHO Framework Convention on Tobacco Control, Geneva, 2016.

- (3) National Health and Medical Research Council, 2017, 'CEO Statement: Electronic Cigarettes (e-cigarettes)' NHMRC, 2017.
- (4) "E-Cigarettes: Public Health England's Evidence-Based Confusion" *The Lancet*, vol. 386, p. 829, © 2015 Elsevier Ltd. All rights reserved.
- (5) McKee, M; Capewell, S (2015) Evidence about electronic cigarettes: a foundation built on rock or sand? *BMJ* (Clinical research), 351. h4863. ISSN 0959-8138

**The CHAIR:** That would be nice. What I would like as well, if you can provide it, is that I am wondering if the exploding batteries and the overheating is a result of the nature of these devices—the fact that they heat up liquids that contain nicotine—or if it is a result of shoddy manufacturers or an unregulated market where Australian consumer standards are not applied. Because there are obviously plenty of other electronic devices that heat things up that do not have a reputation for exploding. I am wondering if there is something unique about vaping devices or if it is their unregulated nature.

E-cigarettes were first offered for sale in 2007 and have become extremely popular globally since that time. Most e-cigarettes are powered by lithium-ion batteries, smaller versions of what are found in cell phones and laptops. Evidence has shown that when these batteries are put in extreme temperatures, are over-charged, or are poorly made, they can explode and leave e-cigarette users with severe hand, face, and eye injuries.

A report by the U.S. Fire Administration highlighted that between January 2009 and December 31, 2016, 195 separate incidents of explosion and fire involving an electronic cigarette were reported by the U.S. media. The first key point the report found was that "The combination of an electronic cigarette and a lithium-ion battery is a new and unique hazard. There is no analogy among consumer products to the risk of a severe, acute injury presented by an e-cigarette." (6) These incidents resulted in 133 acute injuries. To avoid an e-cigarette explosion, the report went on to suggest always following the device's specific battery charging instructions and using the power sources it specifies.

In February 2018, Public Health England commissioned an evidence review into e-cigarettes and heated tobacco products. The report noted: "Exploding e-cigarettes can cause severe burns and injuries that require intensive and prolonged medical treatment, especially when they explode in users' hands, pockets or mouths." Adding that, "the cause is uncertain but appears to be related to malfunctioning lithium-ion batteries." Most incidents happened during charging (n=44) with fewer occurring while inhaling or between puffs (n=20); the remainder occurred during transportation or storage. (7)

The study identified 21 papers describing 43 cases from outside the UK (including the US, Canada, Germany and Malaysia). Twenty-three cases described patients who had sustained injuries as a result of an e-cigarette (and/or EC battery) exploding while being carried in a trouser pocket; four of which reported they were carrying keys and/or coins in their pocket at the time of the explosion. 13 explosions occurred when the EC device was in the patient's mouth, four while holding it, one while modifying their device and one during a motorcycle accident. Injuries included thermal and chemical burns to the face, hands, thighs, buttocks and genitals; puncture wounds, fractures, loss of teeth and eye injuries. Thirty-six cases resulted in burn injury; range of total surface area from 0.5% to 27.5% in 27 cases. Treatment included wound management, dental and maxillofacial surgery, with 13 patients required a skin graft. (7)

In short, end users are the most common reasons why e-cigarettes and other lithium-ion battery products become unsafe. Throwing devices, getting them wet, charging them with the wrong charger, and leaving them to bake in the sun have all found to be the cause of overheating.

Better made devices will contain safety features (which include protection from overheating, overcharging, being discharged too much, and protection from short-circuiting and being recharged using the wrong charger) that work to prevent damaged devices from becoming unsafe.

(6) Lawrence A. McKenna Jr. Research Group National Fire Data Center. U.S. Fire Administration. *Electronic Cigarette Fires and Explosions in the United States 2009 - 2016*

(7) McNeill A, Brose LS, Calder R, Bauld L & Robson D (2018). "Evidence review of e-cigarettes and heated tobacco products 2018. A report commissioned by Public Health England." London: Public Health England.

**Hon PIERRE YANG:** Yes. So if a child falls into a canal, generally, if it is a small child, the water will be higher than their body height. What is your opinion on that and what kind of measures do you think would mitigate that risk?

Recognising that the following risk mitigation activities will vary depending on the waterbody, including location, usage and structure. Injury Matters highlights the following measures in preventing injuries and reducing risk

- Safety and risk management audits
- Consultation with safety organisations in planning phases
- Barriers – around playgrounds in close proximity to waterway, handrails/balustrades where appropriate
- Safety signage
- Public education – dangers of waterways, supervision of young children, safe behaviours etc.
- Provision of programs to develop Swimming and water safety skills
- Provision of programs to develop first aid, rescue and resuscitation skills

Risk comes in many forms but here we would like to highlight two forms. The physical environment, including shallow water, currents/flowing water, sudden changes in water depth, steep gradient of entry to water, submerged obstacles, deep water, water quality, flooding/seasonal variations, steep crumbling banks/thick vegetation, pathways/platforms. Jetties/bridges, pontoons, activity areas (BBQ area, playgrounds), lighting. And the human environment, covering the lack of awareness of dangers, lack of swimming ability, inadequate parental supervision, risk taking behaviour, alcohol consumption, unauthorised use of waterway, ability of bystanders to respond in an emergency.

**Hon RICK MAZZA:** Just as a supplementary to that, if you are able to give us any figures of how many children have actually drowned in a canal.

Since 2008 there have been five drowning deaths (1.5% of total drowning deaths since 2008) in canals/channels.

**Hon PIERRE YANG:** Or a lake—man-made.

Since 2008 there have been 20 drowning deaths occurring in lake/dam/lagoon locations, which represents 5.9% of total drowning deaths since 2008.

**Hon Dr SALLY TALBOT:** Has the rate of injury or death of children in private pools decreased since the regulations changed in 2012?

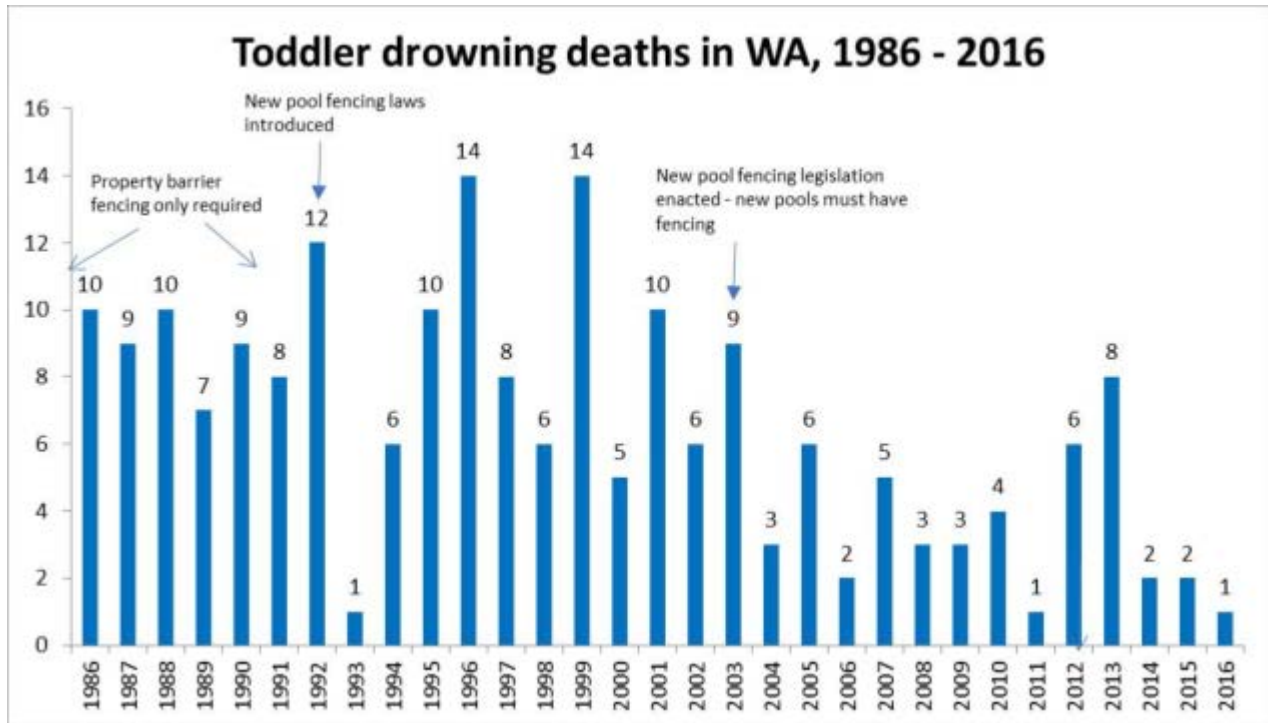
Specific laws that mandate the installation of a safety barrier to enclose private swimming and spa pools were first introduced in WA in 2001. In the five years prior to the implementation of the 2001 legislation (1997 – 2001), on average 8.2 toddlers drowned each year in WA, with 65.9% of these occurring in home pools. In the five years immediately following the introduction of the legislation (2002 – 2006), there was an average of 5.8 deaths per year, with 51.7% of these occurring in home pools. This represents a 29.3% decrease in toddler drowning deaths and 14.2% decrease in the proportion of deaths occurring in home swimming pools following the introduction of this legislation.

More recently, since 2012 between 2013 and 2017, there were 3.2 drowning deaths per year with only 1.8 of these occurring in home swimming pools. Injury Matters notes that considering the state's overall population increase during this period and the increase in the amount of home swimming pools installed in WA this represents a significant decline in the drowning rate in this age group.

**Hon Dr SALLY TALBOT:** If you could just correlate the Ombudsman's report with you at that answer. The second question on the same subject is that we have heard some suggestion—I think "suggestion" is a better word than "evidence"—that fencing in private pools should only be mandatory where the homeowners are parents of small children or the pool is accessed by small children. Have you got any data that identifies the relationship between the pool owner and the child who drowns or nearly drowns?

Over the past ten years, 68.8% of drowning deaths involving toddlers aged 0-4 years occurred at their usual place of residence, 12.5% occurred at a neighbour's property, 12.5% occurred at a relative of the child's residence and 6.25% occurred at a child care facility. Injury Matters reinforces our support of pool barrier measures as a means of keeping young children and their families safe and supports ongoing regulation to ensure harm reduction.

## Home pool deaths



Please note, the above graph was included as part of the Royal Life Saving WA's submission to the Select Committee on Personal Choice and Community Safety.