Smoking Cessation Research Review™

Making Education Easy

Issue 29 – 2018

In this issue:

Abbreviations used in this issue
NRT = nicotine replacement therapy
OR = odds ratio

Welcome to issue 29 of Smoking Cessation Research Review.

Projections from a US study modelling public health outcomes if cigarette smoking was replaced by e-cigarettes lead to the conclusion that *"a strategy of replacing cigarette smoking with vaping would yield substantial life year gains"*. Moreover, switching smokers to e-cigarettes would result in meaningful health benefits including reduced disease disability to smokers, less tobacco-related disease and reduced exposure to secondhand smoke. The study researchers call for policies that provide the best available information on the relative risks of e-cigarettes, to encourage switching to e-cigarette use.

Do the benefits of e-cigarettes for smoking cessation depend upon the regulatory environment? An analysis of data from the International Tobacco Control Four Country Survey shows that the effectiveness of e-cigarettes for helping smokers to quit is higher in a less restrictive, compared with a more restrictive, regulatory environment. The study researchers suggest that regulatory approaches are needed that maximise the benefits of e-cigarettes for smoking cessation and minimise their risks to public health.

We hope you enjoy the selection in this issue, and we welcome any comments or feedback.

Kind regards,

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Independent commentary by Dr Brent Caldwell.
Brent Caldwell was a Senior Research Fellow at Wellington Asthma Research Group, and worked on the Inhale Study. His main research interest is in identifying and testing improved smoking cessation methods, with a particular focus on clinical trials of new smoking cessation pharmacotherapies.

Independent commentary by Honorary Associate Professor Natalie Walker.
Dr Natalie Walker is an epidemiologist and leader of the Addiction Research programme at the National Institute for Health Innovation, University of Auckland. Her primary area of interest is the conduct of phase III, community-based, clinical trials, particularly in the fields of smoking cessation, alcohol consumption, and heart health. **FOR FULL BIO CLICK HERE.**

Disclosure Statement: Natalie Walker has provided consultancy to the manufacturers of smoking cessation medications, received honoraria for speaking at a research meeting and received benefits in kind and travel support from a manufacturer of smoking cessation medications. Natalie has also undertaken two trials of very low nicotine content cigarettes, which were purchased from two different tobacco companies. The companies concerned had no role in development of the study design, data collection, data analysis, data interpretation, or writing of the trial publications.

Lung cancer mortality associated with smoking and smoking cessation among people living with HIV in the United States

Authors: Reddy KP et al.

Summary: These researchers constructed a model for lung cancer-related mortality among HIV-positive smokers in care. The model combined demographic data and HIV/AIDS epidemiology statistics with smoking status (current, former, or never) and intensity (heavy, moderate, or light). Sensitivity analyses accounted for nonadherence to antiretroviral therapy (ART) and for a range of HIV-conferred risks of death from lung cancer and from other non-AIDS-related diseases (e.g. cardiovascular disease). Among 40-year-old men with HIV who continued to smoke, estimated cumulative lung cancer mortality was 28.9% for heavy smokers, 23.0% for moderate smokers, and 18.8% for light smokers; corresponding rates for those who quit smoking at age 40 years were 7.9%, 6.1%, and 4.3%; the rate was 1.6% for never smokers. Among women aged 40 years who continued to smoke, mortality was 27.8% for heavy smokers, 20.9% for moderate smokers, and 16.6% for light smokers; for former smokers, the rates were 7.5%, 5.2%, and 3.7%, respectively; and for never smokers, it was 1.2%. Depending on sex and smoking intensity, the risk of dying from lung cancer was an estimated 6–13 times higher than the risk of dying from traditional AIDS-related causes. Poor adherence to ART increased the risk of AIDS-related death but lowered overall lung cancer-related mortality.

Comment (NW): In the 2007 'HIV Futures New Zealand 2' survey of people living with HIV in NZ, 38% of the 261 participants reported they had smoked cigarettes in the last 12 months (compared to a national smoking prevalence of 19% at that time, based on NZ census data). More up-to-date published data on smoking prevalence amongst people living with HIV in NZ do not appear to be available – this in itself is a concern, and I expect that there remains a higher-than-average smoking prevalence in this population. This paper highlights the significant harm smoking has to the health of this priority population, and reinforces the need to have a clear message to any patients you have who smoke and are living with HIV – *"compliance with antiretroviral therapy and smoking cessation medication go hand-in-hand"*.

Reference: JAMA Intern Med. 2017;177(11): 1613-21
Abstract

New Zealand policy experts' appraisal of interventions to reduce smoking in young adults: a qualitative investigation

Authors: Ball J et al.

Summary: This qualitative investigation recruited 15 key informants including 5 politicians, 4 senior policy analysts and 7 leading tobacco control advocates. Five identified as Māori and 3 as Pacific; all had leadership roles in promoting, developing or implementing tobacco control policy. All informants took part in semi-structured interviews seeking their opinions on the feasibility and likely effectiveness of interventions designed to reduce smoking prevalence among 18–24-year-olds. The participants discussed 9 policy options, all of which could either promote greater mindfulness or introduce barriers impeding smoking uptake: smoke-free outdoor dining and bars; no tobacco sales where alcohol is sold; social marketing campaigns; real life stories (testimonials); life skills training; raise purchase age to 21; tobacco-free generation; smokers' licence; make tobacco retail premises R18. Thematic analysis of the interview transcripts revealed that the participants considered the more effective policies were those that denormalised tobacco; made it less convenient to access and use; highlighted immediate disadvantages (e.g. impact on fitness); aligned with young people's values; and addressed the underlying causes of smoking (e.g. stress). Participants highlighted some political barriers and some questioned whether raising the legal age of tobacco purchase to 21 might widen ethnic disparities in New Zealand, as underage access to tobacco is more prevalent in Māori and Pacific communities. Two interventions were viewed as both politically feasible and likely to lower smoking rates among young adults: social marketing campaigns and extending smoke-free regulations to include outdoor areas of cafes and bars.

Comment (NW): Some interesting findings from this qualitative study that should be explored further with end-users. I was particularly interested in the ideas around the need for a social marketing campaign focussing on 'how tobacco companies have deliberately targeted and manipulated young people'. Such campaigns have been delivered extensively in the USA via the 'Truth Initiative': https://truthinitiative.org/. It would be interesting to see such campaigns with a NZ twist.

Reference: BMJ Open. 2017;7(12):e017837
Abstract

New Zealand adolescents' discouragement of smoking among their peers

Authors: Marsh L et al.

Summary: This evaluation of data from 2,919 NZ secondary school students who participated in the 2014 national Youth In-depth Survey revealed that about half of all students engaged in some form of behaviour discouraging their peers from smoking. Only 1 in 10 students reported that they promoted smoking. Discouragement was associated with non-smoking or lower levels of smoking, having more friends who smoked, and exposure to more health promotion messages about not smoking. Māori and Pacific young people also reported more discouraging behaviours.

Comment (NW): This paper fits well with the one I reviewed above, as it highlights the influence that *"encouraging and training young people as 'agents of change' might have on spreading the smokefree message"*. The paper also makes reference to the Truth Initiative run in the USA and the need for more 'for and by youth' health promotion messages. According to Stats NZ, 5% of our 15–17-year-olds smoke daily – as a group they have reached our Smokefree2025 goal. It's time to shift more of our focus now to supporting those in the 18–24-year age group (who have a smoking prevalence of 19%) to never start smoking or quit smoking – smoking should not be their future.

Reference: Aust N Z J Public Health. 2017;41(5):497-501
Abstract

Time spent reading this publication has been approved for CME for Royal New Zealand College of General Practitioners (RNZCGP) General Practice Educational Programme Stage 2 (GPEP2) and the Maintenance of Professional Standards (MOPS) purposes, provided that a Learning Reflection Form is completed. Please **CLICK HERE** to download your CPD MOPS Learning Reflection Form. One form per review read would be required.

Time spent reading this publication has been approved for CNE by The College of Nurses Aotearoa (NZ) for RNs and NPs. For more information on how to claim CNE hours please **CLICK HERE**.

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Trends in daily cannabis use among cigarette smokers: United States, 2002–2014

Authors: Goodwin RD et al.

Summary: Using data from the US National Survey on Drug Use and Health (a nationally representative cross-sectional study conducted annually among persons aged ≥12 years), this analysis estimated changes in the prevalence of daily cannabis use among current, former, and never cigarette smokers from 2002 through 2014. Daily cannabis use occurs nearly exclusively among non-daily and daily cigarette smokers (8.03% and 9.01%, respectively) compared with former and never smokers (2.79% and 1.05%, respectively). From 2002 to 2014, daily cannabis use increased among both non-daily (from 2.85% to 8.03%; p<0.001) and daily smokers (from 4.92% to 9.01%; p<0.001). Daily cannabis use increased most rapidly among former cigarette smokers (from 0.98% in 2002 to 2.79% in 2014; p<0.001).

Comment (NW): There appears to be no published data looking at trends in cannabis use among adult daily and non-daily tobacco smokers in NZ, so it remains unknown whether the pattern of use seen in the USA matches NZ. In 2012, a nationally representative sample of 3,017 Year 10 students from NZ found that 56% of those who had smoked tobacco in the past month also smoked marijuana, so clearly co-morbid use is not uncommon (White et al. BMC Public Health. 2015;15:233). Given the price of tobacco has been steadily increasing in NZ, it would be interesting to know whether smokers are switching to cannabis use. Cannabis smoking is not without risk, particularly in respect to adverse respiratory outcomes and mental health. The additive health effects of smoking both cannabis and tobacco need to be investigated further.

Reference: Am J Public Health. 2018;108(1):137-42
Abstract

Potential deaths averted in the USA by replacing cigarettes with e-cigarettes

Authors: Levy DT et al.

Summary: These researchers modelled the potential health impact from an endgame strategy intended to replace all or most cigarette smoking by e-cigarette use in the USA over a 10-year period, from 2016 to 2100. They compared a Status Quo Scenario, projecting smoking rates and health outcomes in the absence of vaping, with Substitution models, in which cigarette use is largely replaced by vaping over a 10-year period. They also tested an Optimistic and a Pessimistic Scenario, differing in terms of the relative harms of e-cigarettes compared with cigarettes and the impact on overall initiation, cessation and switching. Compared with the Status Quo, the Optimistic Scenario results in 6.6 million fewer premature deaths and 86.7 million fewer life years lost when cigarettes are replaced by e-cigarettes. The Pessimistic Scenario results in 1.6 million fewer premature deaths and 20.8 million fewer life years lost. The largest gains are among younger cohorts, with a 0.5 gain in average life expectancy projected for those aged 15 years in 2016.

Comment (NW): This modelling study provides some interesting findings but, as the authors note, it is *"not meant to be predictive"*. There still remain only two published trials of e-cigarettes for smoking cessation (one of which is from NZ). The findings from a third trial (the NZ ASCEND-II e-cigarette study) will be published later this year, which will contribute to the ongoing debate about the population impact of e-cigarettes for smoking cessation.

Reference: Tobacco Control. 2018;27:18-25
Abstract

Free smoking cessation mobile apps available in Australia: a quality review and content analysis

Authors: Thornton L et al.

Summary: A systematic search of the literature identified 112 mobile-based smoking cessation apps that are available in Australia and adhere to Australian smoking cessation treatment guidelines. Each app was rated for technical quality by the Mobile Application Rating Scale. The overall quality was poor for the majority of the rated apps; only 6 were considered to be of 'high-quality'. These apps adhered to Australian treatment guidelines in part. The study researchers call for more research to evaluate smoking cessation apps, as well as sustained funding for evidence-based apps.

Comment (BC): There is a strong rationale that smartphone apps could provide real-time tailored advice to smokers who are suffering strong withdrawal symptoms, to prevent them from lapsing (McClernon & Choudhury. 2013); however, research has consistently found apps do not use evidence-based techniques (Hoeppner et al., 2016), often do not recommend use of NRT and, do not refer people to support services (Bennett et al., 2015). The SF28 app by Kaur Ubhi and Robert West et al. in England is available for free via http://www.sf28.co.uk/.

Reference: Aust N Z J Public Health. 2017;41:625-30
Abstract

Studying the interactive effects of menthol and nicotine among youth: An examination using e-cigarettes

Authors: Krishnan-Sarin S et al.

Summary: The first part of this investigation was a pilot study involving 14 e-cigarette users recruited from local high schools, colleges, and online advertisements and flyers. Chemosensory experiments identified low (barely perceptible, 0.5%) and high (similar to commercial e-liquid, 3.5%) menthol concentrations. Sixty e-cigarette users (same demographics as the pilot study participants) were subsequently randomised to a nicotine concentration (0 mg/mL, 6 mg/mL, 12 mg/mL) and participated in 3 laboratory sessions. In each session, they received their assigned nicotine concentration with 1 of 3 menthol concentrations in random order across sessions (0, 0.5%, 3.5%); they participated in 3 fixed-dose puffing periods and an ad lib puffing period. Overall, the high concentration of menthol (3.5%) significantly increased e-cigarette liking/wanting relative to no menthol (p<0.001); there was marginal evidence of nicotine*menthol interactions (p=0.06). Liking/wanting was increased when 3.5% menthol was combined with 12 mg/mL nicotine, but not 6 mg/mL nicotine. At high (3.5%) and even at very low (0.5%) concentrations, menthol significantly improved taste and increased coolness. There was no evidence of nicotine or menthol-related changes in stimulant effects, nicotine withdrawal symptoms or ad lib use.

Comment (BC): Menthol is a fantastic chemical to increase the tolerability of e-cigs and encourage smokers to use their e-cigs often enough to assuage their withdrawal symptoms and urges to smoke. Menthol acts as a counter-irritant and also causes a transient breathe-hold which allows more time for nicotine to be absorbed via the lung. Krishnan-Sarin and colleagues tested 0mg, 0.5% and 3.5% menthol, finding that higher doses of menthol improved liking of the higher doses of nicotine. There were no main effects of nicotine dose on withdrawal symptoms, so 0mg of nicotine was as effective at reducing withdrawal symptoms as 12mg of nicotine! Perhaps the V2 cig brand was not very effective at aerosolising nicotine, or perhaps the subjects had little experience of vaping and therefore did not know how to puff in order to achieve delivery of high doses of nicotine? In our pressurised metered-dose inhaler study, we used 0.25% menthol, since many smokers thought a 0.5% dose tasted too much like confectionary and not enough like a cigarette.

Reference: Drug Alcohol Depend. 2017;180:193-9
Abstract

Evaluating the effect of smoking cessation treatment on a complex dynamical system

Authors: Bekiroglu K et al.

Summary: These researchers applied dynamic systems modelling to ecological momentary assessment data from a randomized placebo-controlled smoking cessation trial (n=1,504) to examine how distinct tobacco withdrawal-related processes are related over time and how smoking cessation treatment influences these relations. The model included withdrawal-related processes, momentary craving, negative affect, quitting self-efficacy, and cessation fatigue for each of 6 treatment conditions (nicotine patch, nicotine lozenge, bupropion, patch + lozenge, bupropion + lozenge, and placebo). The analyses revealed that withdrawal measurements are inter-related over time. The nicotine patch + nicotine lozenge treatment condition showed reduced cessation fatigue and enhanced self-efficacy in the long-term, while bupropion + nicotine lozenge was more effective at reducing negative affect and craving. Interestingly, although nicotine patch + nicotine lozenge had a better initial effect on cessation fatigue and self-efficacy, nicotine lozenge had a stronger effect on negative affect and nicotine patch had a stronger impact on craving.

Comment (BC): It is remarkable that dynamic systems modelling allows the effects of so many different constructs on abstinence, such as withdrawal symptoms and quit fatigue, to be disentangled from one another. Generalised linear models (GLM) and hierarchical GLM would fail at this task because of collinearity – e.g. if the effects of higher withdrawal symptom scores on abstinence have the same effects on abstinence as higher quit fatigue scores. I've always interpreted the collinearity that frequently occurs between predictors of abstinence to mean that the processes that underlie relapse are all really the same process and that there is little point in attempting to distinguish the 'processes' from one another. However, this study provides evidence that treatment decisions can be usefully tailored to people based on their cessation fatigue, negative affect, craving, and self-efficacy.

Reference: Drug Alcohol Depend. 2017;180: 215-22
Abstract

Does the regulatory environment for e-cigarettes influence the effectiveness of e-cigarettes for smoking cessation?: Longitudinal findings from the ITC Four Country Survey

Authors: Yong HH et al.

Summary: This study examined the impact of regulatory environment for e-cigarettes on their real-world effectiveness for smoking cessation. Study participants were from the International Tobacco Control Four Country surveys; from the USA and Canada (2 waves, n=318 and n=380, respectively), the UK (3 waves, n=439) and Australia (4 waves, n=662). The study period spanned between 2010 and 2014. Canada and Australia had more restrictive regulatory environments for e-cigarettes; the USA and the UK had less restrictive policies. Compared to unassisted quitting (i.e. no prescription medications or e-cigarettes), smokers who used e-cigarettes for quitting from countries with less restrictive e-cigarette policy environments were more likely (OR 1.95; 95% CI, 1.19 to 3.20; p<0.01), whereas smokers who used e-cigarettes for quitting from countries with more restrictive e-cigarette policies were less likely (OR 0.36; 95% CI, 0.18 to 0.72; p<0.01), to report sustained abstinence for ≥30 days.

Comment (BC): Isn't it amazing that in countries with liberal e-cig regulations, the quit rates for people who used e-cigs only, compared to those who used no meds and no e-cigs, were 1.95/0.36=5.4 times as likely to achieve abstinence compared to countries with restrictive e-cig laws! We need a regulatory environment that supports smokers' access to as many safe and effective therapies as possible, encourages smokers to try as many different therapies as possible to find the one(s) that suits them the best and that nurtures the development of social groups of smokers and ex-smokers to promote cessation devices to each other and that provide venues to celebrate and enjoy those devices.

Reference: Nicotine Tob Res. 2017;19(11):1268-76
Abstract

Cost-effectiveness of a health system-based smoking cessation program

Authors: Levy DE et al.

Summary: This economic analysis examined data from a US population-based randomised controlled smoking cessation trial – Project CLIQ (Community Link to Quit) – that offered cessation counselling, medications, and social services to low- and moderate-income smokers. Smokers were identified by an electronic health records-based smoker registry and interactive voice recognition technology. The CLIQ system successfully increased cessation rates. The cost-effectiveness of CLIQ was evaluated from a provider organisation's perspective if implemented outside the trial framework. Over the 20-month study period, the programme was estimated to cost $US283,027 more than usual care when applied to 8,544 registry-identified smokers, 707 of whom participated in the programme. The cost per smoker was $US33, incremental cost per additional quit was $US4,137, and incremental cost per additional life year saved was $US7,301. One-time costs constituted 28% of costs over 20 months. Ongoing costs were dominated by personnel costs (71% of ongoing costs). In sensitivity analyses, cost-effectiveness increased markedly with higher smoker participation rates, because of the large initial costs.

Comment (BC): This automated voice response system, plus four phone calls from a tobacco treatment specialist and six weeks of free patches, along with referral to social services, was cheap, effective, and could be offered to all patients who smoke, allowing them to opt out not requiring them to opt in. Imagine how much more effective this might be if people got NRT for longer than six weeks and if they had a selection of NRTs and could use multiple NRT combinations. Why don't we do it in NZ?

Reference: Nicotine Tob Res. 2017;19(12):1508-15
Abstract

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