Smoking Cessation Research Review™

Making Education Easy

Issue 27 – 2017

In this issue:

Abbreviations used in this issue
BW = birthweight
CAM = complementary and alternative medicine
cpd = cigarettes per day
NRT = nicotine replacement therapy
OR = odds ratio
SUDI = sudden unexpected death in infancy

Welcome to issue 27 of Smoking Cessation Research Review.

Excellent evidence in one of the papers that we cover in this issue attests to the importance of continuing to pay attention to sudden unexpected death in infancy; the New Zealand nationwide data clearly demonstrate that maternal smoking in infancy is a huge problem.

Interesting results are reported from an Internet-based contingency management programme promoting smoking cessation in the US. The programme required smokers to use web cameras to record themselves blowing into carbon monoxide (CO) monitors on a daily basis for 7 weeks, to provide evidence of smoking status (i.e. to satisfy CO cut-off points). Individuals who met CO cut-off points for abstinence were rewarded with financial incentives. Abstinence rates were high at the initial 4-week time point, but not after 3 and 6 months of follow-up. Clearly, once the incentives are no longer in place, those who want to quit smoking need more support to maintain the effects of the programme.

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.

The combination of bed sharing and maternal smoking leads to a greatly increased risk of sudden unexpected death in infancy: the New Zealand SUDI Nationwide Case Control Study

Authors: Mitchell EA et al.

Summary: Results are reported from a three-year (1 March 2012 to 28 February 2015) nationwide case-control study conducted in New Zealand that sought to identify modifiable risk factors for sudden unexpected death in infancy (SUDI). Over the study period, 137 SUDI cases were recorded, resulting in a SUDI mortality rate of 0.76/1,000 live births. Māori had the highest rate (1.41/1,000) versus Pacific (1.01/1,000) and non-Māori non-Pacific (predominantly European; 0.50/1,000). Interviews were conducted with the parent(s) of 97% of the SUDI cases and with 258 controls. The two major risk factors for SUDI were maternal smoking in pregnancy (adjusted OR 6.01; 95% CI, 2.97 to 12.15) and bed sharing (adjusted OR 4.96; 95% CI, 2.55 to 9.64). There was a significant interaction (p=0.002) between bed sharing and antenatal maternal smoking. Infants exposed to both risk factors were at substantially greater risk of SUDI (adjusted OR 32.8; 95% CI, 11.2 to 95.8) compared with infants not exposed to either risk factor. Infants not sharing the parental bedroom were also at increased risk of SUDI (adjusted OR 2.77; 95% CI, 1.45 to 5.30). Just 21 cases in the entire study were not exposed to smoking in pregnancy, bed sharing or front or side sleeping position.

Comment (NW): Widespread safe sleeping programmes, coupled with the supply of wahakura and Pepi-Pods, have certainly contributed to the marked reduction in infant deaths. What this paper highlights though is that the major modifiable risk factor of 'maternal smoking in pregnancy' remains a key area of focus. Often efforts to address this risk factor are put into the "too hard" basket – clearly, it should never be ignored.

Reference: N Z Med J. 2017;130(1456):52-64
Abstract

Cigarette smoking during pregnancy: Do complete abstinence and low level cigarette smoking have similar impact on birth weight?

Authors: Berlin I et al.

Summary: This secondary analysis of data from a French smoking cessation trial included pregnant smokers aged ≥18 years, gestational age of 9–20 weeks of amenorrhea, smoking ≥5 cigarettes/day (cpd) and their newborns (381 singleton, live births). All women were motivated to quit smoking. The analysis aimed to assess whether there is a level of smoking rate that does not impact on birth weight (BW). The mean BW when the mother quit smoking was 3417 g; when she smoked more than 0 but less than 5 cpd, 3081g; when smoking 5–9 cpd, 3043 g; and when smoking ≥10 cpd, 2831 g (p=0.006). Corresponding effect sizes ranged from medium to large (Cohen's d for BW: 0.54, 0.57 and 0.85) compared to BW when the mother quit. In a multivariable analysis, adjusted for all significant confounders, mothers who smoked on average more than 0 but less than 5 cpd had a BW loss of 228 g; when smoking 5–9 cpd, 251 g; and when smoking ≥10 cpd, 262 g (all p≤0.02) compared to newborns' BW of mothers who stopped smoking since quit date.

Comment (NW): Many women mistakenly believe that by reducing the number of cigarettes they smoke the level of smoking-related harm to their unborn child is reduced – this paper clearly shows that that is not the case. I believe an adaptive treatment approach is required to support pregnant women to become smokefree. There are many different forms of nicotine replacement therapy (NRT) available for women to try until they find one that works for them, especially those products that help address the strong hand-to-mouth behavioural aspects of smoking (such as nicotine mouth spray, inhalers, and e-cigarettes). Here is an excellent guide from the UK around the use of e-cigarettes during pregnancy: http://www.smokefreeaction.org.uk/SIP/files/eCigSIP.pdf

Reference: Nicotine Tob Res. 2017;19(5):518-24
Abstract

Toward enhancing treatment for pregnant smokers: Laying the groundwork for the use of complementary and alternative medicine approaches

Authors: Loree AM et al.

Summary: This US investigation examined participant characteristics and treatment utilisation among pregnant smokers in the National Survey on Drug Use and Health (NSDUH) and the National Health Interview Survey (NHIS), in order to determine the prevalence and predictors of complementary and alternative medicine (CAM) for any purpose. The data revealed that approximately 7–30% of women were accessing CAM during pregnancy; particularly those of white ethnicity and those with higher socioeconomic status. Use of yoga, meditation, and massage increased across study waves. NSDUH participants were most likely to report seeking chiropractic or massage therapy; NHIS participants most frequently reported use of herbs/supplements, deep breathing, and meditation.

Comment (NW): The 'worried well' are known to be the main users of CAM in Western countries – particularly well-educated, middle-class, white women. The findings of this paper are therefore not surprising. Trial data shows that for many CAM interventions there is either lack of evidence of any effect or evidence of no effect, and often evidence of a strong placebo response. I would recommend reading the Cochrane reviews for smoking cessation that focus on hypnotherapy, nicobrevin, acupuncture and nicotine receptor partial agonists (which includes evidence around cytisine, an alkaloid derived from a plant). For pregnant women who smoke, safety of the CAM they choose to use should be the main concern, particularly for herbal products. For example, cytisine is contraindicated for use in pregnant women who smoke.

Reference: Nicotine Tob Res. 2017;19(5):562-71
Abstract

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Evaluation of a smoking cessation service in elective surgery

Authors: Saxony J et al.

Summary: Outcomes are reported from an evaluation of a novel specialist stop smoking service for patients undergoing elective surgery ('ELECT') that was established in 2012 in Auckland, New Zealand. The service established regular staff training and setting-specific, easy-to-use referral procedures. Cessation treatment emphasised temporary abstinence around the time of surgery, as opposed to long-term smoking abstinence. At the time of the evaluation in 2014, 27 months after its inception, 527 patients had been referred to ELECT, representing one-fifth of all identified smokers. Around 60% of those referred received ≥1 treatment session involving intense behavioural support and nicotine replacement treatment; for Māori, this figure was 75%. In multiple logistic regression analysis, a shorter time to contact of referred patients, older age, being Māori (versus NZ European) and being referred through the surgical hospital services were all associated with a higher likelihood of receiving ≥1 treatment session ($p<0.05$). Of the 123 patients who set a formal quit date, 68% (n=82) self-reported sustained abstinence at 4 weeks post-quit, and 48% (n=58) remained abstinent at 12 weeks post-quit.

Comment (NW): I'd like to highlight this paper, not because I'm a co-author but because ELECT proved to be a great service that took advantage of a 'teachable moment', and as a result had a clear impact on quit rates. Unfortunately, the service is no longer funded, a victim of the recent NZ-wide smoking cessation service restructure - such a lost opportunity.

Reference: J Surg Res. 2017;212:33-41
Abstract

New Zealand tobacco control experts' views towards policies to reduce tobacco availability

Authors: Robertson L et al.

Summary: Outcomes are reported from this analysis of smokefree experts' views on policies that would reduce tobacco retail supply. In-depth telephone interviews were conducted with 25 tobacco control experts drawn from academia, non-governmental organisations, Māori and Pacific health, smoking cessation services, district health boards and other public health-related organisations throughout New Zealand. Their views were sought upon the importance of reducing tobacco retail supply, different policy options and barriers to policy adoption. The qualitative analysis of the transcripts revealed that participants believed tobacco retailer licensing was an important short-term step towards the 2025 goal. In the long-term, participants envisaged tobacco only being available at a small number of specialised outlets, either pharmacies or adult-only/R18 stores. To achieve that long-term scenario, participants suggested a sinking-lid policy on licences or a zoning approach could be adopted to gradually reduce outlet density. Policies banning sales at certain types of outlet were not considered feasible.

Comment (BC): While it is encouraging that people who work in a wide range of smoking cessation roles, from executive and clinical directors to academics and people at the coalface, such as Smokefree Enforcement Officers, all agree that licensing of retailers is an important next step on the road to a Smokefree New Zealand, it is concerning that some of these experts were less keen on methods that would reduce the number of tobacco retailers in the near future. I don't think we should be shy of advocating for radical solutions; after all, smoking kills and unless we do something radical we won't reach the 2025 vision this century. Think of all the other radical policies that became law even though many people didn't think they'd be politically feasible at the time: nuclear-free NZ, women's suffrage, homosexual law reform, anti-smacking.

Reference: N Z Med J. 2017;130(1456):27-35
Abstract

Large multi-centre pilot randomized controlled trial testing a low-cost, tailored, self-help smoking cessation text message intervention for pregnant smokers (MiQuit)

Authors: Naughton F et al.

Summary: Outcomes are reported from a text-messaging programme that was introduced into 16 antenatal clinics in England. The programme aimed to estimate the effectiveness of pregnancy smoking cessation support delivered by short message service (SMS) text message and determine key parameters needed to plan a definitive trial. A total of 407 women were randomised to the intervention (n=203) or to routine NHS cessation care (usual care; n=204). All were <25 weeks' gestation, smoked ≥1 cpd (>5 cpd prior to pregnancy), were able to receive and understand English SMS texts and were not already using text-based cessation support. All participants received a smoking cessation leaflet; women in the intervention group also received a 12-week programme of individually tailored, automated, interactive, self-help smoking cessation text messages (MiQuit). Rates of biochemically validated continuous abstinence from 4 weeks post-randomisation until late pregnancy (36 weeks' gestation) were 5.4% for the MiQuit arm and 2.0% for usual care (OR 2.7; 95% CI, 0.93 to 9.35). The Bayes factor for this outcome was 2.23. Completeness of follow-up at 36 weeks gestation was similar in both groups; provision of self-report smoking data was 64% (MiQuit) and 65% (usual care); abstinence validation rates were 56% and 61%, respectively. The incremental cost-per-quitter was £133.53.

Comment (BC): The results of this pilot study are consistent with prior research that has found text messages aid smokers to quit. What is interesting is that even though the effect size of this intervention was massive (OR=2.86), it was not statistically significant because the proportions of those who quit were so low in both groups (as low as 2% in the usual care group!). The abysmal abstinence rates are likely to be due to 45% of subjects being in the most socioeconomically deprived quintile, a fifth not having even a year 11 (Form 5) qualification, and half were younger than 25 years of age. We need more effective methods to help these high-risk smokers quit!

Reference: Addiction. 2017;112(7):1238-49
Abstract

The impact of TV mass media campaigns on calls to a National Quitline and the use of prescribed nicotine replacement therapy: a structural vector autoregression analysis

Authors: Haghpanahan H et al.

Summary: This paper reports on the impact of Scottish tobacco control TV mass media campaigns on smoking cessation activity, as measured by calls to NHS Smokeline and the volume of prescribed nicotine NRT, during the period from January 2003 to December 2012. This multivariate time-series analysis used secondary data on population level measures of exposure to TV mass media campaigns broadcast and smoking cessation activity. The analysis used two main outcome measures: (i) monthly calls to Smokeline – Scotland's national quitline – and (ii) monthly values for gross ingredient cost (GIC) of NRT. The GIC of NRT is the cost of NRT before the deduction of any discounts or special payments made to those prescribing or dispensing the drug. It includes any costs reimbursed fully or partially via prescription charges and therefore reflects most accurately the volume of prescriptions rather than simply the number of prescriptions. Tobacco control adult television viewer ratings were associated with an increase in calls to Smokeline; however, there was no increase in the monthly volume of prescribed NRT. In a seasonally unadjusted model, a 1 standard deviation increase of 194 tobacco control television viewer ratings resulted in an immediate and significant increase of 385.9 calls to Smokeline within 1 month. After adjusting for seasonality the impact was reduced, but the increase in calls remained significant (226.3 calls). The cumulative impact on Smokeline calls remained significant for 6 months after broadcast in the unadjusted model and for up to 18 months in the adjusted model. However, an increase in tobacco control TVRs of 194 failed to have a significant impact on the GIC of prescribed NRT in either the unadjusted (£1361.4) or adjusted (£6297.1) models.

Comment (BC): This analysis, showing that spending more money on smoking cessation advertising leads to more smokers phoning quitlines, is consistent with those of other overseas studies and data from New Zealand. Sadly, the minimal prescription of NRT is also a consistent tale. It was not clear from this article if the lack of an association between advertising and the amount of money spent on NRT was because the quitline did not prescribe NRT to the increased number of callers or, if the quitline did prescribe NRT to the increased number of callers but they did not redeem the prescriptions. A famous TV chef continually asked "Where's the sauce?"; I'm always asking "Where's the NRT?".

Reference: Addiction. 2017;112(7):1229-37
Abstract

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Sleep disturbance during smoking cessation: withdrawal or side effect of treatment?

Authors: Ashare RL et al.

Summary: This analysis of the effects of nicotine withdrawal and treatment side effects on sleep disturbance used data from a clinical trial (Lerman C, et al., 2015) in which 1136 smokers were randomised to placebo (n=363), transdermal nicotine (TN; n=381), or varenicline (n=392) and stratified based on the nicotine-metabolite ratio (NMR) (559 slow metabolisers; 577 normal metabolisers). Sleep disturbance was assessed at baseline and at 1 week following the target quit date (TQD). This present analysis also examined whether sleep disturbance predicted 7-day point-prevalence abstinence at end-of-treatment (EOT). Both varenicline and TN were associated with greater increases in sleep disturbance (vs placebo; treatment × time interaction; p=0.005), particularly among those who quit smoking at 1 week post-TQD. There was a main effect of NMR (p=0.04), but no interactions with treatment. TN and varenicline attenuated withdrawal symptoms unrelated to sleep (vs placebo). Greater baseline sleep disturbance predicted relapse at EOT (p=0.004).

Comment (BC): Sleep disturbance has to be one of the most soul-destroying side effects of smoking cessation and of growing older in general. I suppose it should not come as a surprise that existing smoking cessation therapies do not mitigate this withdrawal symptom. We definitely need more effective NRT. Mind you, we also need better hypnotics and techniques to help people sleep – tolerance to benzodiazepines develops quickly, and other drugs have common side effects.

Reference: J Smok Cessat. 2017;12(2):63-70
Abstract

Nationwide access to an internet-based contingency management intervention to promote smoking cessation: a randomized controlled trial

Authors: Dallery J et al.

Summary: In this US internet-based trial involving 94 cigarette smokers (mean age, 36 years) across 26 states, participants were randomised to earn financial incentives (up to $480 over 7 weeks) based on video-verified abstinence using breath carbon monoxide (CO) output (abstinent contingent group, AC; n=48), or based on submitting CO samples (submission contingent, SC; n=46). Both groups also received the same CO-based goals. Each participant was required to pay a $50 deposit, which could be recovered from initial earnings. Point prevalence abstinence rates at 4 weeks differed between the AC and SC groups (39.6% vs 13.0%; OR 4.4; 95% CI, 1.6 to 12.3), but not after 3 months (29.2% AC vs 19.6% SC; OR 1.7, 95% CI, 0.6 to 4.4) or 6 months of follow-up (22.9% AC vs 13.0% SC; OR 2.0; 95% CI, 0.7 to 5.9). During the two main treatment phases, there were significant differences in negative COs (53.9% AC vs 24.8% SC; OR 3.5; 95% CI, 3.1 to 4.0; 43.4% AC vs 24.6% SC; OR 2.3; 95% CI, 1.6 to 3.4). Adherence to the CO submission protocol was equivalent between the AC (78%) and SC (85%) groups (95% CI, –10.3% to 23.8%; $F < 1$, p=0.39). Treatment acceptability ratings were scored on a 0–100mm visual analogue scale; items assessing the deposit rated the lowest scores, while the highest ratings were awarded against the ease of the intervention, the graph of CO results, and earning money.

Comment (BC): This study yielded surprisingly high early abstinence rates compared to the control group, particularly considering that (1) I imagine that it involves the need to make a video of oneself blowing into a smokerlyzer and uploading it to a website; (2) an extraordinarily low cut-off for CO of 4ppm was used instead of the conventional 10ppm. I'm not sure that loaning each smoker a $690 Smokelyzer piCO⁺ would be something that the NZ government would be interested in. Is it any wonder that the astonishing effect size of the active intervention was lost after four weeks, considering that subjects received minimal follow-up support after that time and no NRT? Nonetheless, some of the methodologies in this trial may usefully be trialled in NZ, along with a method to maintain the benefits beyond four weeks.

Reference: Addiction. 2017;112(5):875-83
Abstract