

Guidance for Health Workers in Aotearoa New Zealand on supporting people to stop vaping and using vaping to stop smoking.

FACT SHEET 6 OF 6:

The following information is taken from the original NZ Vaping Cessation Guidance document and covers the topics,

- [*Harms of vaping compared to smoking*](#)
- [*Nicotine dependence and addiction*](#)
- [*References*](#)
- [*Appendix 1: Health effects of vaping: Brief evidence summary*](#)
- [*Appendix 2: Using vaping devices*](#)
- [*Appendix 3: Evidence on interventions using vaping to stop smoking, and stopping vaping*](#)

Harms of vaping compared to smoking

Use this section:

- when giving clear and personalised advice about vaping and vaping cessation ('B' – Brief Advice)
- to discuss the harms of vaping relative to smoking and how the relative harms change depending on your client's smoking status

Children, adolescents, young people, people who do not smoke, and pregnant people who do not smoke should be strongly advised not to vape, due to the risks of health harm and of developing nicotine dependence when using nicotine-containing vapes.

For people who smoke, vaping is much less harmful than smoking – but it is not harmless.

- Inhaling tobacco smoke causes cancer and other smoking-related illnesses. Up to two in three smokers will die from smoking unless they stop (Banks et al 2015). Any amount of tobacco smoking is harmful, so the sooner people can stop smoking tobacco, the better.
- The current weight of evidence suggests that vaping (with or without nicotine) is less harmful than tobacco smoking.
- Nicotine in any form of delivery can be addictive, but it does not cause cancer. The liquid in most vapes contains nicotine. When people inhale the vape aerosol, nicotine is delivered with it and absorbed rapidly into the bloodstream, then to the brain.

- Smoking delivers nicotine in a more harmful way compared to vaping because smoking involves burning tobacco while vaping does not. Burning tobacco creates cancer-causing substances.
- There are more than 8,000 chemicals in tobacco smoke, many of which are harmful products arising from burning tobacco (Lampos et al 2019). Fewer than 100 chemicals are detectable in e-liquid vapour (Mendelsohn et al 2022). Most of the chemicals in e-liquid vapour are in far lower concentrations than those in tobacco smoke (Mendelsohn et al 2022).
- Many chemicals in vaping e-liquids, such as flavours, are considered safe for eating and drinking. However, the full extent of the long-term health effects of inhaling these substances after they have been heated to high temperatures by a vaping device, and have interacted with each other under these conditions, is not known (National Academies of Sciences, Engineering, and Medicine 2018).

The best end goal is to stop smoking **and** vaping and to be smokefree *and* vape free.

Vaping helps people stop smoking, but the risk of relapse back to smoking needs to be managed.

- For people who smoke tobacco, vaping can be an effective aid to help stop smoking (Lindson et al 2024).
- There is a risk of relapse back to smoking for people who have stopped smoking using vapes.

- People who have switched to vaping from smoking and had repeat relapses back to smoking or have low confidence in remaining smokefree without their vape should be encouraged to try to reduce their vape use to the lowest level of aerosol exposure that prevents them from relapsing to tobacco smoking. People in this situation should have a follow-up meeting or call arranged to review their vape use and see if they are ready to cut down further or stop completely.
- If relapse back to smoking is not so much of a concern, then clients should be advised to stop vaping as soon as possible, due to the potential risk of health harm, and if using nicotine-containing vapes, the risk of maintaining dependence.

Dual use of vapes and cigarettes is as harmful as smoking.

- Dual use (using both vapes and combustible cigarettes interchangeably) is as harmful as smoking. It is concerning if the transition from smoking cigarettes to exclusive vaping does not occur or if there is not a significant reduction in the consumption of combustible cigarettes (Pisinger and Rasmussen 2022).
- Dual use should only be a temporary stepping stone to stopping smoking completely as soon as possible. People who dual use should stop smoking tobacco completely and use nicotine vaping to stop, if at all possible.

Nicotine dependence and addiction

Use this section:

- when discussing behavioural strategies for vaping cessation and vaping to stop smoking ('C' - Cessation Support)
- to explain dependence, addiction, and related concepts as they relate to cigarette smoking and nicotine vaping
- when planning how to manage cravings and withdrawal symptoms as barriers to stopping cigarette smoking and nicotine vaping.

Nicotine is a naturally occurring component of the nightshade family found in tobacco plant leaves. Nicotine is contained in many vaping devices and may be present even if it is not stated on the label.

Dependence refers to the physiological adaptations occurring in response to the repeated use of medications and substances, even after little use. As a result, people may experience withdrawal symptoms when stopping the substance abruptly. Dependence may occur with nicotine. Dependence is not the same as addiction. Dependence can occur without addiction, including when using nicotine-containing substances.

Addiction refers to feeling a strong need to use a substance. People may continue to use the substance despite being aware of its potential harmful effects and may feel a loss of control over its use. They may also feel withdrawal symptoms when abruptly stopping a substance. Addiction may occur with nicotine. Addiction is not the same as dependence. Addiction can occur without dependence, including when using nicotine-containing substances.

Nicotine vaping can lead to dependence in never-smokers and people who used to smoke. Risk factors for nicotine vaping dependence include genetics (Cooper and Henderson 2020), vaping at an early age, having family and friends who are accepting of vaping, using other substances such as cigarettes and cannabis (Vogel et al 2018), and co-existing mental health problems (Gorfinkel et al 2022). Different vape flavours, such as menthol and fruit, may strengthen nicotine dependence in adolescents as they are pleasant and mask the harshness and bitterness of higher nicotine concentrations (Cooper and Henderson 2020; Gades et al 2022).

Cravings refer to a powerful desire or urge to smoke a cigarette or to vape when a person tries to stop smoking tobacco or vaping or has stopped completely. Cravings can occur without warning. The trigger may be seeing someone else smoking or vaping, smelling smoke or vapour, or walking past a store that sells these products. Cravings can occur for months and years after withdrawal symptoms disappear. However, these urges to smoke or vape become less intense and frequent over time. People can reduce the risk of cravings by planning to avoid being in situations where triggers are likely. Refer to page 23 for ways to deal with cravings.

Withdrawal symptoms are unpleasant and sometimes severe feelings related to stopping nicotine use that can lead people to start smoking cigarettes or vaping nicotine again to make them go away. These feelings may include feeling irritable, anxious, and restless, having a depressed mood, disturbed sleep, and difficulty concentrating. These unpleasant feelings are a normal response to the lack of nicotine that people were used to getting. In tobacco smoking cessation, withdrawal symptoms are strongest in the first week after stopping, when the risk for

relapse is highest, and most symptoms will disappear within four weeks of stopping smoking. These timeframes may differ with vaping, but it is helpful for people to learn about the withdrawal symptoms to expect when they try to stop smoking or vaping and to plan how to manage them to stop smoking or vaping.

Relapse occurs when people start smoking or vaping again after trying to make a serious attempt to stop (longer than 24 hours).

References

Action for Smokefree 2025 (ASH). 2021. *ASH Year 10 snapshot survey 2021 topline – Youth Smoking and Vaping*.

URL: www.ash.org.nz/2021_regular_smoking_and_vaping (accessed 5 June 2024).

Action for Smokefree 2025 (ASH). 2023. *ASH Year 10 snapshot survey 2023 topline – youth smoking and vaping*.

URL: http://www.ash.org.nz/2023_topline_youth_smoking_and_vaping_factsheet (accessed 30 April 2024).

Adams ZW, Kwon E, Aalsma MC, et al. 2021. Treatment of adolescent e-cigarette use: limitations of existing nicotine use disorder treatment and future directions for e-cigarette use cessation. *Journal of the American Academy of Child & Adolescent Psychiatry* 60(1): 14–16. DOI: 10.1016/j.jaac.2020.07.007 (accessed 21 May 2024).

Ahmed A. 2022. A review of electronic cigarettes and liquid nicotine poisoning exposure cases in the United States. *Journal of Pharmacy and Pharmaceutical Sciences* 25: 354–368. DOI: 10.18433/jpps33141 (accessed 21 March 2024).

Ahmed Z, Preshaw PM, Bauld L, et al. 2018. Dental professionals' opinions and knowledge of smoking cessation and electronic cigarettes: a cross-sectional survey in the north of England. *British Dental Journal* 225(10): 947–952. DOI: 10.1038/sj.bdj.2018.1026 (accessed 21 March 2024).

Al-Hamdani M, Davidson M, Bird D, et al. 2023. Learning from their experiences: strategies used by youth and young adult ex-vapers. *Journal of Substance Use and Addiction Treatment* 149: 209038. DOI: 10.1016/j.josat.2023.209038 (accessed 21 March 2024).

Amin S, Pokhrel P, Elwir T, et al. 2023. A systematic review of experimental and longitudinal studies on e-cigarette use cessation. *Addictive Behaviors* 146: 107787. DOI: 10.1016/j.addbeh.2023.107787 (accessed 22 March 2024).

Asfar T, Jebai R, Li W, et al. 2022. Risk and safety profile of electronic nicotine delivery systems (ENDS): an umbrella review to inform ENDS health communication strategies. *Tobacco Control* 33: 373–382. DOI: 10.1136/tc-2022-057495 (accessed 21 March 2024).

Baenziger ON, Ford L, Yazidjoglou A, et al. 2021. E-cigarette use and combustible tobacco cigarette smoking uptake among non-smokers, including relapse in former smokers: umbrella review, systematic review and meta-analysis. *BMJ Open* 11(3): e045603. DOI: 10.1136/bmjopen-2020-045603 (accessed 28 March 2024).

Baker KA, Campbell NJ, Noonan D, et al. 2022. Vaping prevention in a middle school population using CATCH My Breath. *Journal of Pediatric Health Care* 36(2): 90–98. DOI: 10.1016/j.pedhc.2021.07.013 (accessed 22 March 2024).

Baker MM, Procter TD, Belzak L, et al. 2022. Vaping-associated lung illness (VALI) in Canada: a descriptive analysis of VALI cases reported from September 2019 to December 2020. *Health Promotion and Chronic Disease Prevention in Canada* 42(1): 37–44. DOI: 10.24095/hpcdp.42.1.06 (accessed 21 March 2024).

Ball J, Zhang J, Stanley J, et al. 2023. Addressing intergenerational inequity in tobacco-harm: what helps children of smokers to remain nonsmokers? *Nicotine & Tobacco Research* 26(1): 102-110. DOI: 10.1093/ntr/ntad148 (accessed 16 May 2024).

Banks E, Joshy G, Weber, MF, et al. 2015. Tobacco smoking and all-cause mortality in a large Australian cohort study: findings from a mature epidemic with current low smoking prevalence. *BMC Medicine* 13(38). DOI: 10.1186/s12916-015-0281-z (accessed 4 June 2024).

Banks E, Yazidjoglou A, Brown S, et al. 2023. Electronic cigarettes and health outcomes: umbrella and systematic review of the global evidence. *The Medical Journal of Australia* 218(6): 267–275. DOI: 10.5694/mja2.51890 (accessed 21 March 2024).

Barnes C, Turon H, McCrabb S, et al. Interventions to prevent or cease electronic cigarette use in children and adolescents. *Cochrane Database Syst Rev* 2023, Issue 11, Art. No. CD015511. DOI: 10.1002/14651858.CD015511.pub2 (accessed 21 March 2024).

Bar-Zeev Y, Kennedy M, Gould G. 2023. *iSISTAQUIT educational resource package - a toolkit to aid the management of smoking and vaping with pregnant Aboriginal and Torres Strait Islander women*. Coffs Harbour: Southern Cross University.

Becker TD, Arnold MK, Ro V, et al. 2021. Systematic review of electronic cigarette use (vaping) and mental health comorbidity among adolescents and young adults. *Nicotine & Tobacco Research* 23(3): 415–425. DOI: 10.1093/ntr/ntaa171 (accessed 7 May 2024).

Becker TD, Rice TR. 2022. Youth vaping: a review and update on global epidemiology, physical and behavioral health risks, and clinical considerations. *European Journal of Pediatrics* 181(2): 453–462. DOI: 10.1007/s00431-021-04220-x (accessed 26 May 2024).

Bold K, O'Malley S, Krishnan-Sarin S, et al. 2023. E-cigarette use patterns, flavors, and device characteristics associated with quitting smoking among a U.S. sample of adults using e-cigarettes in a smoking cessation attempt. *Nicotine & Tobacco* 25(5): 954–961. DOI: 10.1093/ntr/ntac276 (accessed 21 March 2024).

Boyd S, Overbye S. 2020. Tūturu “has changed the focus from punitive to pastoral”: Learnings and outcomes from the second year of Tūturu. Wellington: New Zealand Council for Educational Research.

BPAC. 2018. Smoke and mirrors: *is vaping useful for smokers who cannot quit?* URL: <http://bpac.org.nz/2018/vaping.aspx> (accessed 15 May 2024).

BPAC. 2021. *Unapproved medicines and unapproved uses of medicines: keeping prescribers and patients safe- BPJ Issue 51.* URL: bpac.org.nz/BPJ/2013/March/unapproved-medicines.aspx#5 (accessed 16 May 2024).

Britt E, Gregory D, Tohiariki T, et al. 2014. *Takitaki mai. A guide to Motivational Interviewing for Māori.* Wellington: Matua Raki.

Brown A, Balk SJ. 2020. E-cigarettes and other electronic nicotine delivery systems (ENDS). *Current Problems in Pediatric and Adolescent Health Care* 50(2). DOI: 10.1016/j.cppeds.2020.100761 (accessed 21 March 2024).

Buu A, Cai Z, Li R, et al. 2021. Validating e-cigarette dependence scales based on dynamic patterns of vaping behaviors. *Nicotine & Tobacco Research* 23(9): 1484–1489. DOI: 10.1093/ntr/ntab050 (accessed 17 May 2024).

Calder R, Gant E, Bauld L, et al. 2021. Vaping in Pregnancy: A Systematic Review. *Nicotine & Tobacco Research* 23(9): 1451–1458. DOI: 10.1093/ntr/ntab017 (accessed 10 May 2024).

Camara-Medeiros A, Diemert L, O'Connor S, et al. 2021. Perceived addiction to vaping among youth and young adult regular vapers. *Tobacco Control* 30(3): 273–278. DOI: 10.1136/tobaccocontrol-2019-055352 (accessed 6 June 2024).

Caponnetto P, Campagna D, Ahluwalia JS, et al. 2023. Varenicline and counseling for vaping cessation: a double-blind, randomized, parallel-group, placebo-controlled trial. *BMC Medicine* 21(1): 220. DOI: 10.1186/s12916-023-02919-2 (accessed 21 May 2024).

Centers for Disease Control and Prevention (U.S.). 2019. *E-cigarette, or vaping, products visual dictionary*. URL: stacks.cdc.gov/view/cdc/103783 (accessed 20 June 2024).

Chadi N. 2021. *Vaping - a clinician's guide to counselling youth and parents*. Ottawa: Canadian Paediatric Society, Adolescent Health Committee.

Chadi N, Vyver E, Bélanger RE. 2021. Protecting children and adolescents against the risks of vaping. *Paediatrics & Child Health* 26(6): 358. DOI: 10.1093/pch/pxab037 (accessed 20 March 2024).

Chaiton M, Cohen JE, Bondy SJ, et al. 2017. Perceived addiction as a predictor of smoking cessation among occasional smokers. *Journal of Smoking Cessation* 12(3): 165–172. DOI: 10.1017/jsc.2015.19 (accessed 6 June 2024).

Cobb CO, Foulds J, Yen MS, et al. 2021. Effect of an electronic nicotine delivery system with 0, 8, or 36 mg/mL liquid nicotine versus a cigarette substitute on tobacco-related toxicant exposure: a four-arm, parallel-group, randomised, controlled trial. *The Lancet Respiratory Medicine* 9(8): 840–850. DOI: 10.1016/S2213-2600(21)00022-9 (accessed 4 June 2024).

Cooper SY, Henderson BJ. 2020. The impact of electronic nicotine delivery system (ENDS) flavors on nicotinic acetylcholine receptors and nicotine addiction-related behaviors. *Molecules* 25(18). DOI: 10.3390/molecules25184223 (accessed 15 May 2024).

Costello C. 2024. *Government to crack down on youth vaping*. URL: beehive.govt.nz/release/government-crack-down-youth-vaping (accessed 5 June 2024).

Crane LA, Asdigian NL, Fitzgerald MD. 2023. Looking cool, doing tricks, managing stress, and nicotine addiction: youth perspectives on nicotine vaping and implications for prevention. *American Journal of Health Promotion* 37(7): 964–974. DOI: 10.1177/08901171231189560 (accessed 22 March 2024).

Dai HD, Hanh P, Guenzel N, et al. 2023. Adoption of vaping cessation methods by US adolescent e-cigarette users. *Pediatrics* 152(5). DOI: 10.1542/peds.2023-062948 (accessed 22 March 2024).

Delnevo CD. 2023. E-Cigarette and cigarette use among youth: gateway or common liability? *JAMA Network Open* 6(3). DOI: 10.1001/jamanetworkopen.2023.4890 (accessed 21 March 2024).

Dempsey D, Jacob P, Benowitz NL. 2002. Accelerated metabolism of nicotine and cotinine in pregnant smokers. *Journal of Pharmacology and Experimental Therapeutics* 301(2): 594–598. DOI: 10.1124/jpet.301.2.594 (accessed 3 June 2024).

Fowles J. 2021. *Health Risk Assessment: E-cigarette liquid: Acute toxicity hazards and health risks*. The Institute of Environmental Science and Research Limited (ESR).

Fredericksen RJ, Fitzsimmons E, Drumright LN, et al. 2023. Vaporized nicotine use among patients in HIV care who smoke tobacco: perceived health effects and effectiveness as a smoking cessation tool. *AIDS Care* 35(11): 1741–1748. DOI: 10.1080/09540121.2023.2180476 (accessed 21 March 2024).

Frost K, Graham-DeMello A, Ball J, et al. 2024. A qualitative analysis of how underage adolescents access nicotine vaping products in Aotearoa New Zealand. *Nicotine & Tobacco Research*. DOI: 10.1093/ntr/ntae096 (accessed 14 May 2024).

Fucito LM, Baldassarri SR, Baker N, et al. 2024. Varenicline for e-cigarette cessation in adults: a preliminary placebo-controlled randomized trial. *American Journal of Preventive Medicine*. DOI: 10.1016/j.amepre.2024.04.007 (accessed 21 May 2024).

Gades MS, Alcheva A, Riegelman AL, et al. 2022. The role of nicotine and flavor in the abuse potential and appeal of electronic cigarettes for adult current and former cigarette and electronic cigarette users: a systematic review. *Nicotine & Tobacco Research* 24(9): 1332–1343. DOI: 10.1093/ntr/ntac073 (accessed 15 May 2024).

Gordon T, Karey E, Rebuli ME, et al. 2022. E-cigarette toxicology. *Annual Review of Pharmacology and Toxicology* 62(6e4, 7607088): 301–322. DOI: 10.1146/annurev-pharmtox-042921-084202 (accessed 21 March 2024).

Gorfinkel L, Hasin D, Miech R, et al. 2022. The link between depressive symptoms and vaping nicotine in U.S. adolescents, 2017–2019. *Journal of Adolescent Health* 70(1): 133–139. DOI: 10.1016/j.jadohealth.2021.07.003 (accessed 15 May 2024).

Gould G, Bittoun R, Clarke M. 2014. A pragmatic guide for smoking cessation counselling and the initiation of nicotine replacement therapy for pregnant Aboriginal and Torres Strait Islander smokers. *The Journal of Smoking Cessation* 10(2): 96–105. DOI: 10.1017/jsc.2014.3 (accessed 3 June 2024).

Graham AL, Amato MS, Cha S, et al. 2021. Effectiveness of a vaping cessation text message program among young adult e-cigarette users: a randomized clinical trial. *JAMA Internal Medicine* 181(7): 923–930. DOI: 10.1001/jamainternmed.2021.1793 (accessed 28 March 2024).

Guiney H, Oakly A, Martin G. 2019. *E-cigarette use and perceptions among current and ex-smokers in New Zealand*. Wellington: Health Promotion Agency.

Gwon SH, Thongpriwan V, Mobarki A, et al. 2024. Experiences and perceptions of e-cigarette cessation for young adults in rural communities. *Nursing Research* 73(1): 46–53. DOI: 10.1097/NNR.0000000000000692 (accessed 20 May 2024).

Hadland SE, Chadi N. 2020. Through the haze: what clinicians can do to address youth vaping. *The Journal of Adolescent Health* 66(1): 10–14. DOI: 10.1016/j.jadohealth.2019.10.009 (accessed 20 March 2024).

Hair E, Tulsiani S, Aseltine M, et al. 2023. Vaping-Know the Truth: Evaluation of an online vaping prevention curriculum. *Health Promotion Practice* 25(3): 468–474. DOI: 10.1177/15248399231191099 (accessed 22 March 2024).

Hajek P, Przulj D, Pesola F, et al. 2022. Electronic cigarettes versus nicotine patches for smoking cessation in pregnancy: a randomized controlled trial. *Nature Medicine* 28(5): 958–964. DOI: 10.1038/s41591-022-01808-0 (accessed 24 May 2024).

Hardie L, McCool J, Freeman B. 2022. Online retail promotion of e-cigarettes in New Zealand: a content analysis of e-cigarette retailers in a regulatory void. *Health Promotion Journal of Australia* 33(1): 91–98. DOI: 10.1002/hpja.464 (accessed 3 March 2024).

Hardie L, McCool J, Freeman B. 2023. E-cigarette retailers' use of Instagram in New Zealand: a content analysis. *International Journal of Environmental Research and Public Health* 20(3). DOI: 10.3390/ijerph20031897 (accessed 3 March 2024).

Hardie L, McCool J, Freeman B. 2024. Industry response to New Zealand's vaping regulations. *Tobacco Control*. DOI: 10.1136/tc-2023-058427 (accessed 3 March 2024).

Harvanko AM, Havel CM, Jacob P, et al. 2020. Characterization of nicotine salts in 23 electronic cigarette refill liquids. *Nicotine & Tobacco Research* 22(7): 1239–1243. DOI: 10.1093/ntr/ntz232 (accessed 11 May 2024).

Health Promotion Agency. 2019. *Māori women's perspectives and experiences with smoking and vaping*. Wellington: Health Promotion Agency.

Holliday R, Chaffee BW, Jakubovics NS, et al. 2021. Electronic cigarettes and oral health. *Journal of Dental Research* 100(9): 906–913. DOI: 10.1177/00220345211002116 (accessed 20 May 2024).

Holt LJ, Latimer LJ. 2024. Emerging adults' experiences with e-cigarette cessation. *Substance Use & Misuse* 59(3): 405–410. DOI: 10.1080/10826084.2023.2275563 (accessed 21 March 2024).

Huerne K, Eisenberg MJ. 2023. Vaping-cessation interventions in former smokers. *The Canadian Journal of Cardiology* 39(9): 1263–1267. DOI: 10.1016/j.cjca.2023.04.020 (accessed 21 May 2024).

Irusa KF, Finkelman M, Magnuson B, et al. 2022. A comparison of the caries risk between patients who use vapes or electronic cigarettes and those who do not: a cross-sectional study. *Journal of the American Dental Association* 153(12): 1179–1183. DOI: 10.1016/j.adaj.2022.09.013 (accessed 22 March 2024).

Jeong Choi H, Miller-Day M, Hecht M. 2022. A snapshot of parenting practices useful for preventing adolescent vaping. *Addictive Behaviors Reports* 378. DOI: 10.1016/j.abrep.2022.100418 (accessed 22 March 2024).

Jonas A. 2022. Impact of vaping on respiratory health. *BMJ (Clinical Research Ed.)* 378: e065997. DOI: 10.1136/bmj-2021-065997 (accessed 21 March 2024).

Jones E, Endrighi R, Weinstein D, et al. 2023. Methods used to quit vaping among adolescents and associations with perceived risk, addiction, and socio-economic status. *Addictive Behaviors* 147: 107835. DOI: 10.1016/j.addbeh.2023.107835 (accessed 22 March 2024).

Karey E, Xu S, He P, et al. 2024. Longitudinal association between e-cigarette use and respiratory symptoms among US adults: findings from the Population Assessment of Tobacco and Health Study Waves 4-5. *PloS One* 19(2). DOI: 10.1371/journal.pone.0299834 (accessed 10 March 2024).

Kasza KA, Edwards KC, Anesetti-Rothermel A, et al. 2022. E-cigarette use and change in plans to quit cigarette smoking among adult smokers in the United States: longitudinal findings from the PATH Study 2014–2019. *Addictive Behaviors* 124. DOI: 10.1016/j.addbeh.2021.107124 (accessed 4 June 2024).

Kasza KA, Hammond D, Gravely S, et al. 2023. Associations between nicotine vaping uptake and cigarette smoking cessation vary by smokers' plans to quit: longitudinal findings from the International Tobacco Control (ITC) Four Country Smoking and Vaping Surveys. *Addiction* 118(2): 340–352. DOI: 10.1111/add.16050 (accessed 4 June 2024).

Key J, Hoare K. 2020. Nurse prescribing in New Zealand-the difference in levels of prescribing explained. *The New Zealand Medical Journal* 133(1524): 111–118. URL: nzmj.org.nz/media/pages/journal/vol-133-no-1524/nurse-prescribing-in-new-zealandthe-difference-in-levels-of-prescribing-explained/d67119093e-1696474423/nurse-prescribing-in-new-zealandthe-difference-in-levels-of-prescribing-explained.pdf (accessed 20 May 2024).

Khan A, Ahmed S, Sarfraz Z, et al. 2023. Vaping and mental health conditions in children: an umbrella review. *Substance Abuse: Research and Treatment* 17: 11782218231167322. DOI: 10.1177/11782218231167322 (accessed 21 March 2024).

Kochvar A, Hao G, Dai HD. 2024. Biomarkers of metal exposure in adolescent e-cigarette users: correlations with vaping frequency and flavouring. *Tobacco Control* 29:tc-2023-058554. DOI: 10.1136/tc-2023-058554 (accessed 5 June 2024).

Kundu A, Kouzoukas E, Zawertailo L, et al. 2023. Scoping review of guidance on cessation interventions for electronic cigarettes and dual electronic and combustible cigarettes use. *CMAJ Open* 11(2): E336–E344. DOI: 10.9778/cmajo.20210325 (accessed 3 March 2024).

Lampos S, Kostenidou E, Farsalinos K. 2019. Real-time assessment of e-cigarettes and conventional cigarettes emissions: aerosol size distributions, mass and number concentrations. *Toxics* 7(3). DOI: 10.3390/toxics7030045 (accessed 7 May 2024).

Lee DN, Liu J, Stevens H, et al. 2024. Does source matter? Examining the effects of health experts, friends, and social media influencers on young adult perceptions of Instagram e-cigarette education messages. *Drug and Alcohol Dependence* 258: 111270. DOI: 10.1016/j.drugalcdep.2024.111270 (accessed 7 May 2024).

Lin C, Mathur Gaiha S, Halpern-Felsher B. 2024. E-cigarette and combustible cigarette cessation patterns, reasons, and methods among adolescents, young adults, and adults. *Addictive Behaviors* 150: 107918. DOI: 10.1016/j.addbeh.2023.107918 (accessed 22 March 2024).

Lindson N, Butler AR, McRobbie H, et al. 2024. Electronic cigarettes for smoking cessation. *Cochrane Database Syst Rev* 2023, Issue 1, Art. No. CD010216. DOI: 10.1002/14651858.CD010216.pub8 (accessed 19 May 2024).

Livingston JA, Chen CH, Kwon M, et al. 2022. Physical and mental health outcomes associated with adolescent e-cigarette use. *Journal of Pediatric Nursing* 64(8607529): 1–17. DOI: 10.1016/j.pedn.2022.01.006 (accessed 21 March 2024).

Lyytinen G, Brynedal A, Anesäter E, et al. 2023. Electronic cigarette vaping with nicotine causes increased thrombogenicity and impaired microvascular function in healthy volunteers: a randomised clinical trial. *Cardiovascular Toxicology* 23(7–8): 255–264. DOI: 10.1007/s12012-023-09802-9 (accessed 21 March 2024).

Lyzwinski LN, Naslund JA, Miller, CJ, et al. 2022. Global youth vaping and respiratory health: epidemiology, interventions, and policies. *NPJ Primary Care Respiratory Medicine* 32(1): 14. DOI: 10.1038/s41533-022-00277-9 (accessed 21 March 2024).

Majid OW. 2024. Preliminary evidence of impaired oral wound healing in e-cigarette users: a call for perioperative vaping cessation. *Evidence-Based Dentistry* 25: 63–64. DOI: 10.1038/s41432-024-00982-z (accessed 17 May 2024).

Martuzevicius D, Prasauskas T, Setyan A, et al. 2019. Characterization of the spatial and temporal dispersion differences between exhaled e-cigarette mist and cigarette smoke. *Nicotine & Tobacco Research* 21(10): 1371–1377. DOI: 10.1093/ntr/nty121 (accessed 7 May 2024).

McNeill A, Simonavičius E, Brose LS, et al. 2022. *Nicotine vaping in England: an evidence update including health risks and perceptions, September 2022. A report commissioned by the Office for Health Improvement and Disparities.* London: Office for Health Improvement and Disparities.

Medsafe. 2020. *Unapproved medicines.*

URL: www.medsafe.govt.nz/profs/riss/unapp.asp (accessed 17 April 2024).

Mendelsohn CP, Beaumont C. 2022. An update on vaping and nicotine prescribing. *Australian Journal of General Practice* 51(7): 501–506. DOI: 10.3316/informit.591293042344037 (accessed 6 June 2024).

Mendelsohn CP, Wodak A, Hall W, et al. 2022. A critical analysis of ‘Electronic cigarettes and health outcomes: systematic review of global evidence.’ *Drug and Alcohol Review* 41(7): 1493–1498. DOI: 10.1111/dar.13515 (accessed 21 April 2024).

Minister of Health. 2023. *Te Mana Ola: The Pacific Health Strategy.* Wellington: Ministry of Health.

Ministry of Health. 2021a. *Background and Recommendations for The New Zealand Guidelines for Helping People to Stop Smoking: 2021.* Wellington: Ministry of Health.

Ministry of Health. 2021b. *The New Zealand Guidelines for Helping People to Stop Smoking: 2021 Update.* Wellington: Ministry of Health.

Ministry of Health. 2023a. *Smoking Status of Daily Vapers.* Wellington: Ministry of Health.

Ministry of Health. 2023b. *About the Smokefree Environments and Regulated Products (Vaping) Amendment Act.*

URL: health.govt.nz/our-work/regulation-health-and-disability-system/vaping-herbal-smoking-and-smokeless-tobacco-products-regulation/about-smokefree-environments-and-regulated-products-vaping-amendment-act (accessed 18 May 2024).

Ministry of Health. 2023c. *New Zealand Health Survey. Annual data explorer.*

URL: minhealthnz.shinyapps.io/nz-health-survey-2022-23-annual-data-explorer (accessed 30 April 2024).

Moxham-Hall V, du Toit A, Rawlings D, et al. 2022. *Clinical interventions for e-cigarette cessation in young people: an evidence snapshot*. NSW: Sax Institute for the NSW Ministry of Health.

Mukerjee R, Hirschtick JL, Arciniega LZ, et al. 2024. ENDS, cigarettes, and respiratory illness: longitudinal associations among U.S. youth. *American Journal of Preventive Medicine* 66(5):789-796. DOI: 10.1016/j.amepre.2023.12.005 (accessed 21 March 2024).

National Academies of Sciences, Engineering, and Medicine. 2018. *Public Health Consequences of E-Cigarettes*. Washington DC: The National Academies Press.

Niederdeppe J, Porticella NA, Mathios A, et al. 2024. Managing a policy paradox? Responses to textual warning labels on E-cigarette advertisements among U.S. national samples of youth overall and adults who smoke or vape. *Social Science & Medicine* 344. DOI: 10.1016/j.socscimed.2023.116543 (accessed 7 May 2024).

NSW Ministry of Health. 2019. *Quick guide to drug interactions with smoking cessation*. NSW: Ministry of Health. URL: health.nsw.gov.au/tobacco/Factsheets/tool-7-guide-dug-interactions.pdf (accessed 7 April 2024).

Oliver AP, Bell LA, Agley J, et al. 2022. Examining the efficacy of project ECHO to improve clinicians' knowledge and preparedness to treat adolescent vaping. *Clinical Pediatrics* 61(12): 869–878. DOI: 10.1177/00099228221107816 (accessed 22 March 2024).

Palmer AM, Carpenter MJ, Rojewski AM, et al. 2023. Nicotine replacement therapy for vaping cessation among mono and dual users: a mixed methods preliminary study. *Addictive Behaviors* 139: 107579. DOI: 10.1016/j.addbeh.2022.107579 (accessed 5 June 2024).

Pierce JS, Abelmann A, Spicer LJ, et al. Diacetyl and 2,3-pentanedione exposures associated with cigarette smoking: implications for risk assessment of food and flavoring workers. *Critical Reviews in Toxicology* 44(5): 420–435. DOI: 10.3109/10408444.2014.882292 (accessed 17 May 2024).

Pisinger C, Rasmussen SKB. 2022. The health effects of real-world dual use of electronic and conventional cigarettes versus the health effects of exclusive smoking of conventional cigarettes: a systematic review. *International Journal of Environmental Research and Public Health* 19(20). DOI: 10.3390/ijerph192013687 (accessed 21 March 2024).

Prochaska JJ, Vogel EA, Benowitz N. 2022. Nicotine delivery and cigarette equivalents from vaping a JUULpod. *Tobacco Control* 31(e1): e88-e93. DOI: 10.1136/tobaccocontrol-2020-056367 (accessed 7 June 2024).

Project VECTOR. 2024. *E-cigarette use: evidence-informed guidance on harms and benefits*. Toronto: The Centre for Addiction and Mental Health.

Pulotu-Endemann K. 2001. *Fonofale Model of Health*. Wellington: Health Promotion Forum.

Reid P, Robson B. 2007. Understanding health inequities. *Hauora: Māori Standards of Health IV. A study of the years 2000-2005*. Wellington: Te Rōpū Rangahau Hauora a Eru Pōmare.

Rigotti NA, Benowitz NL, Prochaska J, et al. 2024. Cytisinicline for vaping cessation in adults using nicotine e-cigarettes: the ORCA-V1 randomized clinical trial. *JAMA Internal Medicine*: e241313. DOI: 10.1001/jamainternmed.2024.1313 (accessed 10 May 2024).

Robertson L, Sanford KR, Waa A, et al. 2023. A qualitative analysis of the experiences of people who resumed smoking following exclusive electronic nicotine delivery systems use. *Nicotine & Tobacco Research* 25(3): 470–477. DOI: 10.1093/ntr/ntac157 (accessed 21 March 2024).

Robles N. 2023. *Impact of E-Cigarettes on Oral Wound Healing* [The Ohio State University]. URL: etd.ohiolink.edu/acprod/odb_etd/etd/r/1501/10?clear=10&p10_accession_num=osu1689202066283915 (accessed 17 May 2024).

Rough E, Balogun B, Rachael Harker R. 2024. *Vaping and health*. London: UK Parliament Research Briefings.

Royal College of Physicians. 2024. *E-cigarettes and harm reduction: an evidence review*. London: Royal College of Physicians.

Sahr M, Kelsh S, Blower N. 2020. Pharmacist assisted vape taper and behavioral support for cessation of electronic nicotine delivery system use. *Clinical Case Reports* 8(1): 100–103. DOI: 10.1002/ccr3.2599 (accessed 6 March 2024).

Sahr M, Kelsh S, Blower N, et al. 2021. Pilot study of electronic nicotine delivery systems (ENDS) cessation methods. *Pharmacy* 9(1): 21. DOI: 10.3390/pharmacy9010021 (accessed 28 March 2024).

Sanchez S, Kaufman P, Pelletier H, et al. 2021. Is vaping cessation like smoking cessation? A qualitative study exploring the responses of youth and young adults who vape e-cigarettes. *Addictive Behaviors* 113: 106687. DOI: <https://doi.org/10.1016/j.addbeh.2020.106687> (accessed 27 May 2024).

Sanchez S, Kundu A, Limanto E. 2022. Smartphone apps for vaping cessation: quality assessment and content analysis. *JMIR mHealth and uHealth* 10(3). DOI: 10.2196/31309 (accessed 21 March 2024).

Shipton D, Tappin DM, Vadiveloo T, et al. 2009. Reliability of self reported smoking status by pregnant women for estimating smoking prevalence: a retrospective, cross sectional study. *BMJ* 339: b4347. DOI: 10.1136/bmj.b4347 (accessed 4 June 2024).

Skelton E, Lum A, Robinson M, et al. 2022. A pilot randomised controlled trial of abrupt versus gradual smoking cessation in combination with vaporised nicotine products for people receiving alcohol and other drug treatment. *Addictive Behaviors* 131: 107328. DOI: 10.1016/j.addbeh.2022.107328 (accessed 21 March 2024).

Smokefree Environments and Regulated Products (Vaping) Amendment Act 2020.

Strickett E, Robertson L, Waa A, et al. 2021. A qualitative analysis of Māori and Pacific People's experiences of using electronic nicotine delivery Systems (ENDS). *Nicotine & Tobacco Research* 23(3): 550–556. DOI: 10.1093/ntr/ntaa087 (accessed 14 May 2024).

Sun R, Méndez D, Warner KE. 2023. Association of electronic cigarette use by US adolescents with subsequent persistent cigarette smoking. *JAMA Network Open* 6(3): e234885. DOI: 10.1001/jamanetworkopen.2023.4885 (accessed 7 May 2024).

Sundstrom RM, Boyd LD, Martell K, et al. 2023. Dental hygienists knowledge, beliefs, and intentions regarding asking adolescents about electronic nicotine delivery systems use. *Journal of Adolescent Health* 73(6): 1053–1060. DOI: 10.1016/j.jadohealth.2023.06.030 (accessed 21 March 2024).

Szumilas P, Wilk A, Szumilas K, et al. 2022. The effects of e-cigarette aerosol on oral cavity cells and tissues: a narrative review. *Toxics* 10(2): 74. DOI: 10.3390/toxics10020074 (accessed 21 March 2024).

Te Whatu Ora. 2023. *Pacific Peoples' Nicotine-Free Futures*. Wellington: Te Whatu Ora.

The Centre for Addiction and Mental Health. 2022. *Vaping Cessation Guidance Resource*. Toronto: The Centre for Addiction and Mental Health.

The Royal New Zealand College of General Practitioners. 2023. *Position Statement - Smoking and Vaping*. Wellington: The Royal New Zealand College of General Practitioners.

Tran D, Davis JP, Ring C, et al. 2024. A deeper dive into young adults' experiences with e-cigarettes, e-cigarette cessation, and transitioning to cigarette smoking. *Substance Use & Misuse* 59(6): 937-946. DOI: 10.1080/10826084.2024.2310493 (accessed 21 March 2024).

Tūturu. 2024. Tūturu: A Guide to Getting Started. URL: tuturu.org.nz/assets/How-to-Guide-Tuturu.pdf (accessed 24 June 2024).

Vaioleti TM. 2006. Talanoa research methodology: A developing position on Pacific research. *Waikato Journal of Education* 12. DOI: 10.15663/wje.v12i1.296 (accessed 25 June 2024).

Vanderkam P, Pomes C, Dzeraviashka P, et al. 2023. Insomnia and parasomnia induced by validated smoking cessation pharmacotherapies and electronic cigarettes: a network meta-analysis. *Fundamental and Clinical Pharmacology* 29(2): 96-108. DOI: 10.1111/fcp.12908 (accessed 22 March 2024).

Vogel EA, Ramo DE, Rubinstein ML. 2018. Prevalence and correlates of adolescents' e-cigarette use frequency and dependence. *Drug and Alcohol Dependence* 188: 109–112. DOI: 10.1016/j.drugalcdep.2018.03.051 (accessed 15 May 2024).

Walker N, Parag V, Wong S, et al. 2020. Use of e-cigarettes and smoked tobacco in youth aged 14–15 years in New Zealand: findings from repeated cross-sectional studies (2014–19). *The Lancet Public Health* 5(4): e204–e212. DOI: 10.1016/S2468-2667(19)30241-5 (accessed 21 May 2024).

Whittaker R, McRobbie H, Bullen C, et al. 2019. Mobile phone text messaging and app-based interventions for smoking cessation. *Cochrane Database Syst Rev* 2019, Issue 10, Art. No. CD006611. DOI: 10.1002/14651858.CD006611.pub5 (accessed 19 May 2024).

Wu J, Benjamin EJ, Ross JC, et al. 2024. Health messaging strategies for vaping prevention and cessation among youth and young adults: a systematic review. *Health Communication* 14:1-19. DOI: 10.1080/10410236.2024.2352284 (accessed 25 June 2024).

Yayan J, Franke KJ, Biancosino C, et al. 2024. Comparative systematic review on the safety of e-cigarettes and conventional cigarettes. *Food and Chemical Toxicology* 185: 114507. DOI: 10.1016/j.fct.2024.114507 (accessed 21 March 2024).

Zawertailo L, Kouzoukas E, Fougere C, et al. 2023. Clinical guidance for e-cigarette (vaping) cessation: results from a modified Delphi panel approach. *Preventive Medicine Reports* 35:102372. DOI: 10.1016/j.pmedr.2023.102372 (accessed 22 March 2024).

Appendix 1: Health effects of vaping: Brief evidence summary

Use this section:

- when giving advice about vaping and stopping vaping ('B' – Brief Advice)
- to inform people of the benefits of stopping vaping
- to help people weigh all the health effects of vaping rather than considering them in isolation
- to relate the health effects to your client's circumstances (for example, a current health condition such as asthma).

Respiratory health

Avoid long-term vaping to reduce exposure to chemicals that could damage the airways and lungs and minimise potential respiratory symptoms and dysfunction.

- For people who smoke, there is insufficient evidence that changing to vaping will improve lung function, the course of lung disease (eg, asthma and COPD), or related symptoms (Banks et al 2023; National Academies of Sciences, Engineering, and Medicine 2018). Harm occurs if vaping prevents stopping smoking and instead prolongs smoking through dual vaping and smoking (National Academies of Sciences, Engineering, and Medicine 2018).
- There is some evidence on the effects of vaping on increased self-reported respiratory symptoms, including asthma symptoms, in vapers compared to non-vapers (Project VECTOR 2024; Yayan et al 2024). There is also some evidence that vaping increased these respiratory symptoms,

including asthma, in dual users compared to never-smokers who vape (Karey et al 2024).

- There is insufficient evidence from lung function tests, lung imaging studies, and bronchoscopy on the effects of any duration of vaping on lung function (McNeill et al 2022).
- E-cigarette or Vaping Use Associated Lung Injury (EVALI, also known as VALI, vaping-associated lung injury) is associated with vitamin E acetate, an additive found in some cannabis e-liquids (M. M. Baker et al 2022). Vitamin E acetate is generally not found in regular nicotine e-liquids (M. M. Baker et al 2022; Project VECTOR 2024).
- Bronchiolitis obliterans is a disease of airway narrowing and scarring. It is popularly called “popcorn lung” as it was first described in popcorn factory workers exposed to diacetyl, a buttery-flavoured agent (BPAC 2018). Popcorn lung was a possible concern because some e-liquids contained diacetyl as a flavour. However, many countries have now banned diacetyl as a vape flavour, and there is no direct evidence of harm from vaping e-liquids that contain diacetyl (BPAC 2018). People who smoke have far greater exposure to diacetyl than from vaping or occupational exposures, without evidence of popcorn lung (Pierce et al 2014).
- There is insufficient evidence on the effects of second-hand vaping on lung function (McNeill et al 2022).

Cardiovascular health

Avoid vaping to avoid exposure to adverse cardiovascular system effects.

- The use of nicotine vapes increases heart rate and blood pressure immediately after vaping, in the same way as after smoking a cigarette or using NRT (Asfar et al 2022; McNeill et al 2022; National Academies of Sciences, Engineering, and Medicine 2018; Project VECTOR 2024).
- Some studies of people who have smoked and of people who have vaped showed that nicotine and nicotine-free vaping can lead to short-term changes in blood vessels, as seen in smoking (Asfar et al 2022; Banks et al 2023; Lyytinen et al 2023; Project VECTOR 2024). These changes included dysfunction of the blood vessel lining and stiffness of the arteries.
- However, there is insufficient evidence on the effect of long-term nicotine vaping on long-term changes (over more than three months) in heart rate, blood pressure, and cardiac function (McNeill et al 2022; National Academies of Sciences, Engineering, and Medicine 2018).
- There is no evidence of the effect of nicotine vaping on cardiovascular diseases, such as heart attacks, strokes, and cardiac death (Banks et al 2023).

Use the following points when discussing nicotine vaping to stop smoking in people who have had a previous cardiovascular event.

- In smoking, the chemicals created from burning tobacco, such as carbon monoxide (CO), reduce oxygen in the blood or may damage the heart. CO is not present in vape aerosol.
- Vaping as a substitute for smoking tobacco will likely reduce the potential for cardiovascular harm posed by continued smoking because CO and other chemicals are absent.
- Nicotine vaping is associated with short-term increases in heart rate and blood pressure, and both nicotine and nicotine-free vaping are associated with blood vessel changes.
- Be cautious when considering using vapes to reduce or stop smoking if there has been a recent acute serious heart or blood vessel-related event, such as a heart attack or a stroke (Project VECTOR 2024).
- Consider vaping in people unable or unwilling to use NRT or non-NRT medications (such as bupropion, also known as Zyban) to stop smoking according to best practice guidelines.

Cancer

- There is currently no evidence to suggest that nicotine vaping causes cancer (Asfar et al 2022; Banks et al 2023; McNeill et al 2022; National Academies of Sciences, Engineering, and Medicine 2018; Project VECTOR 2024).

- There is evidence that there may be exposure to cancer-causing chemicals in people who vape but at a significantly reduced level compared to smoking cigarettes (National Academies of Sciences, Engineering, and Medicine 2018; Project VECTOR 2024).

Oral and dental health, and ear, nose, and throat (ENT) health

- The commonest oral effects of vaping are mouth or throat irritation (Project VECTOR 2024).
- Some, but insufficient, evidence suggests vaping may lead to gum disease, bone loss around teeth, and other problems in the tissue surrounding teeth (the periodontium) in people who exclusively vape or who both vape and smoke cigarettes, and who are never or former smokers (Asfar et al 2022; Banks et al 2023; Project VECTOR 2024). There is some early-stage evidence that vaping impairs oral wound healing (Majid 2024; Robles 2023).
- The evidence is mixed, but insufficient, on whether changing from smoking to vaping improves oral and dental health (Banks et al 2023; McNeill et al 2022; National Academies of Sciences, Engineering, and Medicine 2018).
- Laboratory studies found vape aerosols toxic to cells from the ear, nose, and throat (Asfar et al 2022). However, the evidence on a link between nicotine vaping and ENT disease outcomes is insufficient (Asfar et al 2022).

Pregnancy

- There is insufficient evidence in human studies on the effects of maternal vaping on pregnancy outcomes, including birthweight (Asfar et al 2022; Banks et al 2023; Calder et al 2021; McNeill et al 2022; National Academies of Sciences, Engineering, and Medicine 2018; Project VECTOR 2024).
- There is insufficient evidence in human studies on the effects of maternal vaping on reproductive health outcomes (Banks et al 2023; McNeill et al 2022).
- There is insufficient evidence on the effects of maternal vaping on human fetal development (National Academies of Sciences, Engineering, and Medicine 2018). According to animal studies, exposing the fetus to nicotine from vapes and/or vape aerosol may have adverse effects on the unborn baby's developing brain, heart and lungs, cognition, kidneys, and birthweights (Project VECTOR 2024).

Young people

Children, adolescents, young people, and people who do not smoke should not vape due to the potential risks of health harm and dependence.

- There is moderate evidence for increased asthma attacks and increased lung symptoms, such as cough and wheeze, in adolescents who vape (Jonas 2022; Livingston et al 2022; Mukerjee R. et al 2024; National Academies of Sciences, Engineering, and Medicine 2018).

- The brain does not complete development until a person is in their mid-20s, and sustained nicotine exposure before this age, from in the womb to adolescence, could potentially impact brain development (Rough et al 2024). In adolescence, nicotine may affect learning and behaviour (Lyzwinski et al 2022).
- There may be a connection between vaping and mental health problems (eg, depression, anxiety, and impulsivity) in adolescents and young adults (Becker et al 2021; Khan et al 2023; Livingston et al 2022). However, the types of evidence from these studies do not support a causal association between vaping and mental health problems in adolescents and young adults.

Health and safety

- Intentional or unintentional exposure to and poisoning from e-liquids (via eating, drinking, and contact with the eyes or skin) can harm multiple organs and even be fatal (Banks et al 2023; National Academies of Sciences, Engineering, and Medicine 2018). The commonest route of poisoning is through accidental oral ingestion, with fewer instances of poisoning via contact with the eyes (Fowles 2021; McNeill et al 2022).
- Vapes contain batteries that may rarely explode or catch fire, causing burns and projectile injuries (Banks et al 2023; National Academies of Sciences, Engineering, and Medicine 2018). Batteries that are of poor quality, improperly stored, or modified significantly increase the risk of vape devices causing these burns and injuries (National Academies of Sciences, Engineering, and Medicine 2018).

- The risks of e-liquid poisoning and fire due to vaping devices are comparable to similar household substances and electrical goods (Rough et al 2024).
- There is evidence that vaping e-liquids increases the risk of exposure to substances that are potentially toxic to brain and organ development, including metals such as cadmium, lead, and uranium (Kochvar et al 2024). More frequent vaping is linked with increased exposure to these toxic substances (Kochvar et al 2024). These metals are also present in the environment, and people may be exposed to them through industrial activity and their diet.

Second-hand exposure to vaping aerosols differs from second-hand exposure to cigarette smoke.

- Vaping can increase airborne particulate matter in indoor environments (Banks et al 2023).
- However, second-hand vapour contains a small fraction of the toxic substances in tobacco. Vaping also does not contain tobacco nor involve the burning of tobacco. In contrast, cigarette smoke contains a mixture of over 8,000 chemicals. Many of these chemicals are harmful products from burning tobacco (Lampos et al 2019).
- When someone vapes, only the vapour exhaled by the person enters the surrounding air (Martuzevicius et al 2019). This vapour dissipates quickly. On the other hand, the majority of the harmful emissions that smoking generates are “side stream” or generated in between cigarette puffs (Martuzevicius et al 2019).

- The nicotine from exhaled vapour can be deposited on surfaces but at very low levels that are unlikely to cause harm (Banks et al 2023). However, it is important to note that vaping in the following areas is prohibited under the law: indoor workplace areas, certain public enclosed areas, and motor vehicles carrying children, adolescents, and young people under the age of 18 years.
- Therefore, the risks to health from second-hand exposure to vapour and deposited nicotine are likely to be very low.

Appendix 2: Using vaping devices

Use this section:

- when discussing behavioural strategies for vaping to stop smoking ('C' - Cessation Support)
- to discuss how to use vaping devices in a way that minimises the risk of misuse.

Under the Smokefree Environments and Regulated Products (Vaping) Amendment Act 2020, it is illegal to:

- sell or supply vaping products to someone aged under 18 years
- vape anywhere it is illegal to smoke, including indoor workplace areas and certain public enclosed areas
- vape in motor vehicles carrying young people under the age of 18 years.

Avoid nicotine poisoning.

- Advise people to safely store e-liquid to prevent accidental exposure in children and pets.
- When topping up refillable vapes, avoid contact between the e-liquid and skin, and use gloves to clean up spills immediately after they occur.

Follow instructions for use specific to your device.

- Do not modify the vaping device or the e-liquid, for instance, by adding THC (tetrahydrocannabinol, the psychoactive component of cannabis), vitamin E acetate, or other oils.
- It is unsafe to refill or recharge a disposable vape. Internal parts wear out in disposable vapes and can expose people to toxic chemicals, so they should not be reused.
- Tampering with batteries in disposable vapes can cause fires and burns. Some vapes have exploded.
- Use the correct charger for the device, and do not leave a vape unattended when charging.
- Only use e-liquids within their shelf life (usually two years from the date of manufacture). Store away from light and heat.
- Maintain reusable devices and replace parts regularly. For example, replace the coil regularly, as frequently as weekly, to properly vapourise the liquid. Poor maintenance increases the risk of heavy metal contamination.
- Avoid “dry puffing”, which occurs if the liquid is not vapourised properly or if using the vapes dry. The internal parts burn when the liquid runs out, releasing foul-tasting and harmful chemicals. Get a new vape or change worn-out components. Top up with refillable liquids if the vape is reusable.

Choose brands and retailers that have a good reputation.

- Do not purchase e-liquids, pods, or devices from unknown sources.
- Avoid unlabelled products and non-retail or social sources of vapes if the ingredients cannot be verified.

Safe disposal of vaping products.

- Dispose of batteries and disposable vapes safely.
- Improper disposal of vape battery waste can lead to toxic chemicals leaching into soil and waterways.

Avoid getting “nic sick”.

- People feel “nic sick” when exposed to too much nicotine.
- Symptoms include nausea, headaches, and dizziness. These effects go away within a few minutes of stopping vaping. Frequently ignoring these symptoms may lead your client to develop an increased tolerance to nicotine and to vape more.
- To avoid feeling “nic sick”, advise your client to start with one puff and allow time for the nicotine to take effect before the next inhale when trying a new flavour or brand of vape.

Some young people get a buzz from “nic sick” symptoms. Frame the discussion around these symptoms as a way your client’s body is telling them that they have had too much nicotine.

Appendix 3: Evidence on interventions using vaping to stop smoking, and stopping vaping.

Use this section for summary evidence on vaping to stop smoking and stop-vaping interventions.

Stop-smoking support using vapes

- There is high certainty evidence that nicotine vaping increases the rates of stopping smoking compared to standard NRT, moderate certainty evidence for increasing stop-smoking rates compared to nicotine-free vaping, and low-certainty evidence for increasing stop-smoking rates compared to behavioural or no support (Lindson et al 2024).
- The evidence is unclear on whether gradual or abrupt smoking cessation is more effective when vaping to stop smoking. A small Australian pilot randomised controlled trial (n = 66) in adult users of alcohol and other drug services demonstrated no statistically significant difference in smoking cessation between gradual and abrupt stopping (Skelton et al 2022). On the other hand, US survey data (n = 857) found that people who vaped to stop smoking experienced longer durations of smoking abstinence when they abruptly switched to vaping from smoking and when they vaped more frequently during their stop-smoking attempt (Bold et al 2023).

Stop-vaping support

- There is a need for more methodologically rigorous testing of vaping cessation interventions that use an experimental or prospective design and include longer-term follow-up of intervention effects in representative samples (Amin et al 2023; Moxham-Hall 2022).
- The types of interventions used for stopping vaping reported in the literature include behavioural counselling (eg, motivational interviewing and individual or group counselling), contingency management such as financial incentives for achieving abstinence, combined behavioural counselling and NRT, non-NRT medications, tapering vape use, mindfulness, text messaging programmes, and video game and smartphone apps (Chadi et al 2021; Kundu et al 2023; Moxham-Hall 2022). There are no studies on complete cessation of smoking and vaping in dual users (Kundu et al 2023).

Behavioural stop-vaping support

- Vapers may prefer a customisable quit plan, the option of tapering use then stopping vaping, and the support of friends (Kundu et al 2023).
- A pilot randomised controlled trial of 24 US college students demonstrated that a pharmacist-led gradual nicotine vape taper combined with behavioural support was a more effective way of being vape free at six months, compared with behavioural support with NRT and compared with self-guided cessation (Sahr et al 2021).

- A gradual nicotine vape tapering programme involves alternating reductions in nicotine concentration with decreases in the time spent vaping and is coupled with behavioural counselling (Sahr et al 2020). The taper may increase client engagement by enabling them to work towards a quit date. Weigh this strategy up against the risk of ongoing exposure to vaping when considering whether to opt for a nicotine vape taper to stop vaping, as opposed to stopping abruptly or “cold turkey”.
- A Cochrane review published in 2023 evaluated the effectiveness of interventions to prevent and cease vaping in children and adolescents aged 19 years or younger. The review did not identify any eligible studies (RCTs) with published data (Barnes et al 2023).
- Abrupt stopping, using willpower, delaying or limiting access to vapes, and replacing vaping with any other activity were the most frequent stop-vaping strategies used by students aged 18–24 years (Al-Hamdani et al 2023; Holt and Latimer 2024). Social support is deemed effective for vaping cessation by young people but is used less frequently. In younger students aged 11–19 years, unassisted cessation and peer support are the commonest stop-vaping strategies (Dai et al 2023; Jones et al 2023).

Pharmacological stop-vaping support

- Nicotine replacement therapy, varenicline, and bupropion are medications approved for use as smoking cessation aids in New Zealand. Cytisinicline (also known as cytisine, a plant-based alkaloid that reduces nicotine dependence and helps adults stop smoking) is not an approved medicine in New Zealand. The evidence on the use of these medications in vaping cessation is insufficient or emerging.

- A preliminary randomised controlled trial (n = 30) compared a 28-day course of combination NRT with behavioural therapy versus Quitline referral only in adults aged 18 and over who vaped nicotine daily for a year or more and who were interested in stopping vaping within the next month. 33.3 percent of the group treated with NRT and behavioural therapy reported not vaping for seven days prior to the end of treatment, compared to zero in the Quitline control group (p = 0.057) (Palmer et al 2023).
- Two small double-blinded randomised controlled trials demonstrated that varenicline led to higher quit rates in exclusive daily vapers compared to placebo or placebo plus counselling. However, both trials were limited in the number of people recruited (40 and 140 people) and had short follow-up times (12 weeks and six months) (Caponnetto et al 2023; Fucito et al 2024).
- There are currently no clinical trials or case reports on bupropion for vaping cessation (Huerne and Eisenberg 2023).
- A randomised controlled trial (n = 160) investigating a 12-week course of behavioural support and cytisinicline found that cytisinicline may also be helpful for adult nicotine vaping cessation (Rigotti et al 2024). A larger trial with longer follow-up is required to confirm these findings.

School-based stop-vaping interventions

- School-based vaping prevention interventions are limited (Lyzwinski et al 2022). “Catch my breath” is a US middle school intervention focusing on increasing knowledge of vaping-related health harms. There were statistically significant increases in vaping knowledge and decreases in vaping prevalence in schools with the programme compared to control schools (Lyzwinski et al 2022). More research is required on the effect of the programme on vaping attitudes and susceptibility (K. A. Baker et al 2022).
- An evaluation of n = 103,522 US students in Grades 5 to 12 receiving the Vaping: Know the Truth digital curriculum on vaping-associated health effects found that, on average, students answered more than three additional questions correctly out of 20 in the post-test than in the pre-test (Hair et al 2023). This evaluation did not involve a control group of students who did not receive the curriculum, so it is less robust in controlling for potential confounders and isolating the effect of the programme.

Technology-based stop-vaping interventions

- Mobile phone text messaging programmes can be effective in supporting people to stop smoking compared to minimal support (Whittaker et al 2019). These interventions may also be effective as stop-vaping tools (Lyzwinski et al 2022). Current text messaging interventions for stopping vaping provide educational content, foster self-efficacy, and help with resilience-building (Lyzwinski et al 2022).
- A randomised controlled trial of a tailored and interactive text message programme available in the US (“This is Quitting”) in adults aged 18–24 years (n = 2,588) was effective in promoting vaping cessation, compared to a

control group that did not receive the programme (Graham et al 2021). “This is Quitting” is the only intervention that has undergone rigorous testing for vaping cessation, according to a scoping review (Kundu et al 2023) and a systematic review (Amin et al 2023), both published in 2023.

- A 2022 study assessing the quality of smartphone apps for vaping cessation found few apps for vaping cessation. Existing apps use similar approaches as apps for smoking cessation but with limited features explicitly tailored to stopping vaping (Sanchez et al 2022).

Evidence for parents and health workers helping young people to prevent and stop vaping

- Educating parents on conversations that help children understand vaping and increase their media literacy around advertisements promoting vaping may prevent adolescents from vaping. Analysis of US survey data of teenaged youth (n = 639) found that parenting practices that included restrictions on the time children spent on media and discussions on media were associated with greater adolescent perceptions of vaping harm and a lower likelihood of vaping (Jeong Choi et al 2022).
- Practical learning sessions on the management of adolescent vaping for paediatric clinicians may increase the following: clinician comfort in discussing vaping with patients, the provision of counselling, and the implementation of best-practice screening strategies (Oliver et al 2022).