

E-cigarette use in adolescents

Madelynn Hannah BSc PharmD, Marc P. Fadel MD PhD, Trisha Tulloch MD MSc

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1 Rates of use of e-cigarettes that contain nicotine (“vaping”) by adolescents in Canada continue to be among the highest in the world¹

In the Canadian Student Tobacco, Alcohol and Drugs Survey 2021–2022, 29.4% of students in grades 7–12 reported trying an e-cigarette, with 8.1% vaping nicotine daily.²

2 Adolescents acquire highly concentrated nicotine vaping products despite national and provincial regulations in Canada

The minimum age to legally purchase vaping products ranges across Canada, from 18 to 21 years. The maximum nicotine concentration in vaping products is 20 mg/mL, but unregulated products with higher concentrations are widely available. Vaping often delivers higher nicotine concentrations than conventional cigarettes, and nicotine delivery varies among vaping products.^{3,4}

3 Adolescents should be asked about vaping in all health care settings⁵

For youth who vape, management should include education on risks, including nicotine addiction, respiratory and neurodevelopmental complications, and unknown long-term safety.^{1,3,5,6}

4 In addition to behavioural interventions for vaping cessation, adolescents can be offered nicotine replacement therapy (NRT)^{4,5}

Nicotine replacement therapy delivers pharmaceutical-grade nicotine with low risk of misuse owing to slower absorption.⁴ No randomized controlled trials have evaluated NRT for vaping cessation.³ Nicotine replacement therapy is recommended for adolescents with moderate to severe nicotine use disorder, based on evidence of effectiveness for adult smoking cessation, the severe harms of tobacco dependence, and lack of evidence of serious NRT-associated harm in adolescents.^{4,5}

5 Judicious initiation of NRT is necessary, owing to unpredictable nicotine exposure from vaping

Combining a nicotine patch (7–21 mg) with a short-acting NRT product (2–4 mg gum, 1–2 mg lozenge) for breakthrough cravings is advised.⁴ Clinicians should collaborate with each patient to determine an appropriate initial dosage based on level of nicotine dependence and titrate accordingly to manage withdrawal symptoms.⁴ Follow-up should be frequent, to reassess cravings and withdrawal symptoms, tolerability of NRT, motivation, barriers, and comorbid mental health concerns.

References

1. Becker TD, Rice TR. Youth vaping: a review and update on global epidemiology, physical and behavioral health risks, and clinical considerations. *Eur J Pediatr* 2022;181:453–62.
2. Detailed tables for the Canadian Student Tobacco, Alcohol and Drugs Survey 2021–2022. Ottawa: Health Canada; modified 2023 Nov. 17. Available: <https://www.canada.ca/en/health-canada/services/canadian-student-tobacco-alcohol-drugs-survey/2021-2022-detailed-tables.html> (accessed 2023 Aug. 1).
3. Kundu A, Kouzoukas E, Zawertailo L, et al. Scoping review of guidance on cessation interventions for electronic cigarettes and dual electronic and combustible cigarettes use. *CMAJ Open* 2023;11:E336–44.
4. Nicotine replacement therapy and adolescent patients: information for pediatricians. Itasca (IL): American Academy of Pediatrics; 2019. Available: https://downloads.aap.org/RCE/NRT_and_Adolescents_Pediatrician_Guidance_factsheet.pdf (accessed 2023 Aug. 3).
5. Janssen BP, Walley SC, Boykam R, et al.; Section on Nicotine and Tobacco Prevention and Treatment; Committee on Substance Use and Prevention. Protecting children and adolescents from tobacco and nicotine. *Pediatrics* 2023;151:e2023061805.
6. Janssen BP, Walley SC, Boykam R, et al. Section on Nicotine and Tobacco Prevention and Treatment; Committee on Substance Use and Prevention. Protecting children and adolescents from tobacco and nicotine [Technical Report]. *Pediatrics* 2023;151: e2023061806.

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Affiliations: Department of Pharmacy (Hannah), Hospital for Sick Children; Leslie Dan Faculty of Pharmacy (Hannah), University of Toronto; Department of Psychiatry (Fadel), Hospital for Sick Children; Division of Child and Youth Mental Health (Fadel), Department of Psychiatry, Temerty Faculty of Medicine, University of Toronto; Division of Adolescent Medicine (Tulloch), Hospital for Sick Children; Nicotine Dependence Clinic (Tulloch), Centre for Addiction and Mental Health, Toronto, Ont.

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Correspondence to: Trisha Tulloch, trisha.tulloch@sickkids.ca