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Pharmacological Interventions for Vaping Cessation

Rapid Review

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Authors: Sara D. Khangura, Sarah C. McGill

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Questions or requests for information about this report can be directed to **Requests@CADTH.ca**

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Key Messages

- The use of electronic nicotine delivery systems and other vaping products is on the rise, and the health effects from these products remain uncertain.
- No evidence-based guidelines regarding the use of pharmacological vaping cessation interventions were identified.
- Some guidelines suggest that it may be reasonable to apply smoking cessation interventions and/or protocols for vaping cessation, but no guidance specific to the use of pharmacotherapy was identified.

Context and Policy Issues

Vaping is the use of an electronic device that heats a liquid substance which produces aerosol vapour and is then inhaled and exhaled by the user.[1] Often (but not always) the liquid and its aerosol vapour contain nictorine[2,3]; in these cases, the devices are termed electronic nicotine delivery systems (ENDS).[4-6] The use of vaping devices is generally described as a smoking cessation aid for use in the short term only[4,5,7-13]; that is, ENDS and other vaping products are neither recommended for people who do not smoke nor for long-term use in people who smoke and are trying to quit.[11,14]

Nonetheless, the use of ENDS is increasing rapidly across the world,[10,15] particularly among adolescents and younger adults.[9,11,14,16-20] Whereas the use of ENDS products in adults generally follows their use of combustible tobacco products (i.e., often used as a cessation aid), use of ENDS products in children, youth, and younger adults often begins before the use of combustible tobacco products, causing concern that ENDS and other vaping products may serve as a "gateway" to the use of combustible tobacco products — especially in younger populations.[10,11,16,21]

There is currently limited evidence describing the health effects of ENDS and other vaping products — particularly given the wide variety of available ENDS products — including a lack of data describing associated morbidity and mortality.[14] However, a growing body of literature describes the risk of e-cigarette or vaping-associated lung injury that can be caused by ENDS devices.[14,22-24] In addition, there is the risk of toxicity and/or adverse reactions that can be caused by the aerosol vapour,[4] particularly in children and youth.[11,24] Concerns have also been raised about the insufficiency of current regulatory limitations in place in Canada that govern the distribution, marketing, and use of ENDS.[24]

Given the rising use of ENDS and other vaping products, as well as the uncertainty concerning their health effects, there is a need for evidence-based guidance to support vaping cessation. The purpose of this report is to identify and describe evidence-based guidelines to inform the use of pharmacological interventions to support vaping cessation.

Research Question

1. What are the evidence-based guidelines regarding the use of pharmacological vaping cessation interventions in people of any age who use vaping products?

Methods

Literature Search Methods

A limited literature search was conducted by an information specialist on key resources including MEDLINE, the Cochrane Database of Systematic Reviews, the international HTA database, the websites of Canadian and major international health technology agencies, as well as a focused internet search. The search strategy comprised both controlled vocabulary, such as the National Library of Medicine's MeSH (Medical Subject Headings), and keywords. The main search concepts were vaping, or electronic nicotine delivery systems, and pharmacological interventions. Search filters were applied to limit retrieval to health technology assessments and guidelines. The search was limited to English language documents published between January 1, 2016, and March 12, 2021.

Selection Criteria and Methods

One reviewer screened citations for eligible sources. In the first level of screening, titles and abstracts were reviewed and potentially relevant sources were retrieved and assessed for eligibility. The final selection of full-text sources was based on the inclusion criteria presented in Table 1.

Exclusion Criteria

Sources were excluded if they did not meet the selection criteria outlined in Table 1, were duplicate publications, or were published before 2016. Guidelines with unclear methodology were excluded.

Critical Appraisal of Individual Studies

Critical appraisal was not undertaken as no eligible guidelines were identified.

Table 1: Selection Criteria

Criteria	Description
Population	People of any age (i.e., youth or adult populations) who use vaping products
Intervention	Pharmacological vaping cessation interventions (e.g., nicotine replacement therapy, cytisine, varenicline)
Comparator	Not applicable
Outcomes	Recommendations regarding best practices (e.g., appropriate patient populations or clinical settings, recommended treatment strategies, dosing algorithms)
Study designs	Evidence-based guidelines

Summary of Evidence

Quantity of Research Available

A total of 41 citations were identified in the electronic literature search. Following screening of titles and abstracts, 16 citations were excluded and 25 potentially relevant sources from the electronic search were retrieved for full-text review. Eighteen potentially relevant sources were retrieved from the grey literature search for full-text review. Of these potentially relevant articles, 43 publications were excluded for various reasons, with no publications meeting the inclusion criteria for this report. Appendix 1 presents the PRISMA[25] flow chart of the study selection. Additional references of potential interest are provided in Appendix 2.

Summary of Findings

No evidence-based guidelines informing the use of pharmacological vaping cessation interventions were identified; therefore, no summary can be provided.

Limitations

No relevant evidence-based guidelines describing pharmacotherapy for vaping cessation were identified.

Conclusions and Implications for Decision- or Policy-Making

No evidence-based guidelines regarding the use of pharmacological vaping cessation interventions in people of any age who use vaping products were identified.

Pharmacological support for smoking cessation has been demonstrated to be effective,[26] and there are multiple evidence-based recommendations and guidelines informing the use of pharmacotherapy for this purpose[8,27-29]; however, no guidance specific to the use of pharmacotherapy to support vaping cessation was identified. Some guidance and recommendations that were developed to support smoking cessation state generally that recommendations are inclusive of ENDS and other vaping products[28-30] and/or that, despite a current lack of evidence, it may be reasonable to manage vaping cessation in a way similar to smoking cessation. However, these sources do not make explicit, evidence-based recommendations to inform vaping cessation, and do not provide guidance specific to the use of pharmacotherapy.[3,28-32] Other recommendations that focused on the regulation, prevention, and management of ENDS and other vaping products, but did not provide recommendations regarding vaping cessation, were also identified.[4,33,34] Sources of guidance bearing some relevance to this report are listed in Appendix 2.

The current lack of available evidence describing the use of pharmacotherapy and other interventions to support vaping cessation has been identified as a knowledge gap in the literature.[35] Similarly, while previous CADTH reports have sought evidence describing

interventions to support smoking cessation[36-40] — including 1 describing the use of ENDS products to support smoking cessation[41] — only 1 recent CADTH report sought evidence describing the clinical effectiveness of nicotine replacement therapy for vaping cessation in adults, but no relevant studies were identified.[42] This lack of clinical evidence is consistent with the findings of the current report, which has identified a lack of available guidelines informing the use of any pharmacological interventions to support vaping cessation.

There is some early evidence suggesting that pharmacotherapy may benefit vaping cessation efforts.[18] One case study reported the success of nicotine replacement therapy for vaping cessation in a single user of ENDS, and highlighted the need for treatment protocols and guidelines to advance best practice and outcomes for ENDS users who want to quit.[15] Notably, 1 published protocol was identified describing initiation of a randomized controlled trial to evaluate the efficacy of a combined behavioural and pharmacological intervention using varenicline and counselling to support vaping cessation.[35] Continued research in this area will provide evidence to inform recommendations regarding vaping cessation.

Given the rapid rise in the use of ENDS and other vaping products alongside the uncertainty around their health effects, there is a need for evidence-based guidance regarding vaping cessation interventions.

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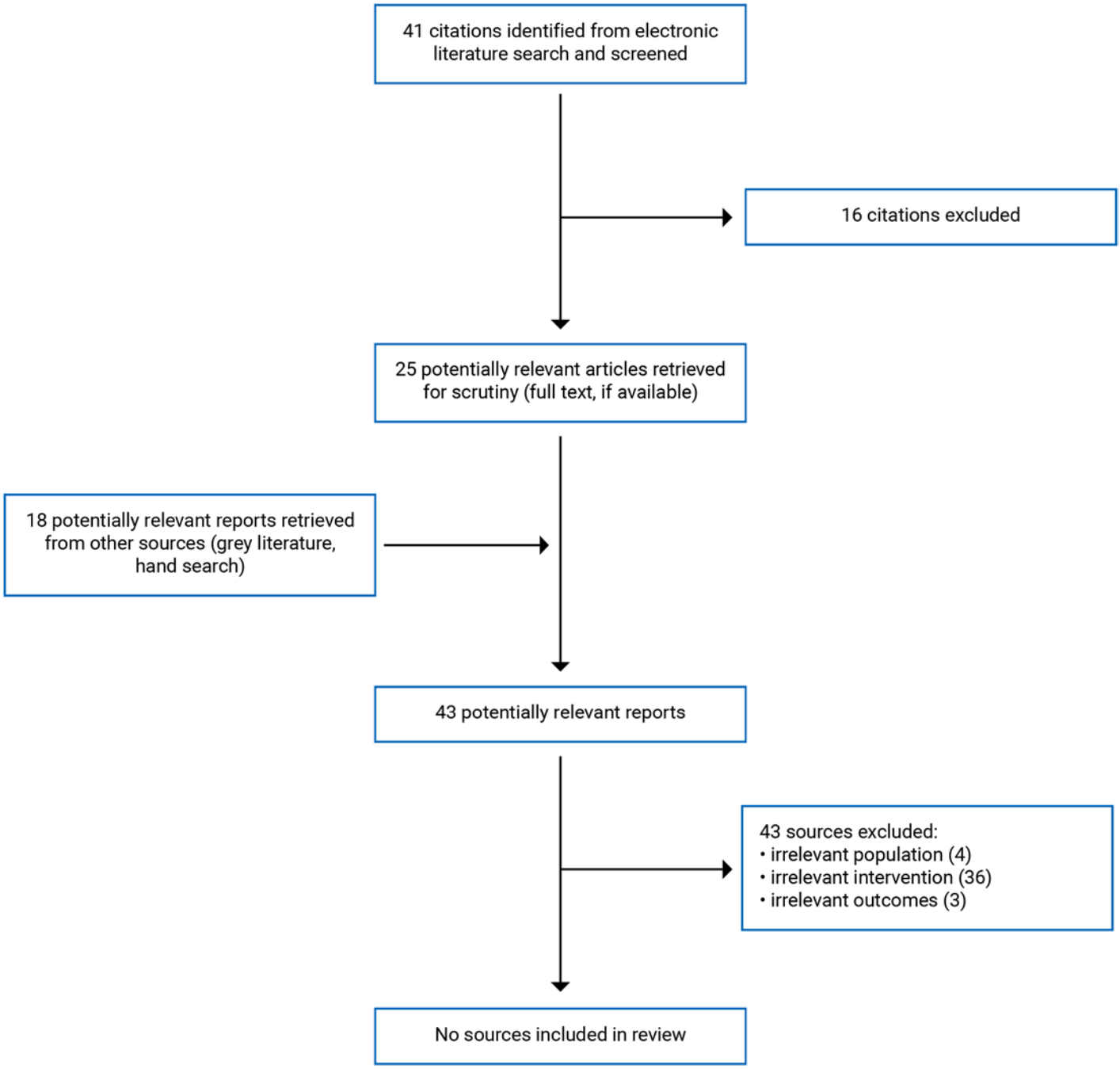
Appendix 1: Selection of Included Studies

Figure 1: Selection of Included Studies



Appendix 2: References of Potential Interest

Additional References

Guidance Specific to Vaping/Vaping Products (but No Recommendation Specific to Pharmacotherapy as a Cessation Aid)

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