INTERVENTIONS FOR QUITTING VAPING

Findings from a Cochrane Living Systematic Review

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Declarations and acknowledgements

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I have never received funding from tobacco, nicotine or pharmaceutical industries.

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Today

- Introduction to Cochrane
- About living systematic reviews
- Rationale for this review
- Methods for this review
- (Pause for questions)
- Results
- Conclusions
- Time for discussion/further questions

Cochrane

Trusted evidence.
Informed decisions.
Better health.

Global non-profit organisation

Produces systematic reviews to inform health decision making

Reviews are published in the Cochrane Library

Cochrane reviews follow strict methodological guidance and are considered ‘gold standard’

Cochrane Tobacco Addiction

- Est. 1996 by members of the General Practice Research Group at the University of Oxford
- Funded by NIHR and its predecessors from inception to March 2023
- No funding currently available for review group infrastructure so the editorial element of the group has disbanded; the group continues though, with funding to conduct specific reviews, of which this is one
- We managed approx. 90 reviews & had a team of over 400 review authors…
- …as well as authoring reviews ourselves

AIMS:

- To inform tobacco control policy internationally;
- To inform tobacco control research, ensuring it is focused on important unanswered questions;
- To contribute to reducing tobacco use.

- Run searches for new literature every month
- Trigger an ‘update’ to the review anytime a new study is identified which:
  - Initiates creation of a new comparison or outcome within an existing comparison
  - Changes existing conclusions
  - Strengthens or weakens existing conclusions
- Time-intensive process which is appropriate when:
  - Uncertainty exists
  - The topic is a policy or clinical priority
  - Further studies are underway that could impact decision-making
- This LSR is one of two we conduct, which are companion projects

Interventions for quitting vapi | living systematic review - Goo | Living systematic reviews | Cc | Interventions for quitting vapi | Electronic Cigarettes for Smo

cebm.ox.ac.uk/research/electronic-cigarettes-for-smoking-cessation-cochrane-living-systematic-review-1

We synthesise evidence on interventions involving electronic cigarettes, or vapes, and share the findings in two Cochrane living systematic reviews.

In our 'Electronic cigarettes for smoking cessation' review we explore the use of electronic cigarettes, or vapes, to hel people to stop smoking tobacco cigarettes and whether they are safe to use for this purpose.

In our 'Interventions for vaping cessation' review we bring together the best available information on methods to help people to quit using vapes.

Monthly search findings

To access the records picked up in our monthly searches since the publication of the last review update please click on the link below.

View search findings

E-CIGARETTES FOR SMOKING CESSATION

Stay up-to-date

Access our latest review here:

- **Electronic cigarettes for smoking cessation**

Access our regularly updated briefing documents here:

- **Plain language briefing [June 2025]**
- **Briefing for healthcare professionals and policy makers [June 2025]**

e-cigarettes for smoking cessation jan25.png

INTERVENTIONS FOR QUITTING VAPING

Stay up-to-date

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- **Interventions for quitting vaping review**

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cebm.ox.ac.uk/research/electronic-cigarettes-for-smoking-cessation-cochrane-living-systematic-review-1

News and impact

Access selected press coverage received for the Electronic cigarettes for smoking cessation Cochrane review.

Disclaimer: by listing the articles we are not endorsing their content.

View press coverage

Presentations

This review has been presented to numerous national and international bodies. For a list of selected presentations please click on the link below.

Presentations

Evidence and Gap Maps

Evidence and gap maps, or EGMs, are interactive tools to help you find out where evidence exists and where evidence is lacking. We will produce two EGMs to share availability of information on vapes as a quit smoking tool and on methods to help people to quit using vapes.

PODCASTS AND VIDEOS

Interventions for quitting vaping Cochrane review 2025

Researcher Stories: E-cigarettes

Let's talk e-cigarettes | University of Oxford Podcasts - Audio and Video Lectures

EC for smoking cessation Cochrane review January 2024

View all podcasts here

VIEWS

New study identifies text messaging and varenicline as promising approaches for vaping cessation

7 things to know about e-cigarettes and quitting smoking

In this blog, Jamie Hartmann-Boyce from the Cochrane Tobacco Addiction Group and Martin Dockrell from the Office of Health Improvement and Disparities share 7 things you need to know about e-cigarettes and quitting smoking.

Latest Cochrane Review finds high certainty evidence that nicotine e-cigarettes are more effective than traditional nicotine-replacement therapy (NRT) in helping people quit smoking

KEY PUBLICATIONS:

An update of a systematic review and meta-analyses exploring flavours in intervention studies of e-cigarettes for smoking cessation

Journal article

LINDSON N. et al, (2024), Addiction

Longer-term use of electronic cigarettes when provided as a stop smoking aid: Systematic review with meta-analyses

Journal article

Butler AR. et al, (2022), Preventive Medicine, 165

Biomarkers of potential harm in people switching from smoking tobacco to exclusive e-cigarette use, dual use or abstinence: secondary analysis of Cochrane systematic review of trials of e-cigarettes for smoking cessation

Journal article

Hartmann-Boyce J. et al, (2022), Addiction

- First iteration published January 2025
- An update was triggered this spring and is currently underway, with planned submission to Cochrane next month
- Today I'll focus on findings from the published review, but end with a preview of what is to come (but subject to change as peer review has not yet taken place)

BACKGROUND

Rationale

- There is limited guidance on the best ways to stop using nicotine-containing vapes (otherwise known as e-cigarettes) and ensure long-term abstinence, whilst minimizing the risk of tobacco smoking and other unintended consequences.
- Treatments could include pharmacological interventions, behavioral interventions, or both.

Consumer involvement

- We held a consumer planning consultation in June 2023. At this workshop, participants concluded that it would be clearer to use the term 'vape' rather than 'e-cigarette' in the review title.
- We held a second workshop and online consultation in 2024 to discuss a dissemination plan for the results of this review.
- Our consumer panel have diverse vaping and smoking experiences and are from differing social backgrounds. All are reimbursed for their time. We have a lead consumer contributor who has experience of smoking combustible cigarettes and using vapes. We are using Cancer Research UK’s consumer toolkit and Cochrane consumer resources to assist our consumer involvement.

Objectives

- To conduct a living systematic review assessing the benefits and harms of interventions to help people stop vaping compared to each other or to placebo or no intervention.
- To also assess how these interventions affect the use of combustible tobacco, and whether the effects vary based on participant characteristics.

METHODS

Eligibility criteria

Participants: people using any kind of nicotine vape at baseline

Interventions: Any intervention designed to support people who vaped to stop vaping, which could include but was not limited to behavioral interventions, pharmacological interventions, changes in characteristics of vapes, and/or any combination of the above interventions.

Comparators: Any of the above interventions, or control/placebo conditions

Outcomes: Studies had to measure one of our primary or secondary (critical or important) outcomes in order to be included

Study type: Randomized controlled trials or randomized crossover trials

Critical (primary) outcomes

Vaping cessation at the longest follow-up point, at least six months from the start of the intervention, measured on an intention-to-treat (ITT; including all participants in their originally assigned groups) basis using the strictest definition of abstinence, preferring biochemically validated results (self-reported outcomes confirmed using biological tests) where reported.

Change in combustible tobacco use (smoking) between baseline and the longest follow-up point, at least six months from the start of the intervention. Combustible tobacco use includes tobacco cigarettes, loose roll-your-own, cigars, cigarillos, and pipe tobacco. Dependent on smoking status at baseline, this could be continued smoking, uptake of smoking, or smoking cessation. We measured these as defined by the study authors, using the strictest definition if multiple measures were reported.

Number of participants reporting **serious adverse events (SAEs)** at one week or longer (as defined by the study authors). If SAEs were reported at more than one time point, we used the measure at longest follow-up.

Important (secondary) outcomes

- Vaping cessation at the longest follow-up point, at three or more but less than six months from the start of the intervention
- Change in combustible tobacco use between baseline and the longest follow-up point, three or more but less than six months from the start of the intervention
- Number of participants reporting adverse events (AEs) at one week or longer, at the longest follow-up point reported.
- Number of people vaping a substance other than nicotine at longest follow-up, at three months follow-up or longer.
- Changes in weight between baseline and longest follow-up point.
- Changes in alcohol use between baseline and longest follow-up point.
- Changes in the following measures at longest follow-up (one week or longer): carbon monoxide; blood pressure; heart rate; blood oxygen saturation; lung function; cotinine; known toxins/carcinogens

Searches

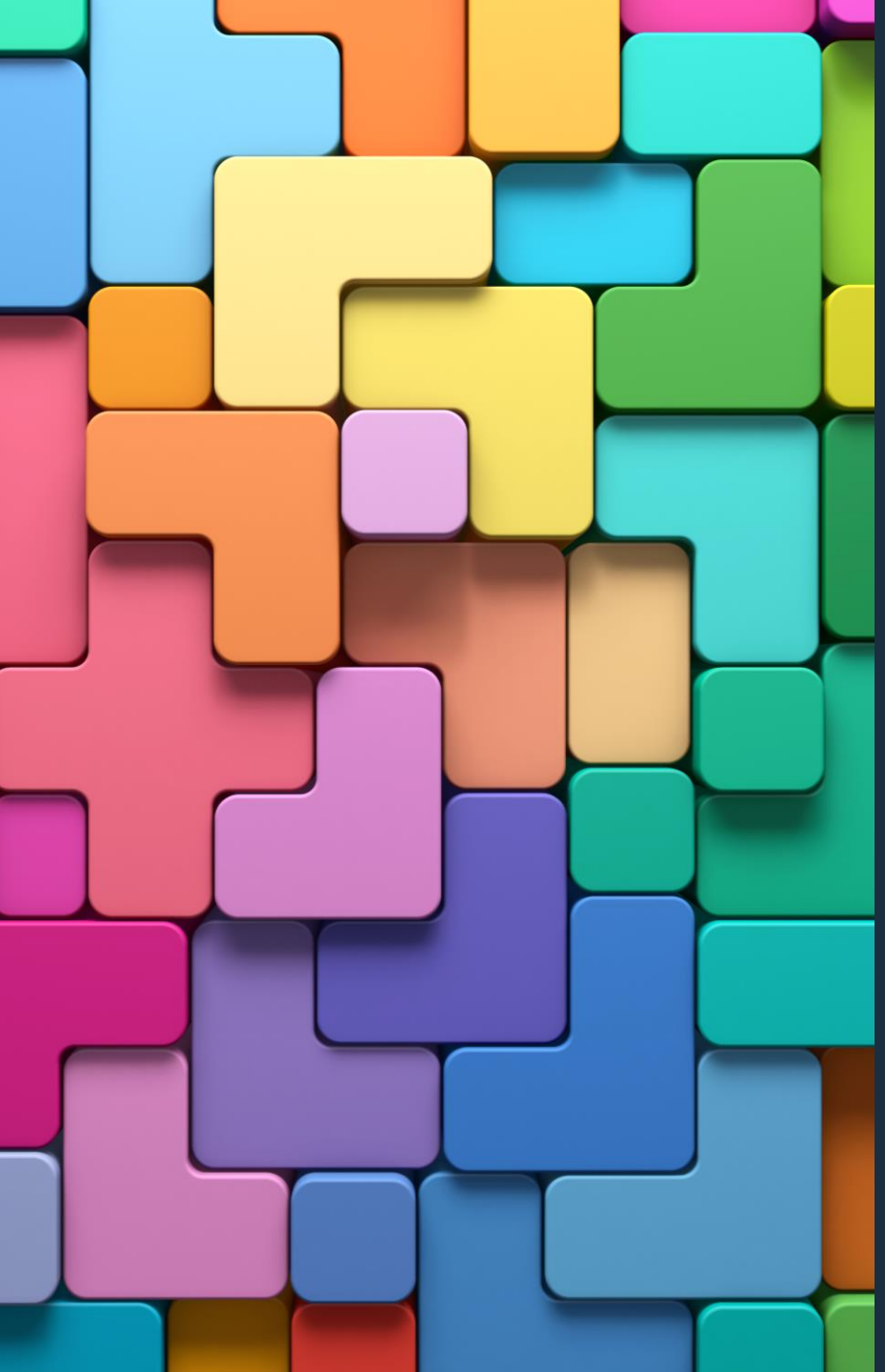
We searched the following databases from 1 January 2004 to 24 April 2024: CENTRAL; MEDLINE; Embase; PsycINFO; ClinicalTrials.gov (through CENTRAL); World Health Organization International Clinical Trials Registry Platform (through CENTRAL). We also searched the references of eligible studies and abstracts from the Society for Research on Nicotine and Tobacco 2024 conference, and contacted study authors.

Screening, data extraction, and risk of bias assessment

All done following standard Cochrane methods, namely:

- Screened independently by two reviewers with discrepancies resolved by discussion or referral to a third reviewer, using Covidence software
- Data extracted using piloted, pre-specified form, again independently by two reviewers with discrepancies resolved by discussion or referral to a third reviewer, in Covidence
- Risk of bias assessment using Cochrane risk of bias tool v1 for randomized controlled trials, applying standard considerations for Cochrane tobacco addiction reviews (Hartmann-Boyce & Lindson)

Hartmann-Boyce J, Lindson N. Assessing and minimizing risk of bias in randomized controlled trials of tobacco cessation interventions. *Addiction*. 2023;118(9):1811-1816. doi:10.1111/add.16220



Synthesis methods

- We grouped studies by comparisons and outcomes reported, and calculated individual study and pooled effects, as appropriate. We used random-effects Mantel-Haenszel methods to calculate risk ratios (RR) with 95% confidence intervals (CI) for dichotomous outcomes. We used random-effects inverse variance methods to calculate mean differences and 95% CI for continuous outcomes.
- We used I^2 to assess statistical heterogeneity.
- We subgrouped studies by age group.
- We used sensitivity analyses to test robustness of our results to exclusion of studies at high risk of bias.
- We assessed the certainty of the evidence for our critical outcomes using the GRADE approach.

GRADE Working Group grades of evidence

- High certainty: we are very confident that the true effect lies close to that of the estimate of effect.
- Moderate certainty: we are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
- Low certainty: our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.
- Very low certainty: we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of the effect.

PAUSE FOR QUESTIONS

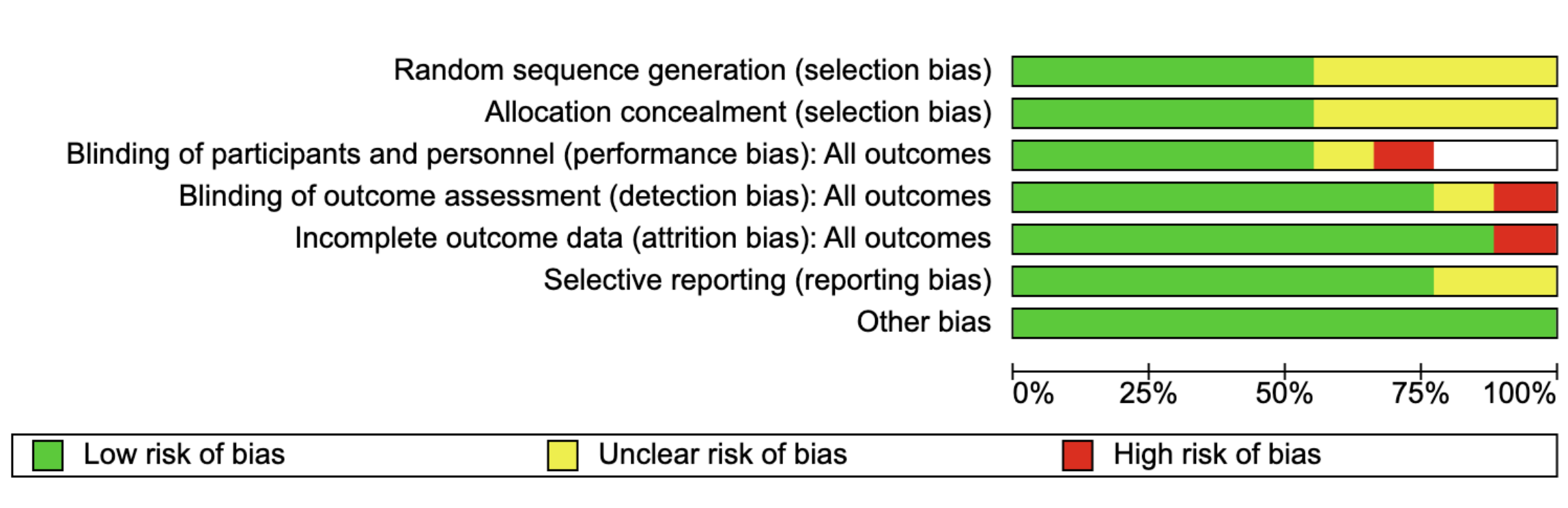
RESULTS

(CURRENT PUBLISHED VERSION, FOCUSING ON CRITICAL OUTCOMES)

Included studies

- 9 RCTs
- 5209 participants motivated to stop using nicotine vapes
- In six studies, participants were abstinent from tobacco smoking at baseline, although most studies included some participants who had previously smoked
- 8 studies included participants aged 18 or older, 3 included only young adults (18-24), and one included 13-17 year olds

Risk of bias



Overall, we judged three studies at low risk, three at high risk, and three at unclear risk of bias.

FINDINGS: PHARMACOTHERAPIES

Combination NRT compared to control for nicotine vaping cessation

Patient or population: nicotine vaping cessation
Setting: Any (USA)
Intervention: combination NRT
Comparison: control

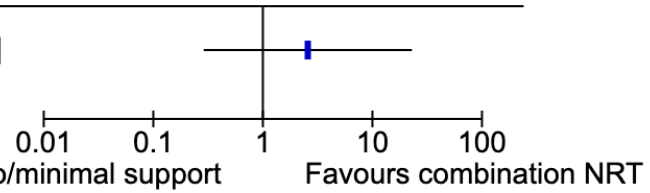
[a] Downgraded two levels due to risk of bias: only study contributing to comparison and outcome was judged to be at high risk of bias.
[b] Downgraded two levels due to imprecision: extremely low number of events across arms (n = 3) and 95% CI incorporates the potential for benefit, harm, and no effect of the intervention.
[c] Downgraded two levels due to imprecision: no events recorded across study arms.

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	№ of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with control	Risk with combination NRT				
Vaping cessation at 6 months or longer follow-up: 6 months	11 per 100	**29 per 100** (3 to 100)	**RR 2.57** (0.29 to 22.93)	16 (1 RCT)	⊕⊖⊖⊖ Very low[a,b]	
Change in combustible tobacco use at 6 months or longer - not reported	-	-	-	-	-	No studies reported this outcome.
Number of participants reporting SAEs follow-up: 3 months	Not pooled	Not pooled	Not pooled	508 (1 RCT)	⊕⊕⊖⊖ Low[c]	We did not calculate relative or absolute effects as there were no events across study arms.

***The risk in the intervention group** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

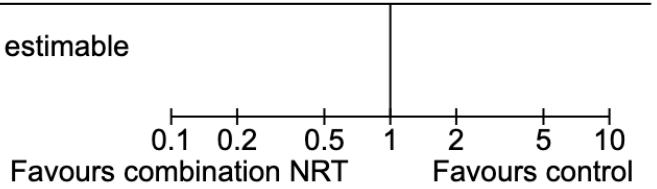
Analysis 1.1: Vaping cessation at 6 months or longer

Study or Subgroup	Combination NRT Events	Total	No/minimal support Events	Total	Risk Ratio M-H, Random, 95% CI
Sahr 2021	2	7	1	9	2.57 [0.29 , 22.93]



Analysis 1.2: Number of participants reporting SAEs

Study or Subgroup	Combination NRT Events	Total	Control Events	Total	Risk Ratio M-H, Random, 95% CI
Klein 2024	0	248	0	260	Not estimable



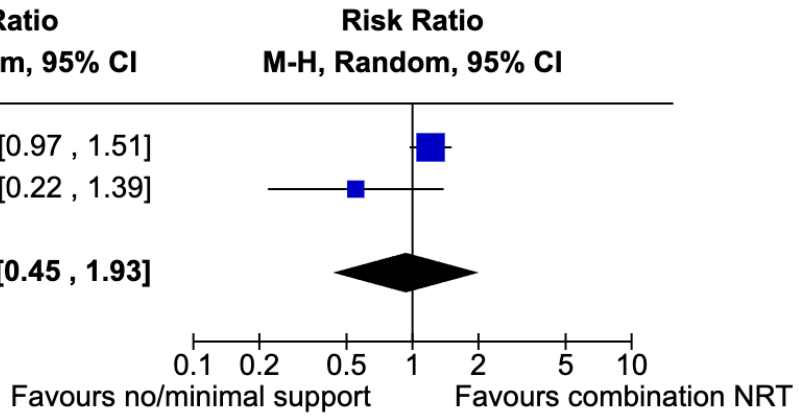
Analysis 1.3: Vaping cessation at between 3 & 6 months

Study or Subgroup	Combination NRT Events	Total	Control Events	Total	Weight	Risk Ratio M-H, Random, 95% CI
Klein 2024	105	248	91	260	66.9%	1.21 [0.97 , 1.51]
Sahr 2021	3	7	7	9	33.1%	0.55 [0.22 , 1.39]
Total		**255**		**269**	**100.0%**	**0.93 [0.45 , 1.93]**
Total events:	108		98			

Test for overall effect: Z = 0.19 (P = 0.85)

Test for subgroup differences: Not applicable

Heterogeneity: Tau² = 0.19; Chi² = 2.64, df = 1 (P = 0.10); I² = 62%



Cytisine compared to placebo for nicotine vaping cessation

Patient or population: nicotine vaping cessation
Setting: Any (USA)
Intervention: cytisine
Comparison: placebo

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	№ of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with placebo	Risk with cytisine				
Vaping cessation at 6 months or longer - not reported	-	-	-	-	-	No studies reported this outcome.
Change in combustible tobacco use at 6 months or longer - not reported	-	-	-	-	-	No studies reported this outcome.
Number of participants reporting SAEs follow-up: 4 months	Not pooled	Not pooled	Not pooled	159 (1 RCT)	⊕⊕⊖⊖ Low[a]	We did not calculate relative or absolute effects as there were no events across study arms.

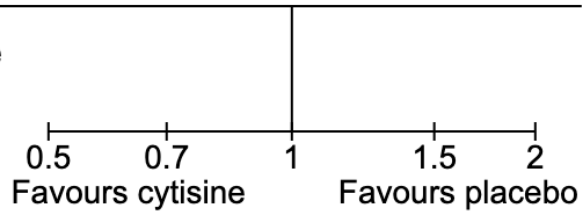
***The risk in the intervention group** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

CI: confidence interval

[a] Downgraded two levels due to imprecision. No events were reported across study arms.

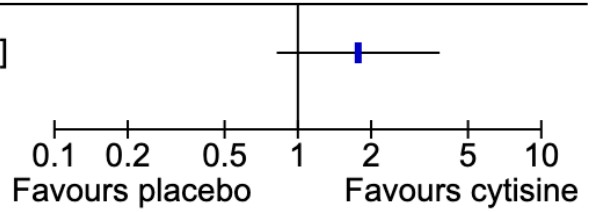
Analysis 2.1: Number of participants reporting SAEs

Study or Subgroup	Cytisine Events	Cytisine Total	Placebo Events	Placebo Total	Risk Ratio M-H, Random, 95% CI
Rigotti 2024	0	106	0	53	Not estimable



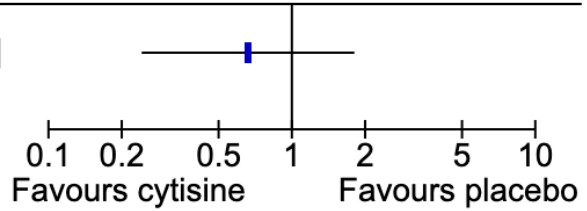
Analysis 2.2: Vaping cessation at between 3 & 6 months

Study or Subgroup	Cytisine Events	Cytisine Total	Placebo Events	Placebo Total	Risk Ratio M-H, Random, 95% CI
Rigotti 2024	25	107	7	53	1.77 [0.82 , 3.82]



Analysis 2.3: Change in combustible tobacco product use (tobacco cigarette use) at between 3 & 6 months

Study or Subgroup	Cytisine Events	Cytisine Total	Placebo Events	Placebo Total	Risk Ratio M-H, Random, 95% CI
Rigotti 2024	8	107	6	53	0.66 [0.24 , 1.81]



Varenicline compared to control for nicotine vaping cessation

Patient or population: nicotine vaping cessation
Setting: any (Italy and USA)
Intervention: varenicline
Comparison: control

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	№ of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with control	Risk with varenicline				
Vaping cessation at 6 months or longer follow-up: 6 months	24 per 100	**49 per 100** (26 to 89)	**RR 2.00** (1.09 to 3.68)	140 (1 RCT)	⊕⊕⊖⊖ Low[a]	
Change in combustible tobacco use at 6 months or longer - not reported	-	-	-	-	-	No studies reported this outcome.
Number of participants reporting SAEs follow-up: range 3 months to 6 months	Absolute effects: n/a (the one study contributing to this comparison that reported events did not report events in the control arm, so an accurate absolute risk for the treatment group could not be calculated) RR 2.60 (95% CI 0.11 to 62.16)			130 (3 RCTs)	⊕⊕⊖⊖ Low[b]	Two of the three studies in this comparison reporting SAEs reported zero events in both arms and so only one study with 95 participants contributes to the effect estimate.

***The risk in the intervention group** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

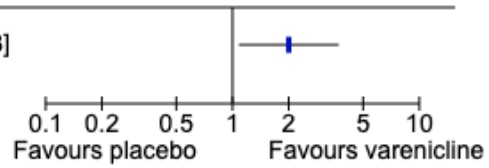
CI: confidence interval; **RR:** risk ratio

[a] Downgraded two levels due to imprecision: small number of events (n = 36) reported across study arms.

[b] Downgraded two levels due to imprecision: very few events and 95% CI incorporates the potential for benefit, harm, and no effect of the intervention.

Analysis 3.1: Vaping cessation at 6 months or longer

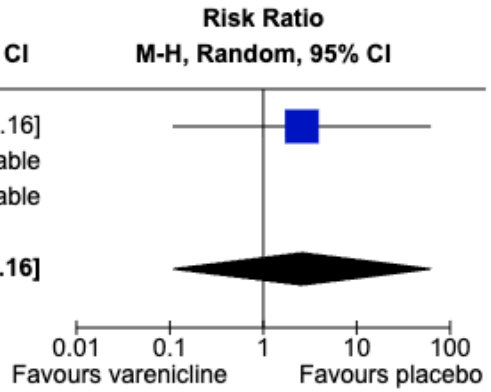
Study or Subgroup	Varenicline Events	Varenicline Total	Placebo Events	Placebo Total	Risk Ratio M-H, Random, 95% CI
Caponnetto 2023	24	70	12	70	2.00 [1.09 , 3.68]



Analysis 3.2: Number of participants reporting SAEs

Study or Subgroup	Varenicline Events	Varenicline Total	Control Events	Control Total	Weight	Risk Ratio M-H, Random, 95% CI
Caponnetto 2023	1	51	0	44	100.0%	2.60 [0.11 , 62.16]
Fucito 2024	0	18	0	15		Not estimable
NCT04602494	0	1	0	1		Not estimable
Total		**70**		**60**	**100.0%**	**2.60 [0.11 , 62.16]**
Total events:	1		0			

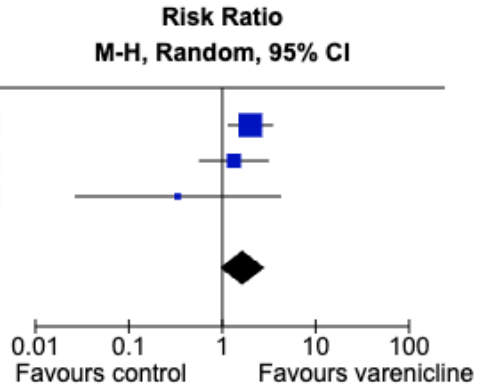
Test for overall effect: Z = 0.59 (P = 0.56)
Test for subgroup differences: Not applicable
Heterogeneity: Not applicable



Analysis 3.3: Vaping cessation at between 3 & 6 months

Study or Subgroup	Varenicline Events	Varenicline Total	Control Events	Control Total	Weight	Risk Ratio M-H, Random, 95% CI
Caponnetto 2023	28	70	14	70	64.6%	2.00 [1.15 , 3.46]
Fucito 2024	8	20	6	20	31.4%	1.33 [0.57 , 3.14]
NCT04602494	0	1	1	1	4.1%	0.33 [0.03 , 4.19]
Total		**91**		**91**	**100.0%**	**1.64 [0.98 , 2.74]**
Total events:	36		21			

Test for overall effect: Z = 1.88 (P = 0.06)
Test for subgroup differences: Not applicable
Heterogeneity: Tau² = 0.03; Chi² = 2.24, df = 2 (P = 0.33); I² = 11%



FINDINGS: CHANGES TO VAPE CHARACTERISTICS

Nicotine/vaping reduction compared to minimal support for nicotine vaping cessation

Patient or population: nicotine vaping cessation
Setting: university (USA)
Intervention: nicotine/vaping reduction
Comparison: minimal support

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	№ of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with minimal support	Risk with nicotine/vaping reduction				
Vaping cessation at 6 months or longer follow-up: 6 months	11 per 100	**38 per 100** (5 to 100)	**RR 3.38** (0.43 to 26.30)	17 (1 RCT)	⊕⊖⊖⊖ Very low[a,b]	
Change in combustible tobacco use at 6 months or longer - not reported	-	-	-	-	-	No studies reported this outcome.
Number of participants reporting SAEs - not reported	-	-	-	-	-	No studies reported this outcome.

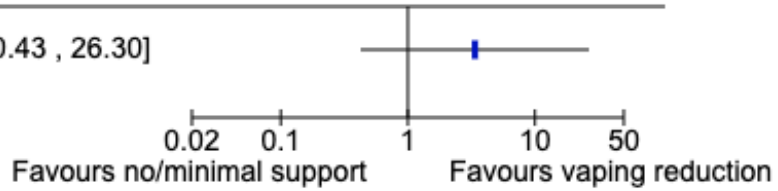
***The risk in the intervention group** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

CI: confidence interval; **RR:** risk ratio

[a] Downgraded two levels due to risk of bias: the only study contributing to the comparison and outcome was judged to be at high risk of bias.
[b] Downgraded two levels due to imprecision: extremely low number of events across study arms and 95% CI encompasses the potential for benefit, harm, and no effect of the intervention.

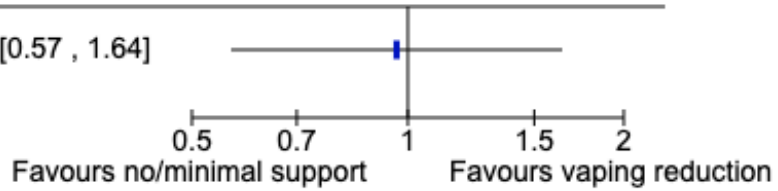
Analysis 4.1: Vaping cessation at 6 months or longer

Study or Subgroup	Reduction in nicotine concentration and vape frequency Events	Total	No/minimal support Events	Total	Risk Ratio M-H, Random, 95% CI
Sahr 2021	3	8	1	9	3.38 [0.43 , 26.30]



Analysis 4.2: Vaping cessation at between 3 & 6 months

Study or Subgroup	Reduction in nicotine concentration and vape frequency Events	Total	No/minimal support Events	Total	Risk Ratio M-H, Random, 95% CI
Sahr 2021	6	8	7	9	0.96 [0.57 , 1.64]



FINDINGS: BEHAVIORAL INTERVENTIONS

Text message-based interventions compared to no/minimal support for nicotine vaping cessation in young people (13 to 24 years)

Patient or population: nicotine vaping cessation in young people (13 to 24 years)
Setting: any (USA)
Intervention: text message-based interventions
Comparison: no/minimal support

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	№ of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with no/minimal support	Risk with text message-based interventions				
Vaping cessation at 6 months or longer follow-up: 7 months	22 per 100	**29 per 100** (26 to 32)	**RR 1.32** (1.19 to 1.47)	4091 (2 RCTs)	⊕⊕⊖⊖ Low[a,b]	
Change in combustible tobacco use at 6 months or longer - not reported	-	-	-	-	-	No studies reported this outcome.
Number of participants reporting SAEs follow-up: 3 months	Not pooled	Not pooled	Not pooled	508 (1 RCT)	⊕⊕⊖⊖ Low[c]	We did not calculate relative or absolute effects as there were no events across study arms.

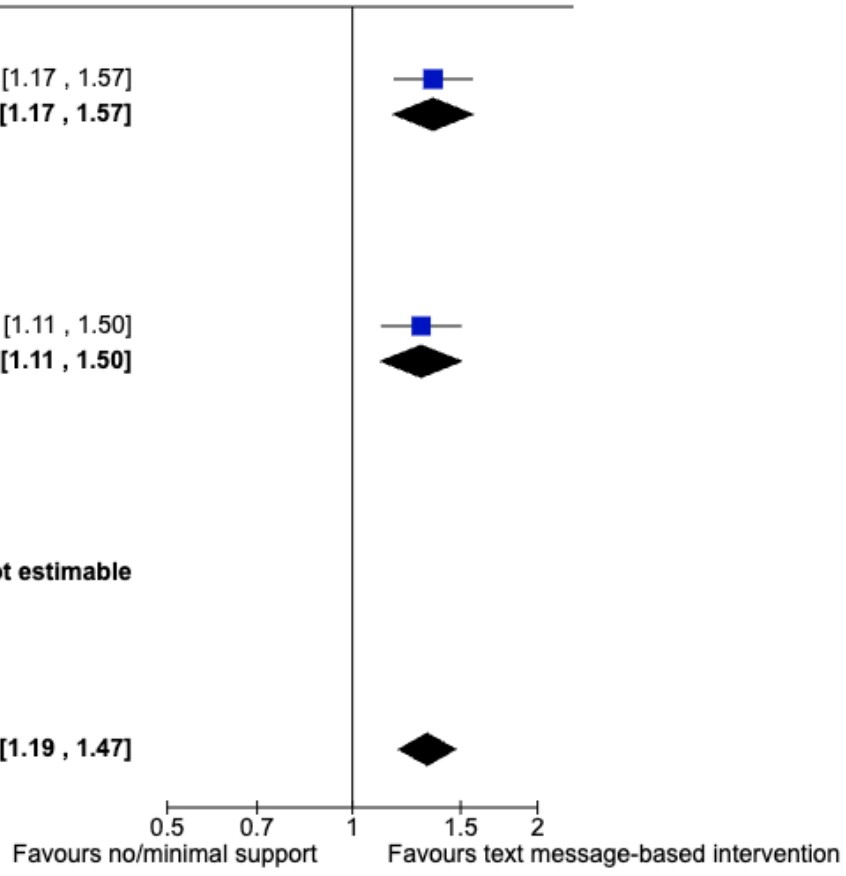
[a] Not downgraded due to risk of bias; one of the two studies was unpublished at the time of writing and was judged to be at unclear risk of bias due to insufficient data with which to judge some domains. The other study was judged at low risk across all domains assessed, and there was no evidence of a difference between study results.

[b] Downgraded two levels due to indirectness: the two contributing studies tested the same intervention in a relatively homogenous population. Unclear if the effects can be generalised to other text message-based interventions and other populations

[c] Downgraded two levels due to imprecision. No events were recorded across study arms.

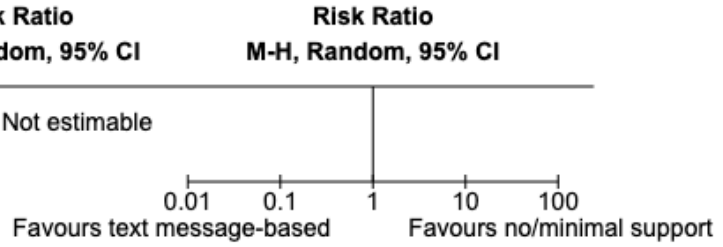
Analysis 5.1: Vaping cessation at 6 months or longer (subgrouped by age)

Study or Subgroup	Text message-based intervention Events	Total	No/minimal support Events	Total	Weight	Risk Ratio M-H, Random, 95% CI
5.1.1 Under 18 years						
NCT04919590	287	759	208	744	50.8%	1.35 [1.17 , 1.57]
Subtotal		**759**		**744**	**50.8%**	**1.35 [1.17 , 1.57]**
Total events:	287		208			
Test for overall effect: Z = 4.02 (P < 0.0001)						
Heterogeneity: Not applicable						
5.1.2 Both under and over 18 years						
Graham 2021	314	1304	239	1284	49.2%	1.29 [1.11 , 1.50]
Subtotal		**1304**		**1284**	**49.2%**	**1.29 [1.11 , 1.50]**
Total events:	314		239			
Test for overall effect: Z = 3.37 (P = 0.0007)						
Heterogeneity: Not applicable						
5.1.3 18 years and over						
Subtotal		**0**		**0**		**Not estimable**
Total events:	0		0			
Test for overall effect: Not applicable						
Heterogeneity: Not applicable						
Total		**2063**		**2028**	**100.0%**	**1.32 [1.19 , 1.47]**
Total events:	601		447			
Test for overall effect: Z = 5.24 (P < 0.00001)						
Test for subgroup differences: Chi² = 0.17, df = 1 (P = 0.68), I² = 0%						
Heterogeneity: Tau² = 0.00; Chi² = 0.17, df = 1 (P = 0.68); I² = 0%						



Analysis 5.2: Number of participants reporting SAEs

Study or Subgroup	Text message intervention Events	Total	Control Events	Total	Risk Ratio M-H, Random, 95% CI
Klein 2024	0	248	0	260	Not estimable



CONCLUSIONS

(CURRENT PUBLISHED VERSION)

Implications for practice

- There is low-certainty evidence (downgraded two levels due to indirectness) that a text message-based intervention may increase nicotine vaping quit rates in youth and young adults (13 to 24 years old), in comparison to no or minimal support, seven months after intervention start.
- There is low-certainty evidence (limited by imprecision) that varenicline may increase nicotine vaping quit rates versus placebo; however, further data may change this conclusion.
- Risk of bias and imprecision preclude conclusions regarding the effects of combination nicotine replacement therapy (NRT), cytisine, and a nicotine concentration and vaping behaviour reduction programme on nicotine vaping quit rates.
- There is very limited evidence looking at serious unintended consequences of pharmacotherapies or behavioural interventions for quitting nicotine vaping, making it difficult to draw conclusions on potential harms. Where these were measured, rates of SAEs were extremely low across arms. The pharmacological interventions tested (combination NRT, cytisine, and varenicline) are licensed for the purposes of quitting smoking globally and considered safe for that indication.
- There is very limited evidence on the effectiveness and potential harms of interventions combining behavioural support and pharmacotherapies for vaping cessation and comparing relevant interventions head-to-head.
- None of the included studies reported whether nicotine vaping cessation interventions had an effect on the number of people smoking combustible tobacco cigarettes at six months or longer, and results of the one study measuring this at four months were inconclusive.

Implications for research

- Further randomised controlled trials (RCTs) are needed investigating interventions to help people to stop vaping, with a follow-up period of at least six months and as long as is feasible. The interventions tested so far reflect interventions that have been found to be effective for tobacco smoking cessation. Further studies should continue to investigate these approaches and potential others, including financial incentives and counselling, which are also deemed effective for smoking cessation. It would also be helpful if studies were conducted with a comparator arm where vaping cessation was not encouraged (i.e. no treatment provided) in order to assess the effect of providing vaping cessation interventions on people's tobacco smoking rates. As well as measuring rates of vaping cessation, studies should measure unintended harms of the interventions, including serious adverse events and the impact of the interventions on rates of combustible tobacco smoking.
- RCTs should ensure they are adequately powered and have processes in place to counteract risks associated with blinding and attrition (for example, using placebo as a comparator where appropriate, balancing face-to-face contact between study arms, biochemically validating vaping and smoking status, and optimising follow-up contact procedures).
- It is possible that the effects of interventions may differ based on the dependence levels of intervention users, which could differ according to nicotine vaping and/or tobacco smoking history and frequency of vaping. Investigators should consider the range of people to whom vaping cessation interventions are relevant, based on both tobacco smoking and vaping history, and clearly specify the baseline characteristics of participants in terms of both of these characteristics. We found low-certainty evidence that varenicline and a text message-based intervention may help more people quit nicotine vaping than no or minimal support. In the latter case, further research is needed to see if these findings are relevant to older adults (as well as young people), and if they extend to other text message-based interventions.

UPDATE UNDERWAY

Findings are preliminary, subject to change, and not for wider distribution

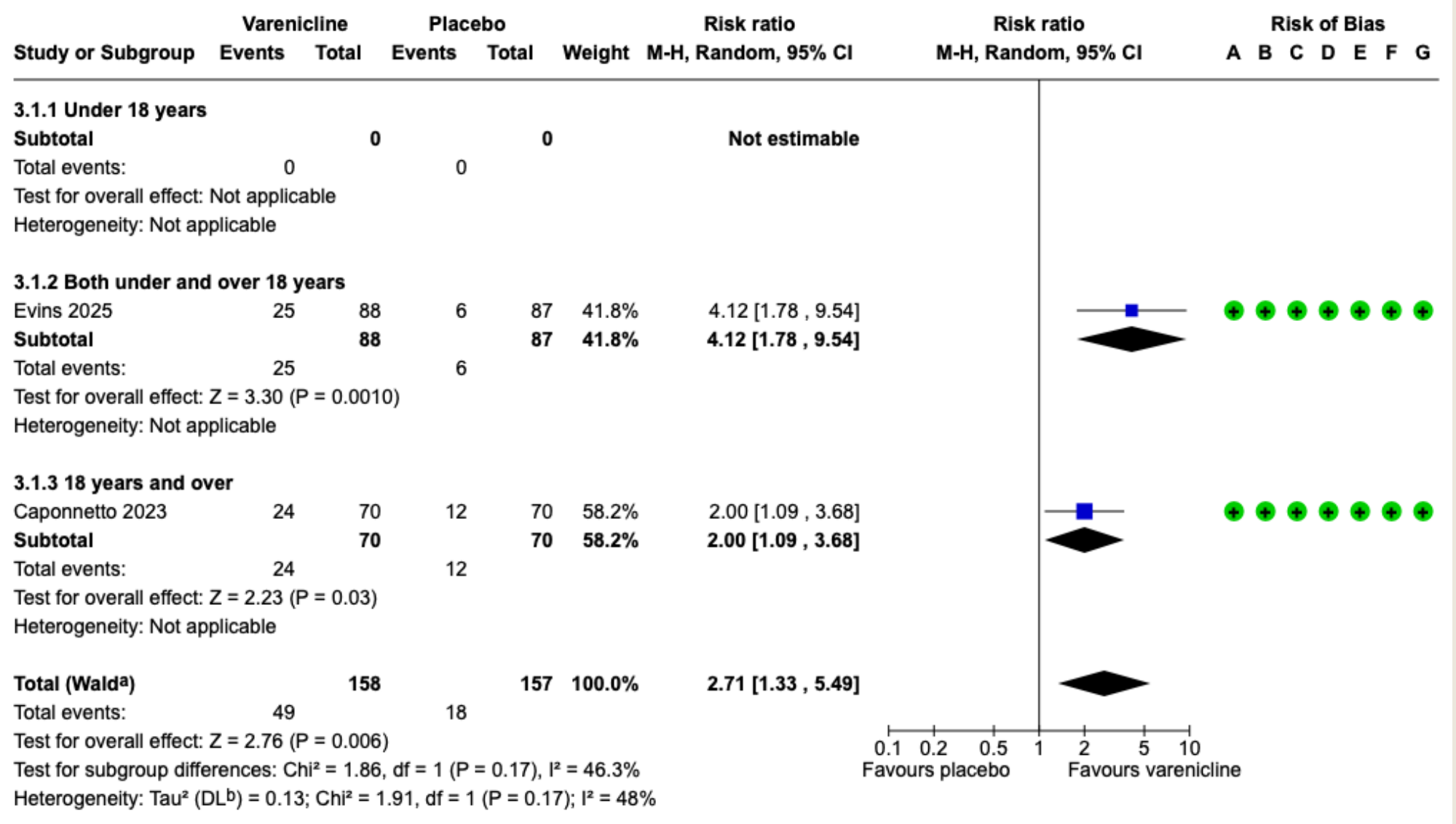
Searches & new studies

- Incorporates data to May 2025
- Includes an additional 6 studies (bringing the total number of included studies to 15)
- Includes new comparisons involving media literacy interventions, app based/e-learning interventions, financial incentives, and head-to-head comparisons by NRT dose
- Also contributes more data to existing comparisons, including varenicline versus placebo (notably a new study by Evins et al which strengthens evidence of benefit)
- 19 ongoing studies identified

Evins AE, Cather C, Reeder HT, et al. Varenicline for Youth Nicotine Vaping Cessation: A Randomized Clinical Trial. *JAMA*. 2025;333(21):1876–1886. doi:10.1001/jama.2025.3810

!Preliminary!

Varenicline v placebo, vaping cessation at 6+ months



Study or Subgroup	Varenicline Events	Varenicline Total	Placebo Events	Placebo Total	Weight	Risk ratio M-H, Random, 95% CI
3.1.1 Under 18 years						
Subtotal		**0**		**0**		**Not estimable**
Total events:	0		0			
Test for overall effect: Not applicable						
Heterogeneity: Not applicable						
3.1.2 Both under and over 18 years						
Evins 2025	25	88	6	87	41.8%	4.12 [1.78 , 9.54]
Subtotal		**88**		**87**	**41.8%**	**4.12 [1.78 , 9.54]**
Total events:	25		6			
Test for overall effect: Z = 3.30 (P = 0.0010)						
Heterogeneity: Not applicable						
3.1.3 18 years and over						
Caponnetto 2023	24	70	12	70	58.2%	2.00 [1.09 , 3.68]
Subtotal		**70**		**70**	**58.2%**	**2.00 [1.09 , 3.68]**
Total events:	24		12			
Test for overall effect: Z = 2.23 (P = 0.03)						
Heterogeneity: Not applicable						
Total (Wald[a])		**158**		**157**	**100.0%**	**2.71 [1.33 , 5.49]**
Total events:	49		18			
Test for overall effect: Z = 2.76 (P = 0.006)						
Test for subgroup differences: Chi² = 1.86, df = 1 (P = 0.17), I² = 46.3%						
Heterogeneity: Tau² (DL[b]) = 0.13; Chi² = 1.91, df = 1 (P = 0.17); I² = 48%						

Risk ratio M-H, Random, 95% CI

Risk of Bias A B C D E F G

0.1 0.2 0.5 1 2 5 10

Favours placebo Favours varenicline

THANK YOU, HAPPY TO TAKE QUESTIONS!

For more information:
Email me at jhartmannboy@umass.edu
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