Interventions for quitting vaping

Findings from January 2025 Cochrane review

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 minimising the risk of tobacco smoking and other unintended consequences.

This briefing document brings you the most up-to-date information from our Cochrane review on the potential benefits and harms of interventions to help people who vape to achieve long-term vaping abstinence. This review is funded by Cancer Research UK

Key findings

- Text message-based interventions may help young people to stop vaping when compared to no or minimal support; however, more evidence is needed.
- Varenicline may help people to stop vaping when compared to no or minimal support; however, more evidence is needed.
- We don't know whether other interventions can help people to stop vaping for six months or more.
- We need more information on potential harms of interventions and whether they cause people to return to, or take up, smoking tobacco

About Cochrane reviews

Cochrane reviews bring together the best available evidence from research and systematically review this information to determine the benefits and risks of treatments. Cochrane is a non-profit organisation. Cochrane Reviews are internationally recognized as the highest standard in evidence-based reviews.

Why this topic is important?

Nicotine vapes expose users to less of the substances that cause disease that are present in tobacco cigarettes. However, vaping is likely to cause more harm than not vaping. Some people vape nicotine to help them quit smoking; however, some people who vape nicotine have never smoked. People may want to stop using vapes containing nicotine, but find it difficult due to nicotine's addictive properties.

Which interventions could help people stop vaping?

Medicines including nicotine replacement therapy (gums, patches, etc.), varenicline, bupropion, and cytisine are already used to help people stop smoking and could be used for stopping vaping. Behavioural interventions could include counselling, text messaging, online support, print-based information and programmes that change vaping behaviour or vape characteristics.

How many studies did we find?

This Cochrane systematic review included 9 studies, representing 5209 participants. In order to keep the information as up-to-date as possible we will search monthly for new evidence - a living systematic review. The January 2025 review includes search findings up to 24th April 2024.

Unanswered questions & future research

More randomized controlled trials are needed with long-term follow up. As data continue to emerge we will update our analyses to ensure decision-makers have the best available evidence to hand when considering how to advise people to stop using vapes

JUNE 2025 SEARCH UPDATE... Our search carried out on 1st June 2025 identified 2 new studies & 2 linked studies. Between March 2025 and May 2025 searches identified 1 new study, 9 new ongoing studies & 4 papers linked to studies included in the review. Our catch-up search carried out on 1st February 2025 identified 7 new ongoing studies & 4 papers linked to studies already included in the review or picked up since 2025. The findings from these searches will be incorporated into the next update of our review.

For all references and the most up to date 2025 Cochrane Review follow this link.

For further information please visit our webpage.

The process

Databases were searched for randomized trials recruiting people of any age using nicotine containing vapes, regardless of tobacco smoking status. Studies had to test an intervention designed to support people to quit vaping, and plan to measure at least one of our outcomes. The main outcomes were:

- How many people stopped using nicotine vapes at least 6 months after study start (also measured between 3 & 6 months);
- Change in tobacco smoking at least 6 months after study start (also measured between 3 & 6 months);
- How many people experienced reporting serious adverse events (SAEs) and adverse events (AEs) of treatment, at least one week after treatment started;
- Change in biological markers (e.g. blood pressure; biomarkers of harm)

Summary of findings tables were made for main comparisons and outcomes. We identified nine RCTs.

Funding

Of the nine studies that reported funding information four were funded by the manufacturer or provider of the intervention (Caponnetto 2023; Rigotti 2024; Graham 2021; NCT04919590).

Summary of findings tables

Summary of findings tables were made for main comparisons and outcomes, see following pages.

1. Combination NRT compared to control for nicotine vaping cessation

2. Cytisine compared to placebo for nicotine vaping cessation

3. Varenicline compared to control for nicotine vaping cessation

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

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

GRADE ratings were used to evaluate certainty in the evidence and can be interpreted as follows.

Grade Working Group grades of evidence

High certainty: We are very confident that the true effect lies close to that of the estimate of the 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 effect

GRADE (Grading of Recommendations, Assessment, Development and Evaluations)

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Cochrane IQV review

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1. Summary of Findings: Combination NRT compared to control for nicotine vaping cessation

Combination NRT compared to control for nicotine vaping cessation					
Patient or population: people who use nicotine vapes Setting: USA Intervention: combination NRT Comparison: control					
Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	№ of participants (studies)	Certainty of the evidence (GRADE)
	Risk with control	Risk with combination NRT			
Vaping cessation at 6 months or longer follow up: 6 months	Study population		RR 2.57	16	⨁⊖⊖⊖
	11 per 100	29 per 100 (3 to 100)	(0.29 to 22.93)	(1 RCTs)	Very low[a, b]
Change in combustible tobacco use at 6 months or longer – not reported	Study population			No studies reported this outcome	
Number of participants reporting serious adverse events at follow up: 3 months Assessed via self-report and medical records	Study population		Not pooled**	508	⨁⨁⊖⊖
	Not pooled**	Not pooled**		(1 RCT)	Low[c]

*__The estimated number of events 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).

** It was not possible to calculate relative or absolute effects as no events were reported across study arms.

CI: Confidence interval; **RCT:** randomised controlled trial; **RR:** Risk ratio

[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 incorporate the potential for benefit, harm and no effect of the intervention.**
[c] **Downgraded two levels due to imprecision: no events recorded across study arms**

2. Summary of Findings: Cytisine compared to placebo for nicotine vaping cessation

Cytisine compared to placebo for nicotine vaping cessation					
Patient or population: people who use nicotine vapes Setting: USA Intervention: cytisine Comparison: placebo					
Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	№ of participants (studies)	Certainty of the evidence (GRADE)
	Risk with placebo	Risk with cytisine			
Vaping cessation at 6 months or longer – not reported	Study population			No studies reported this outcome	
	–				
Change in combustible tobacco use at 6 months or longer – not reported	Study population			No studies reported this outcome	
	–				
Number of participants reporting serious adverse events at follow up: 4 months Assessed via self-report and medical records	Study population		Not pooled**	159 (1 RCT)	⨁⨁⨀⨀ Low[a]
	Not pooled**	Not pooled**			

***The estimated number of events 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).

** It was not possible to calculate relative or absolute effects as no events were reported across study arms.

CI: Confidence interval; **RCT:** randomised controlled trial; **RR:** Risk ratio

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

3. Summary of Findings: Varenicline compared to control for nicotine vaping cessation

Varenicline compared to control for nicotine vaping cessation

- Patient or population: people who use nicotine vapes
  Setting: 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)
	Risk with control	Risk with varenicline			
Vaping cessation at 6 months or longer follow up: 6 months	Study population 24 per 100	49 per 100 (26 to 89)	RR 2.00 (1.09 to 3.68)	140 (1 RCTs)	⨁⨁◯◯ LOW[a]
Change in combustible tobacco use at 6 months or longer – not reported	Study population			No studies reported this outcome	
Number of participants reporting serious adverse events at follow up: range 3 months to 6 months Assessed via self-report and medical records	Study population 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]

*__The estimated number of events 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; **RCT:** randomised controlled trial; **RR:** Risk ratio

[a] **Downgraded two levels due to imprecision: small number of events (n=36) reported across study**
[b] **Downgraded two levels due to imprecision: very few events and 95% CI incorporate the potential for benefit, harm and no effect of the intervention**

4. Summary of Findings: Nicotine/vaping reduction compared to minimal support for nicotine vaping cessation

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

- **Patient or population: people who use nicotine vapes**
  Setting: 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)
	Risk with minimal support	Risk with nicotine/vaping reduction			
Vaping cessation at 6 months or longer follow up: 6 months	Study population 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	Study population			No studies reported this outcome	
Number of participants reporting serious adverse events at follow up: range 3 months to 6 months Assessed via self-report and medical records	Study population			No studies reported this outcome	

*__The estimated number of events 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; **RCT:** randomised controlled trial; **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 encompassing the potential for benefit, harm and no effect of the intervention**

5. Summary of Findings: Text message-based interventions compared to no/minimal support for nicotine vaping cessation in young people (13-24 years)

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

- **Patient or population: people who use nicotine vapes**
  Setting: USA
  Intervention: text message-based interventions
  Comparison: control

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	№ of participants (studies)	Certainty of the evidence (GRADE)
	Risk with no/ minimal support	Risk with text message-based interventions			
Vaping cessation at 6 months or longer follow up: 6 months	Study population 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	Study population			No studies reported this outcome	
Number of participants reporting serious adverse events at follow up: range 3 months to 6 months Assessed via self-report and medical records	Study population Not pooled**	Not pooled**	Not pooled**	508 (1 RCT)	⨁⨁◯◯ LOW[c]

***The estimated number of events 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).

** **We did not calculate relative or absolute effects as there were no events across study arms**

CI: Confidence interval; **RCT:** randomised controlled trial; **RR:** Risk ratio

[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.**