

Electronic cigarettes for smoking cessation

Results from the most recent Cochrane update

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I have no conflicts of interest to declare.



Our author team



About Cochrane

WHAT?

- Gathers and combines the best evidence from research to determine the benefits and risks of treatments/interventions

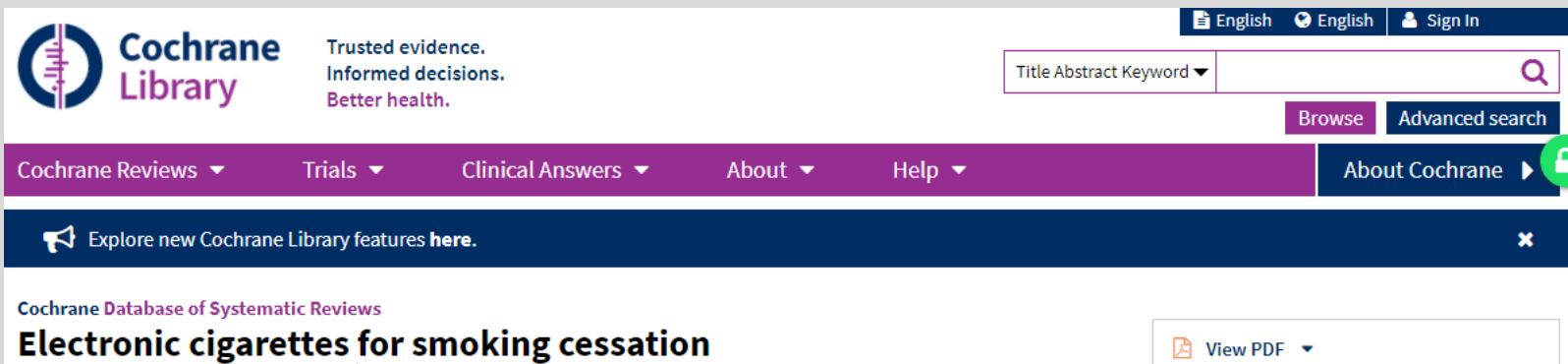
HOW?

- By systematically reviewing the available evidence, with strong emphasis on quality assessment
- Cochrane methods considered gold-standard

WHY?

- To help healthcare providers, patients, carers, researchers, funders, policy makers, guideline developers improve their knowledge and make decisions





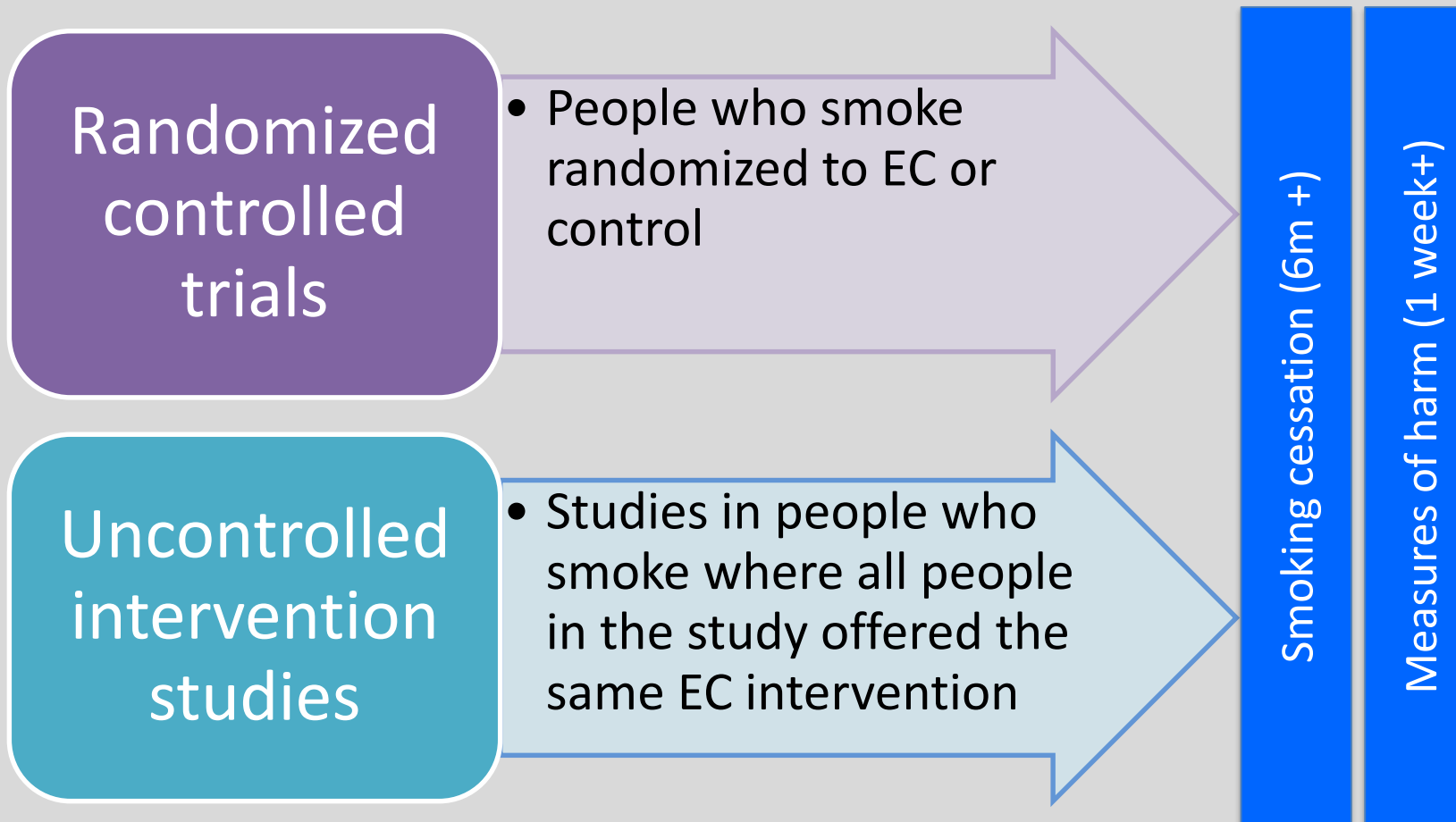
The screenshot shows the Cochrane Library website interface. At the top left is the Cochrane Library logo with the tagline "Trusted evidence. Informed decisions. Better health." To the right is a search bar with the text "Title Abstract Keyword" and a search icon. Below the search bar are buttons for "Browse" and "Advanced search". A navigation menu includes "Cochrane Reviews", "Trials", "Clinical Answers", "About", and "Help". A "Sign In" button is in the top right. A banner below the navigation menu says "Explore new Cochrane Library features here." The main content area displays the title "Electronic cigarettes for smoking cessation" and a "View PDF" button.



Objective:
Evaluate the safety and effect of using
EC to help people who smoke achieve
long-term smoking abstinence



Inclusion criteria



Primary comparisons

- Nicotine e-cigarette versus NRT
- Nicotine e-cigarette versus behavioural support only/no-support
- Nicotine e-cigarette versus non-nicotine e-cigarette

Outcomes

Cessation*

- 6 months+
- Intention to treat
- Strictest definition of abstinence
- Biochemically verified where available
- (as per standard Cochrane methods)

Adverse events (AE)*

- One week or longer of EC use
- Defined as any undesirable experience associated with the use of a medical product in a patient

Serious adverse events (SAE)*

- One week or longer of EC use
- Any AE where the patient outcome is death; life-threatening; hospitalization; disability; birth defect; or requires intervention to prevent any of the above

Changes in relevant biomarkers

- One week or longer of EC use
- Known carcinogens and toxicants
- Exhaled carbon monoxide
- Airway and lung function
- Blood oxygen levels

*primary outcome

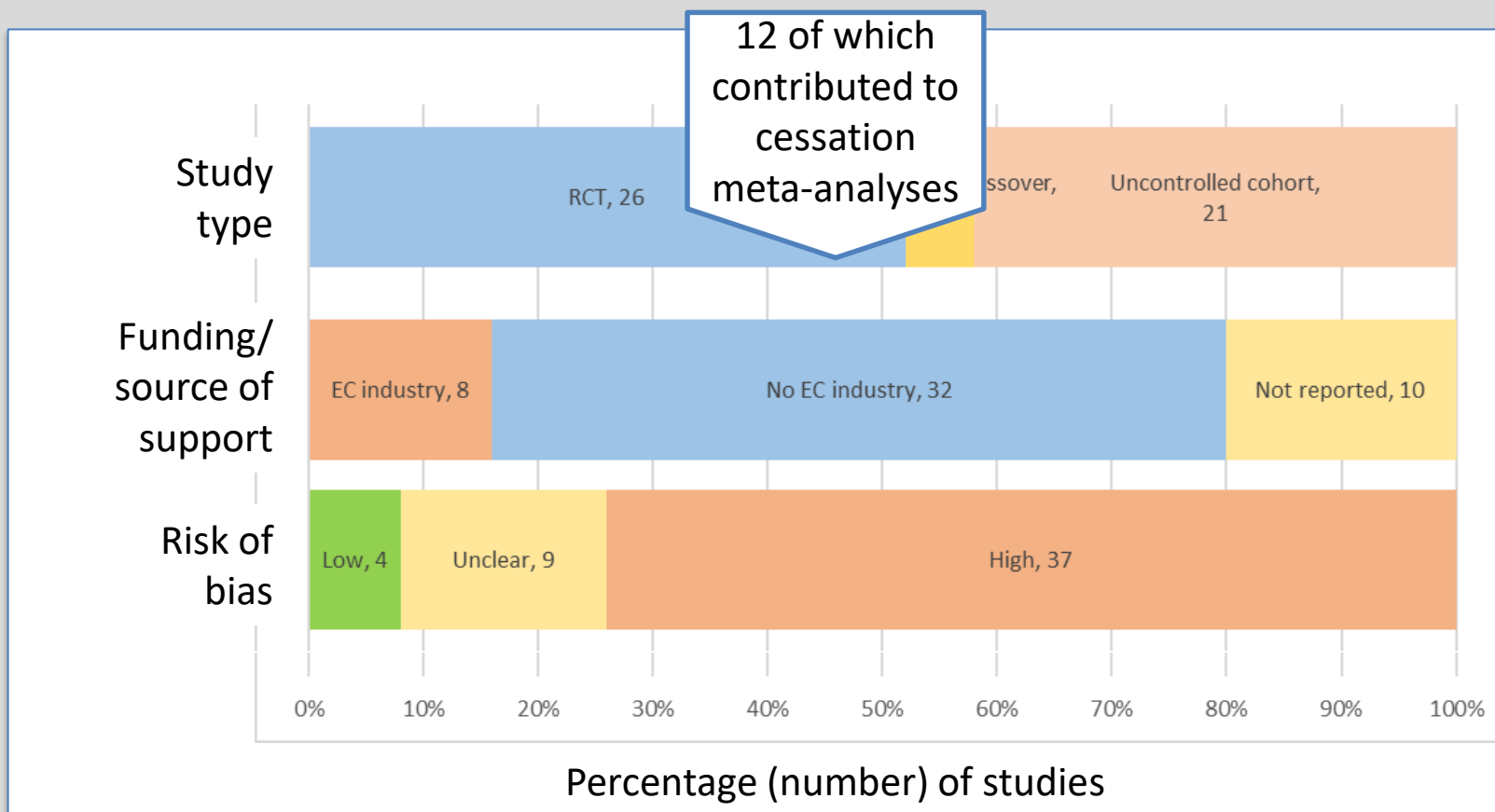
Searches



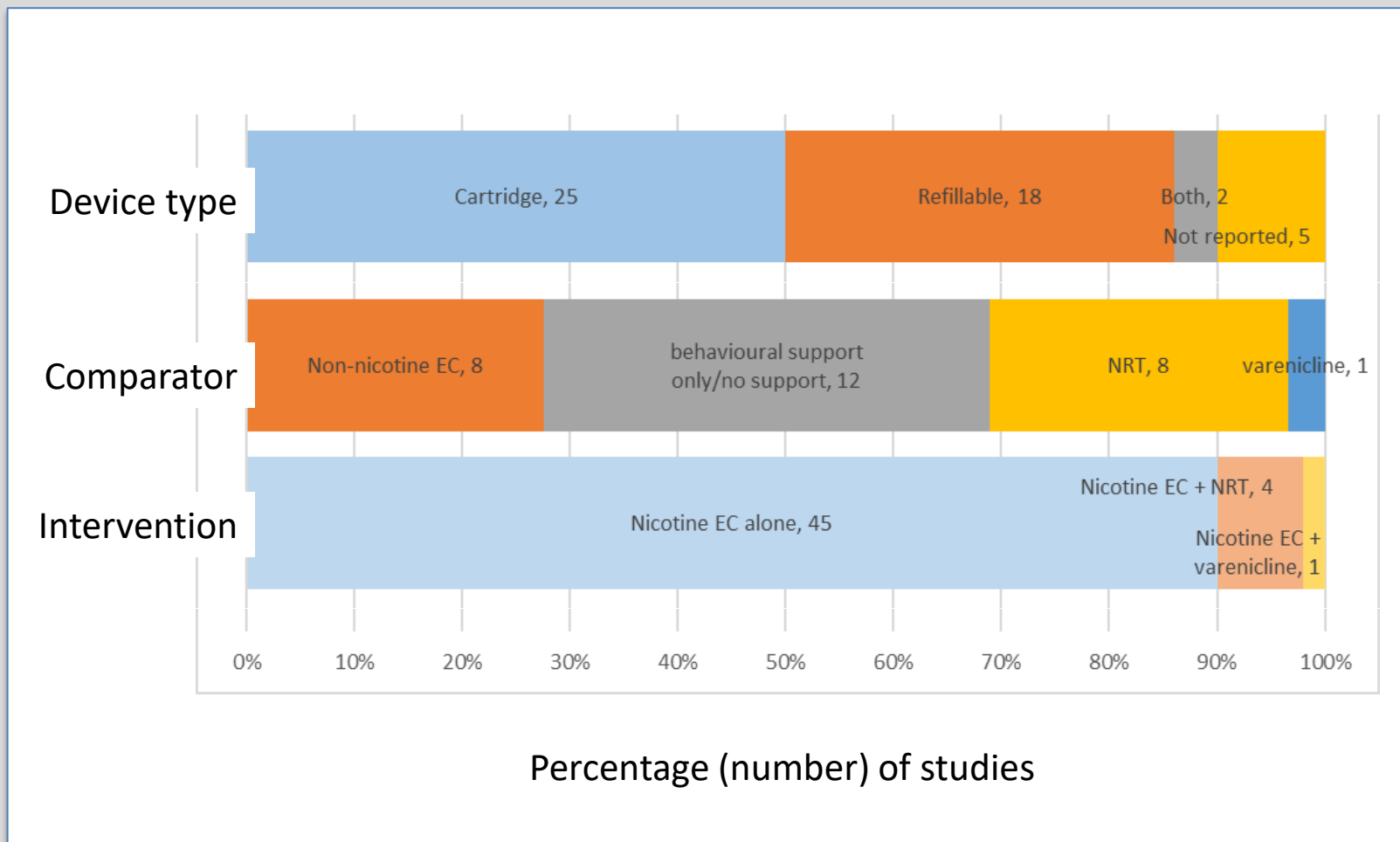
- 7 electronic databases searched to Jan 2020
- Researchers contacted
- Trial registries & conference abstracts for ongoing studies

Included studies

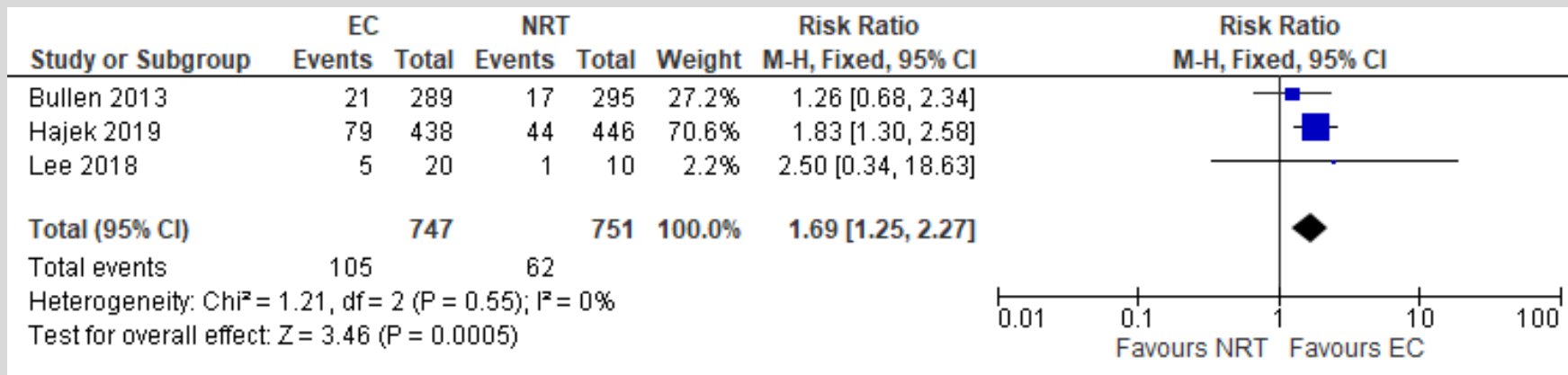
50 included studies (35 new); 12,430 participants



Included studies (cont.)

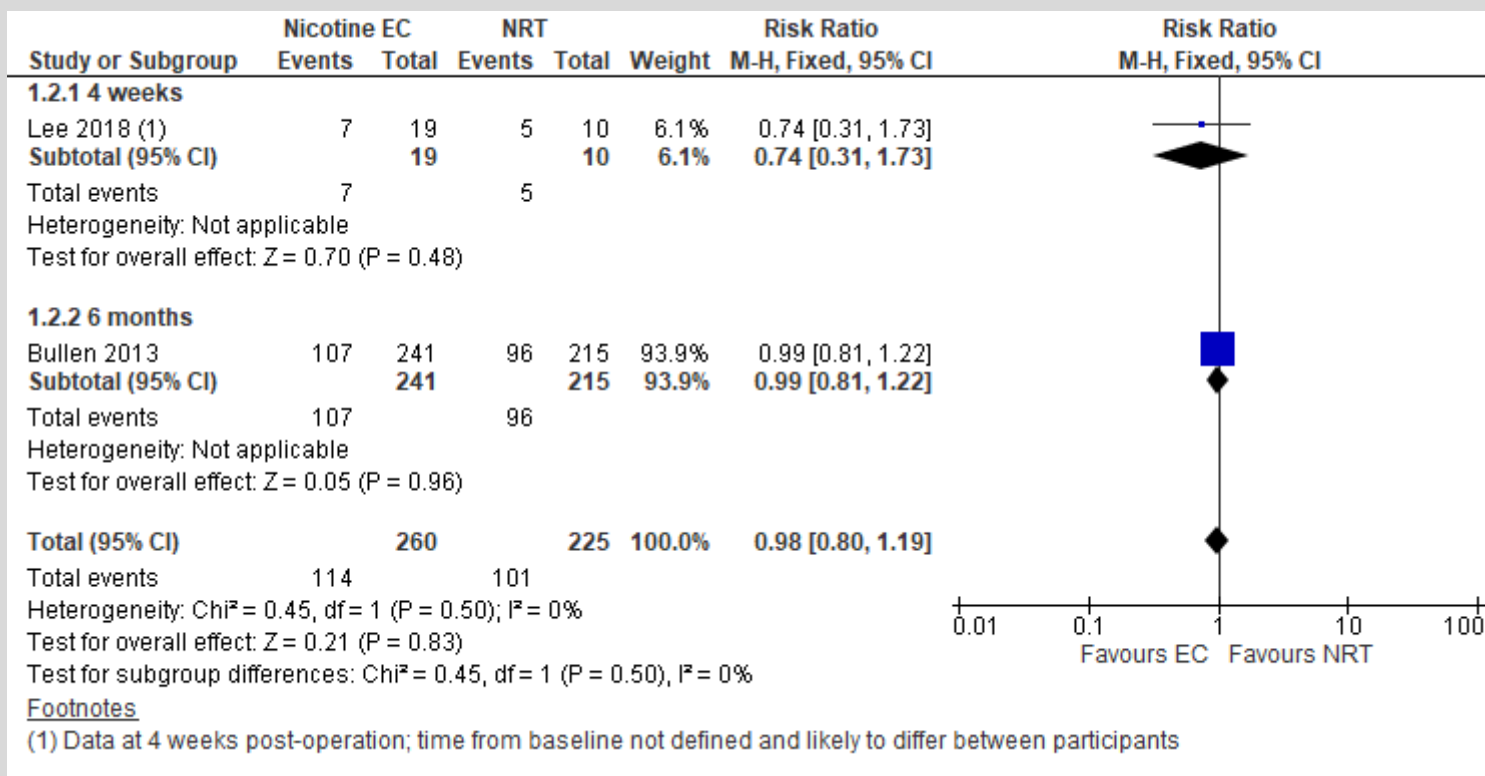


Nicotine e-cigarette versus NRT: Quitting at 6+ months



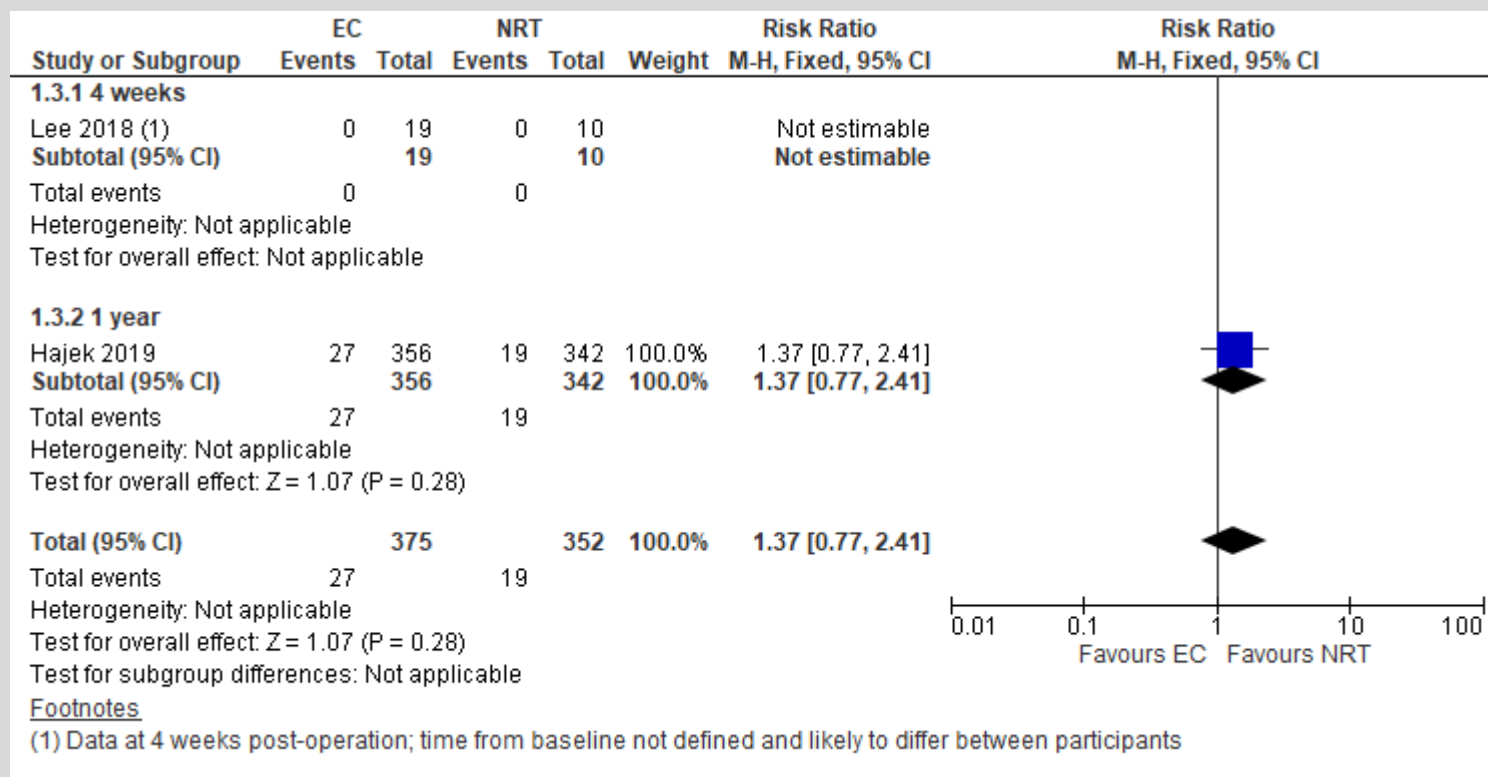
GRADE certainty of evidence: MODERATE (downgraded one level due to imprecision)

Nicotine e-cigarette versus NRT: Adverse events at 1+weeks



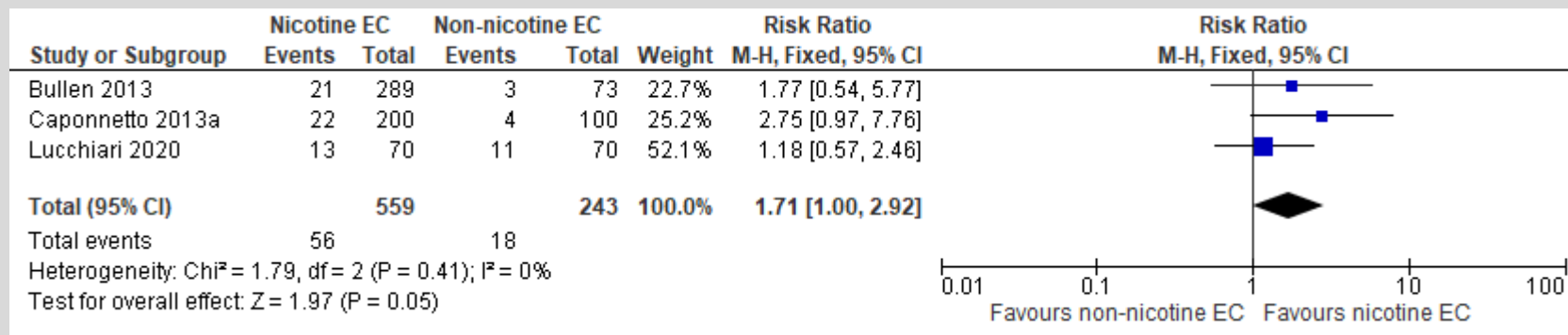
GRADE certainty of evidence: LOW (downgraded two levels due to imprecision)

Nicotine e-cigarette versus NRT: Serious adverse events at 1+weeks



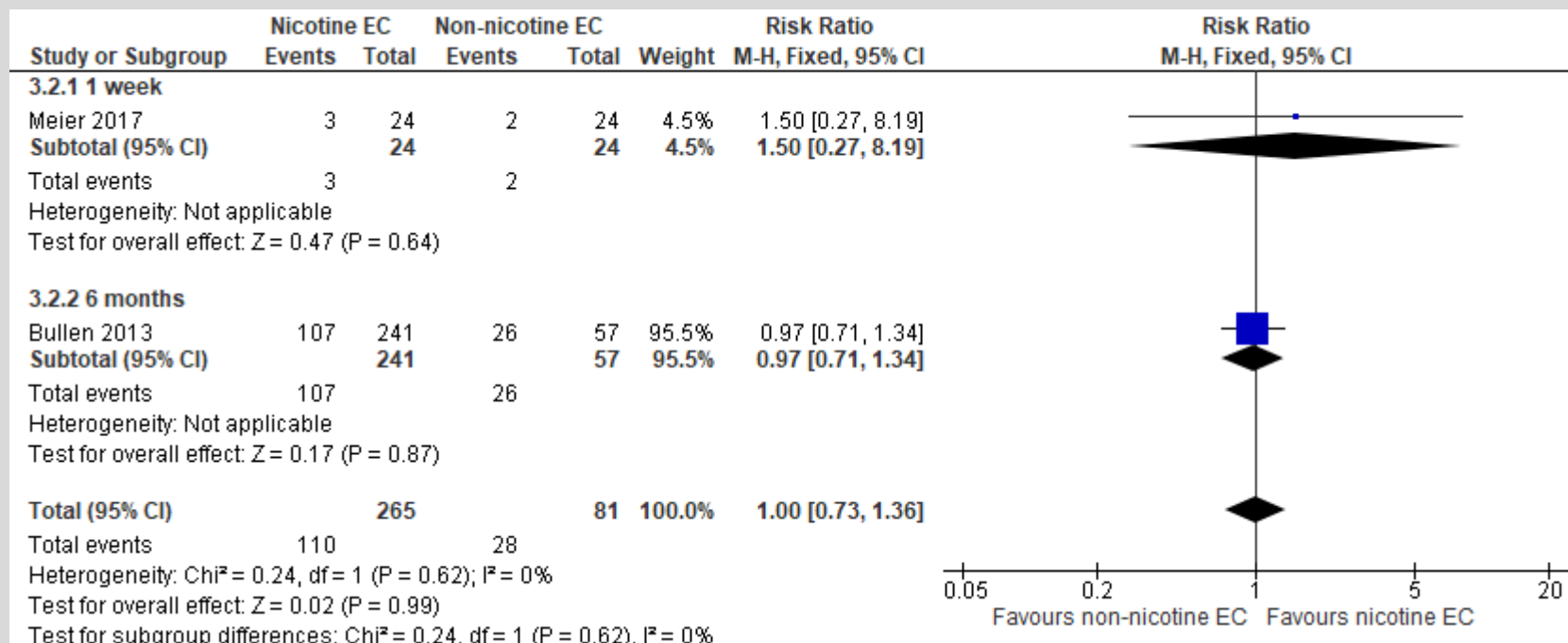
GRADE certainty of evidence: LOW (downgraded two levels due to imprecision)

Nicotine e-cigarette versus non-nicotine e-cigarette: Quitting at 6+ months



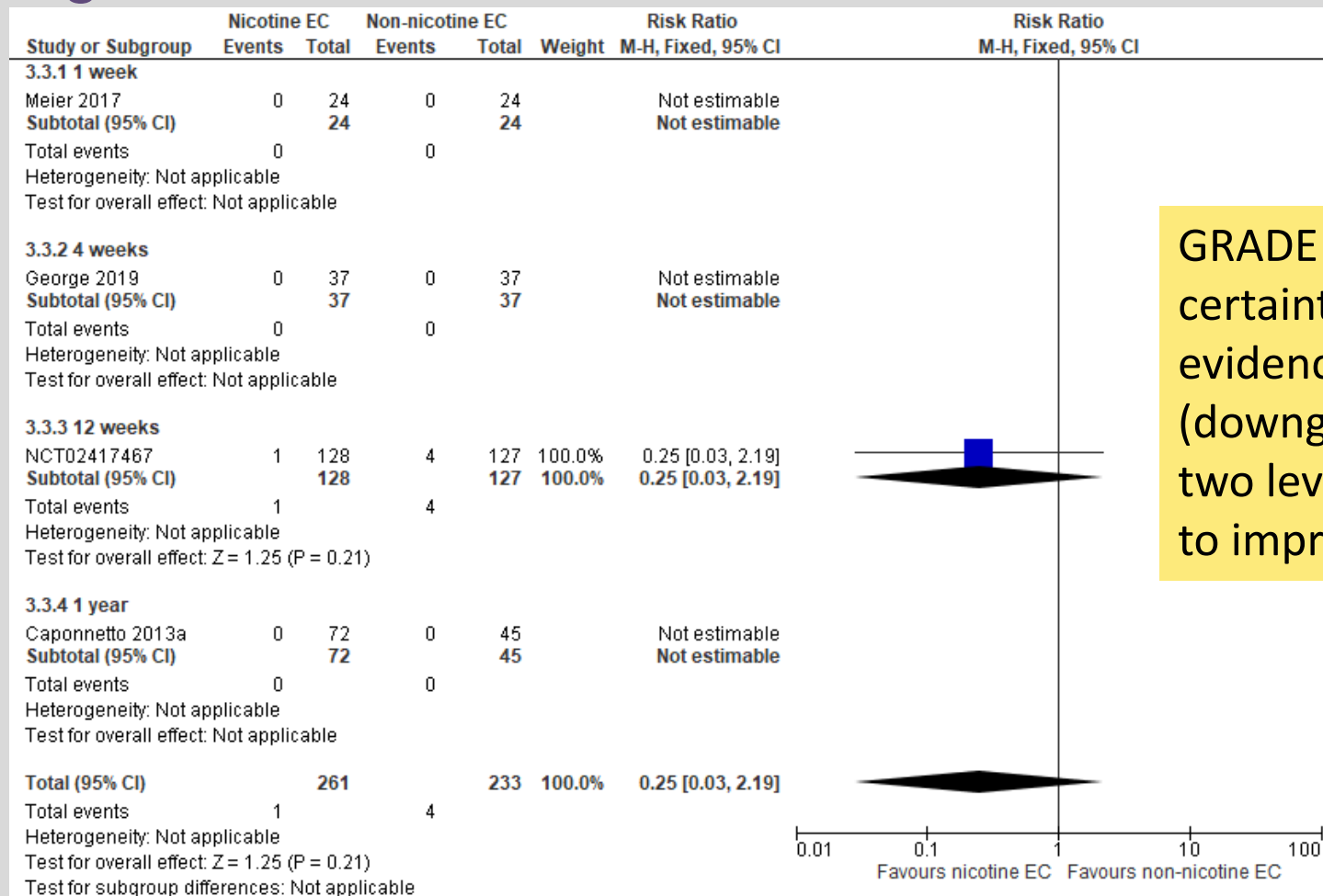
GRADE certainty of evidence: MODERATE (downgraded one level due to imprecision)

Nicotine e-cigarette versus non-nicotine e-cigarette: Adverse events at 1+ weeks



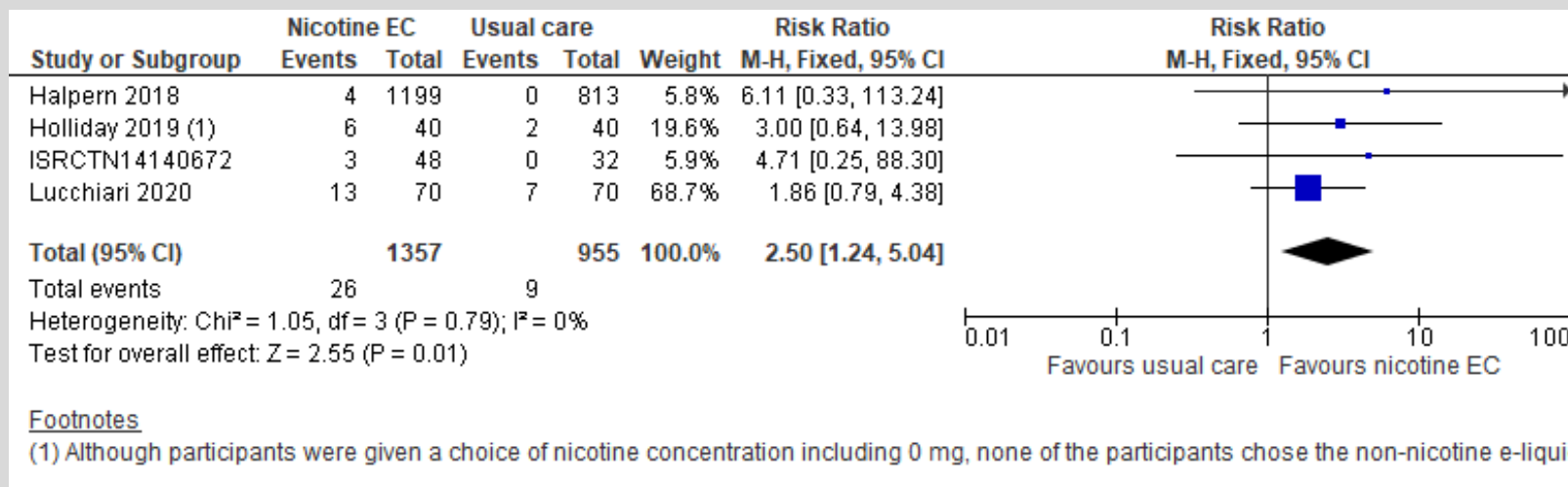
GRADE certainty of evidence: LOW (downgraded two levels due to imprecision)

Nicotine e-cigarette versus non-nicotine e-cigarette: Serious adverse events at 1+weeks



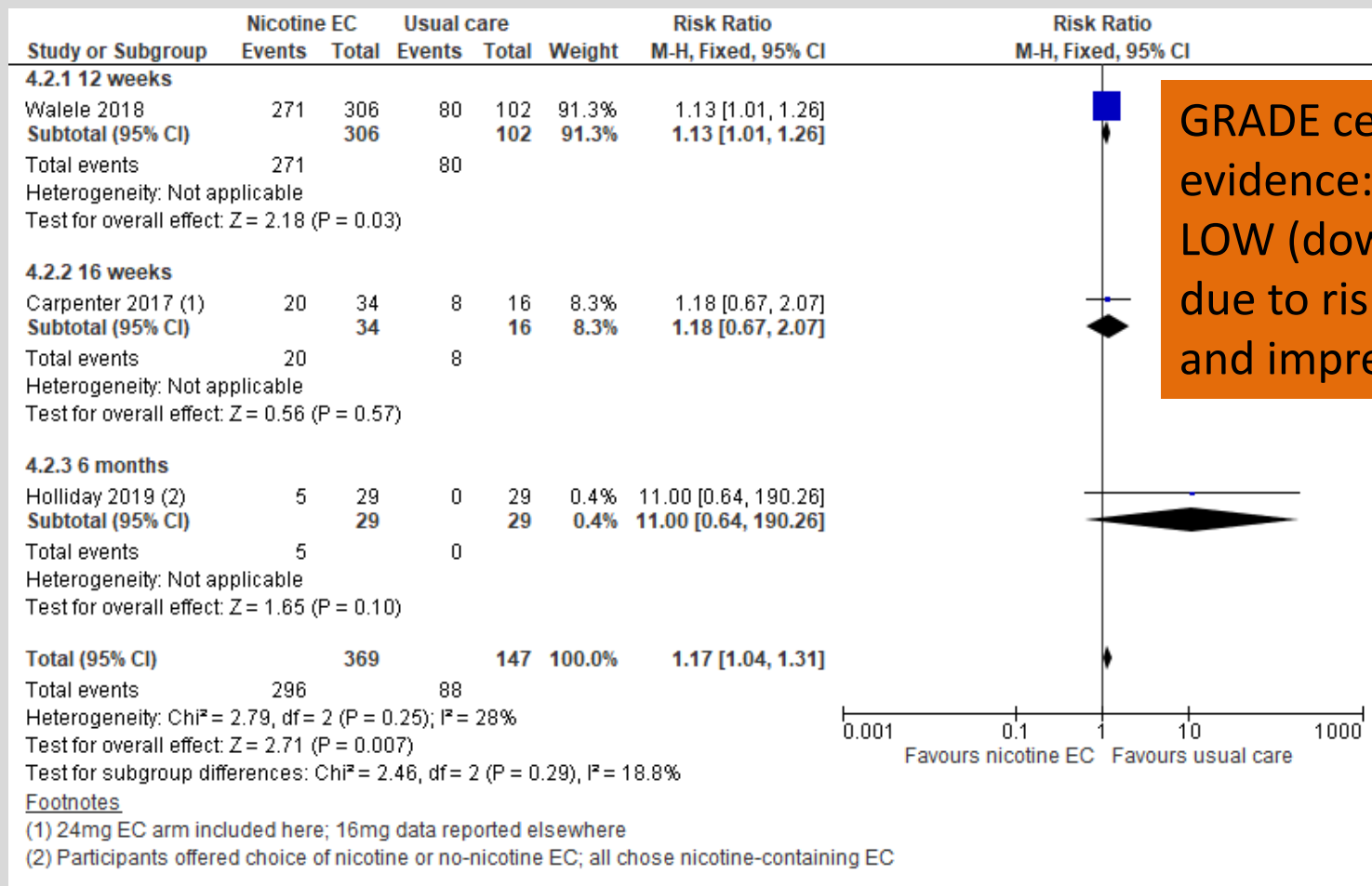
GRADE
certainty of
evidence: LOW
(downgraded
two levels due
to imprecision)

Nicotine e-cigarette versus behavioural support only/no support: Quitting at 6+ months



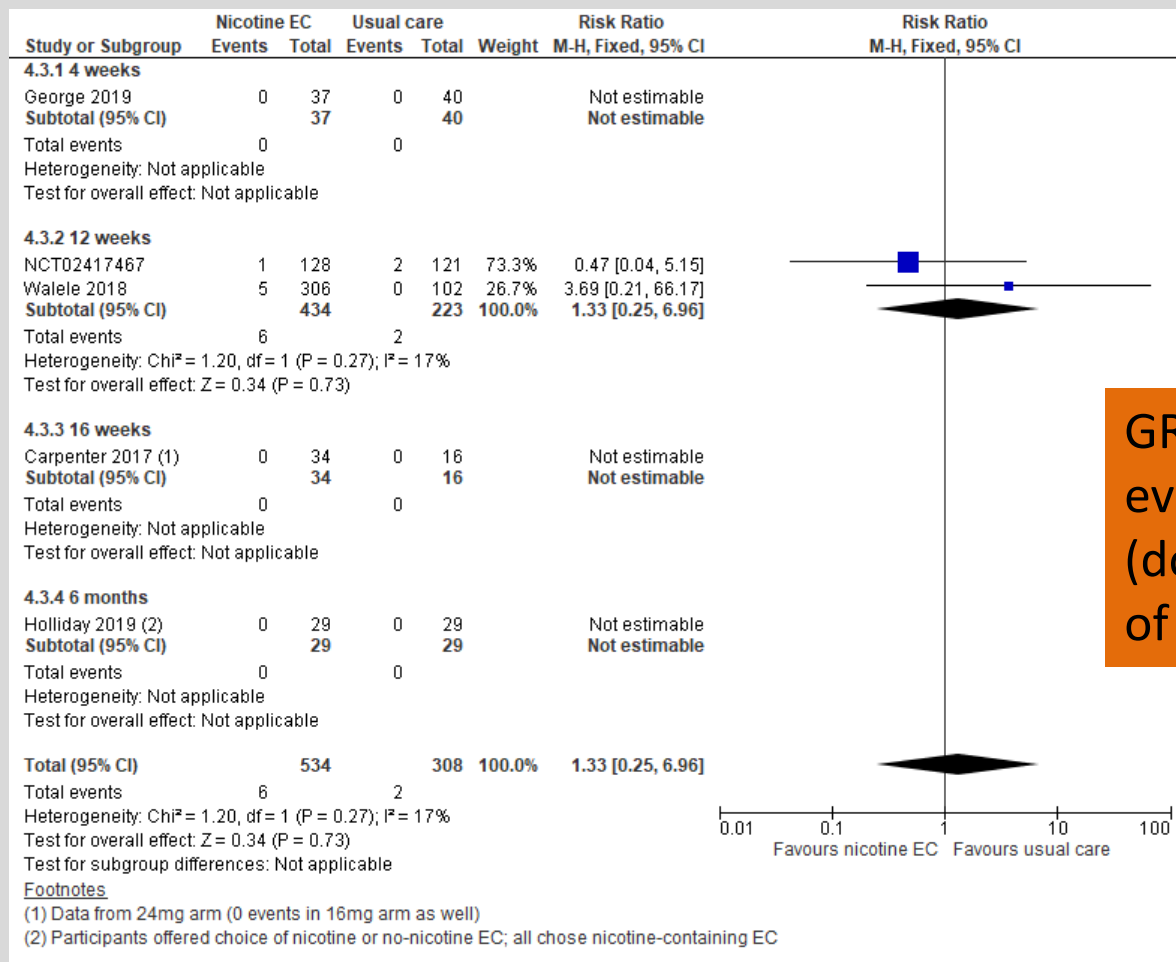
GRADE certainty of evidence: VERY LOW (downgraded two levels due to risk of bias; one level due to imprecision)

Nicotine e-cigarette versus behavioural support only/no support: Adverse events at 1+weeks



GRADE certainty of evidence: VERY LOW (downgraded due to risk of bias and imprecision)

Nicotine e-cigarette versus behavioural support only/no support: Serious adverse events at 1+wks



GRADE certainty of evidence: VERY LOW (downgraded due to risk of bias and imprecision)

Implications for practice

- Evidence suggesting nicotine EC can aid in smoking cessation is consistent across several comparisons. There was moderate certainty evidence, limited by imprecision, that EC with nicotine increased quit rates at six months or longer compared to non-nicotine EC and compared to NRT. There was very low certainty evidence that EC with nicotine increased quit rates compared to behavioural support only or no support.
- The effect of nicotine EC when added to NRT was unclear.
- None of the included studies (short- to mid-term, up to two years) detected serious adverse events considered possibly related to EC use.
- The most commonly reported adverse effects were throat/mouth irritation, headache, cough, and nausea, which tended to dissipate over time. In some studies, reductions in biomarkers were observed in people who smoked who switched to vaping consistent with reductions seen in smoking cessation.

Implications for research

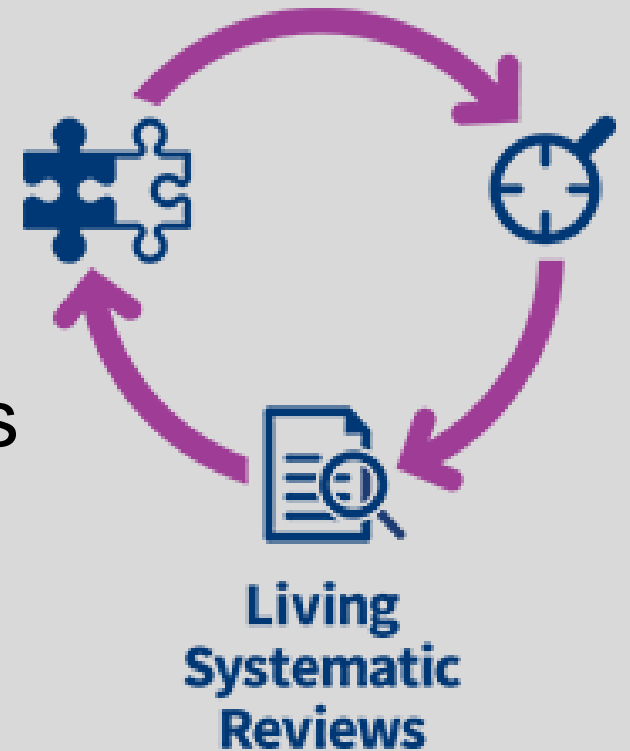
Further trials should:

- Measure cessation at six months or longer.
- Use active comparators
- Assess safety profile for as long as possible
- Be powered to detect differences in safety outcomes
- Present safety in both absolute and relative risk terms (in comparison to the risks of continuing to smoke tobacco).
- Offer recent devices to participants, to be most representative of what will be on the market at the time results are released. Data on pod type EC are particularly lacking. Protocols and statistical analysis plans should be registered in advance and openly available.
- Provide EC in a way that would be used in real-world settings.

Further reviews, using best available methods, need to be conducted to evaluate the possible relationships between EC use and availability and youth uptake of EC and conventional cigarettes.

Living systematic review (LSR)

- Search for new evidence monthly
- Publish links to new evidence monthly
- Update full review when new data emerges that changes, strengthens, or weakens existing conclusions, or relates to new comparisons or outcomes



Also as part of the living systematic review project...

  **Cochrane Tobacco Addiction**  **NIHR** | National Institute for Health Research  **CANCER RESEARCH UK**  **NUFFIELD DEPARTMENT OF PRIMARY CARE HEALTH SCIENCES**  **UNIVERSITY OF OXFORD**

Can electronic cigarettes (EC) help people stop smoking and are they safe to use for this purpose?

Cochrane December 2020 briefing document

This briefing document brings you the most up to date information on electronic cigarettes (ECs) to help people who smoke achieve long-term smoking cessation. It is based on the most recent Cochrane review of EC for quitting smoking. Cochrane reviews are the most reliable available evidence on a particular topic. Our findings help people to make informed choices about their health.

Key findings

- Our review showed more people probably stop smoking for at least six months using nicotine e-cigarettes than using nicotine replacement therapy, or nicotine-free e-cigarettes.
- Nicotine e-cigarettes may work better than no support for quitting smoking, or than behavioural support alone.
- Nicotine e-cigarettes may not be associated with serious unwanted effects.
- The unwanted effects reported most often with nicotine e-cigarettes were throat or mouth irritation, headache, cough and

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Can electronic cigarettes (EC) help people stop smoking and are they safe to use for this purpose?

Findings from the most recent Cochrane review December 2020

This briefing document brings you the most up to date information on the effectiveness of electronic cigarettes (ECs) to help people who smoke achieve long-term smoking cessation.

Key findings

- Findings across the main comparisons consistently favoured EC for smoking cessation at 6 months or longer. Quit rates were higher with nicotine EC compared to: non-nicotine EC; to nicotine replacement therapy (NRT) and to behavioural support only or no support.

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**Let's talk
e-cigarettes**

See full review for

- More detail on everything that's been presented
- Secondary outcomes
- Other comparisons
- Data from uncontrolled studies
- Comparison with other reviews



Updates to and information on the living systematic review:
<https://www.cebm.ox.ac.uk/research/electronic-cigarettes-for-smoking-cessation-cochrane-living-systematic-review-1>