

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

Findings from the September 2021 Cochrane review

This briefing document brings you the most up to date information on the effect and safety of using electronic cigarettes (ECs) to help people who smoke to stop smoking. This evidence comes from our latest Cochrane Review. Cochrane are a non-profit organisation that review all of the available evidence on a particular topic. Our findings help people to make healthcare decisions.

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 feeling sick. These effects reduced over time as people continued using nicotine e-cigarettes.

We need more, reliable evidence to be confident about the effects of e-cigarettes, particularly the effects of newer types of e-cigarettes that have better nicotine delivery.

Why this is this topic important?

Stopping smoking reduces the risk of getting lung cancer and other diseases. Many people find it difficult to quit. We want to find out if e-cigarettes can help and if people using them experience any unwanted effects.

In our latest full review (searches up to 1st May 2021) we found 61 studies in 16,759 adults who smoked.

What we are doing?

Each month we are searching for studies that look at the use of e-cigarettes to help people stop smoking. As we search monthly this is called a living systematic review. We look for randomized controlled trials, in which the treatments people received were decided at random. This type of study usually gives the most reliable evidence about the effects of a treatment. We also search for studies in which everyone received an e-cigarette treatment.

What we are looking at?

The studies we looked at compared electronic cigarettes to nicotine replacement therapy (for example, patches or gum), to stop smoking medication (varenicline), to non-nicotine e-cigarettes, and to behavioural support or no support.

MARCH 2022 SEARCH UPDATE... Searches are run and screened monthly. Our March 2022 search identified 1 record linked to a study already identified as ongoing. Between June 2021 and February 2022 searches identified 9 new studies, 25 ongoing studies and 29 papers linked to studies already included in the review. The findings from these searches will be incorporated into an update of our review over the coming months.

See our full review



[Cochrane EC Review](#)

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Stopping smoking

Electronic cigarettes probably help more people to stop smoking than other smoking cessation aids. For every 100 people using nicotine e-cigarettes to stop smoking, 9 to 14 might successfully stop, compared with only 6 of 100 people using nicotine-replacement therapy, 7 of 100 using nicotine-free e-cigarettes, or four of 100 people receiving no support or behavioural support only.

How long do people continue to use electronic cigarettes?

In response to feedback we are looking at how many people continue to use e-cigarettes at 6 months or longer. In most studies at least half of the participants were still using e-cigarettes at longest follow-up.

Dual use?

Studies have shown a decrease in exhaled carbon monoxide in dual users (those using nicotine e-cigarettes and tobacco) as compared to participants who exclusively smoked tobacco cigarettes.

Not all e-cigarettes are the same

We need more information about device type, nicotine content and the role of flavours on the effectiveness of e-cigarettes to help people to quit tobacco cigarettes.

Health measures

We also look at information on health measures. Very few studies have looked at health outcomes. In those that did, there was no indication that e-cigarettes posed more risks than smoking cigarettes. We need more evidence on this.

- Lung function measures**
- Lung function was improved in people using e-cigarettes compared to people using nicotine replacement therapy. No difference was found when e-cigarettes were compared to non-nicotine e-cigarettes or to usual care. Five of the 61 studies reported data on at least one measure of lung function.
- Changes in carbon monoxide**
- In most studies carbon monoxide levels were lower in those using e-cigarettes. 39 of the 61 studies reported data on carbon monoxide.
- Heart rate**
- Most studies showed lowered heart rate in people using e-cigarettes. Nine of the 61 studies reported data on heart rate.
- Changes in blood pressure**
- Most studies found no difference, in 3 studies blood pressure measures were improved with e-cigarettes and in one study these were improved in the usual care group. Of the 61 included studies, 12 reported data on blood pressure and 2 studies reported data on blood oxygen levels.
- Serious harms**
- The number of people experiencing serious harms was low across all study arms. We did not detect evidence of harm from nicotine e-cigarettes, but the longest follow-up was two years and the number of studies was small.

At a glance

Summary table to show how e-cigarettes compare to nicotine replacement therapy (NRT), non-nicotine e-cigarettes and usual care

| How do e-cigarettes compare? | Nicotine | | Non-nicotine | | Usual care | |
|------------------------------|----------|-----|--------------|-------|------------|------------|
| | E-cig | NRT | E-cig | E-cig | E-cig | Usual care |
| Stopping smoking | ✓ | | ✓ | | ✓ | |
| Lung function | ✓ | | = | = | = | = |
| Carbon monoxide | = | = | ✓ | | ✓ | |
| Heart rate | ✓ | | ✓ | | ✓ | |
| Blood oxygen | = | = | | | ✓ | |
| Blood pressure | = | = | = | = | = | = |
| Levels of toxicants | = | = | | | ✓ | |
| Serious harms | = | = | = | = | = | = |
| Less serious harms | = | = | = | = | | ✓ |

| | |
|---|--|
| ✓ | Favours |
| = | No clear evidence of a difference between groups |
| | Lack of evidence |

We need more data to be confident of the findings on health measures.