### Summary of a Cochrane Review

**Electronic cigarettes: Are they effective in smoking cessation and reduction?**

Electronic cigarettes can possibly help smokers stop and also reduce their cigarette consumption.

Researchers in The Cochrane Collaboration conducted a systematic review on the effects of electronic cigarettes on smoking cessation and reduction. After searching through relevant databases, two randomized controlled trials were identified that together enrolled over 600 adults. This Evidence Update summarizes the key findings.

#### Electronic Cigarettes and smoking cessation

**What are electronic cigarettes?**

Electronic cigarettes (EC) also known as e-cigarettes are battery operated devices made to resemble regular tobacco cigarettes. Although e-cigarettes have been available in the market for a few years, their popularity has increased considerably in recent times.

ECs do not contain tobacco and do not emit smoke however they contain nicotine, thereby providing smokers with the nicotine ‘rush’ without exposing them or others to the smoke of regular cigarettes.

EC manufacturers claim that they are a safer substitute for regular cigarettes, however, the benefits and risks have been widely debated.

Smoking cessation attributes to multiple health benefits. However, most smokers despite the desire to stop smoking are unable to, and often resort to medical help or behavioural support.

**What does research say?**

**The review compared**

1. nicotine ECs with nicotine-free EC (placebo)
2. nicotine ECs with nicotine patches

It was found that:

- Nicotine EC users were more likely to stop smoking when compared to placebo EC users
- Nicotine ECs were more effective than placebo ECs and nicotine patches in achieving 50% or more smoking reduction, this was supported by low quality evidence

**How confident can I be of this evidence?**

Although the two studies included in the review were rated as low risk of bias, the overall evidence was graded as low because the total number of participants included in the studies was only approximately 660. Hence the results should be interpreted with caution.

Data from ongoing trials might change these conclusions in future updates.

**Can this evidence be applied in my setting?**

The studies included in the review were conducted in Italy and New Zealand where ECs are easily available and affordable. Therefore this evidence may not be directly applicable to low and middle income countries.
Electronic cigarettes for smoking cessation and reduction

This table provides more detail about the effectiveness of ECs on smoking cessation and reduction. These numbers are based on research findings that are currently available. The quality of evidence is rated as high, moderate, low or very low.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Placebo</th>
<th>Nicotine EC</th>
<th>No. of participants</th>
<th>What happens</th>
<th>Quality of evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cessation</strong>: Nicotine EC versus placebo EC (Follow-up: 6-12 months)</td>
<td>40 per 1000</td>
<td>93 per 1000 (42–201)</td>
<td>662 (2 studies)</td>
<td>Slightly higher rates of cessation were noted in the Nicotine EC group</td>
<td>Low</td>
</tr>
<tr>
<td><strong>Cessation</strong>: Nicotine EC versus nicotine replacement therapy (Follow-up: 6 months)</td>
<td>58 per 1000</td>
<td>73 per 1000 (39-135)</td>
<td>584 (1 study)</td>
<td>It is uncertain if cessation rates differ between both groups</td>
<td>Very low</td>
</tr>
<tr>
<td><strong>Reduction</strong>: Nicotine EC versus placebo EC ≥ 50% reduction in baseline cigarette consumption (Follow-up: 6-12 months)</td>
<td>271 per 1000</td>
<td>355 per 1000 (277–455)</td>
<td>612* (2 studies)</td>
<td>Reduction rates in Nicotine EC user was found to be slightly better than in placebo EC user</td>
<td>Low</td>
</tr>
<tr>
<td><strong>Reduction</strong>: Nicotine EC versus nicotine replacement therapy ≥ 50% reduction in baseline cigarette consumption (Follow-up: 6 months)</td>
<td>435 per 1000</td>
<td>614 per 1000 (522-727)</td>
<td>546* (1 study)</td>
<td>Higher proportion of EC users achieved 50% or more reduction</td>
<td>Very low</td>
</tr>
</tbody>
</table>

* Does not include quitters

More information

This summary is based on the following systematic review:

What is a systematic review?
A systematic review seeks to answer a well formulated and specific question by identifying, critically appraising, and summarising the results of all relevant trials, published and unpublished, according to pre-stated and transparent methods.

What is the Cochrane Collaboration?
The Cochrane Collaboration is an international network of more than 28,000 people from over 100 countries. The collaboration is one of the biggest producers of systematic reviews on the effects of healthcare interventions, and Cochrane Systematic Reviews are recognized internationally as the benchmark for high quality information. The Cochrane Database of Systematic Reviews is available from www.thecochranelibrary.com and free for eligible countries.

How has the quality of evidence been assessed?
The quality of evidence has been assessed using methods developed by the GRADE working group (www.gradeworkinggroup.org). The GRADE system considers ‘quality’ to be a judgment of the extent to which we can be confident that the estimates of effect are correct. The level of ‘quality’ is judged on a 4-point scale. Evidence from randomized controlled studies is initially graded as HIGH and downgraded by one, two or three levels after full consideration of: the risk of bias of the studies, the directness (or applicability) of the evidence, and the consistency and precision of the results.

- **High**: Further research is very unlikely to change our confidence in the estimate of effect.
- **Moderate**: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
- **Low**: Further research is very likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
- **Very low**: We are very uncertain about the estimate.

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The full text of this review is available FREE on The Cochrane Library.

This Evidence Update has been prepared for the CME Journal (CMC, Vellore) by Cochrane South Asia