

## Transcript October 2022 podcast Let's talk e-cigarettes

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Music Intro.

If asking your mate down the pub about vaping. Here's what they probably say. No one agrees if it's safer or not so, you might as well smoke anyway. Now what your mate needs is a Cochrane review all the facts have been checked at least twice. They find there's a lot that the experts agree on and might give you different advice.

NL: Hi, I'm Nicola Lindson

JHB: and I'm Jamie Hartman-Boyce.

NL: We're both researchers based at the University of Oxford, where we work with the Cochrane tobacco addiction group. Welcome to this edition of let's talk e-cigarettes. This podcast is a companion to a research project being carried out at the University of Oxford, where every month we search the e-cigarette research literature to find new studies. We then use these studies to update our Cochrane systematic review of e-cigarettes for smoking cessation. This is called a living systematic review. In each episode, we start by going through the studies we have found that month and then go into more detail about a particular study or topic related to e-cigarettes.

JHB: This month we ran our searches on the 1st of October. In a nutshell, we found three new ongoing studies, one record linked to a previously included study, and one new study.

NL: The other exciting thing that's happened this month is that our own paper, looking at the changes in biomarkers associated with e-cigarette use has been published in the journal *Addiction*.

What we mean when we talk about biomarkers are biological markers that can be measured to monitor exposure and provide information on health effect. We talked about the paper in detail in the May, 2022 episode of the podcast, but just to remind you of our key messages now.

Switching from smoking to vaping, reduced levels of biomarkers of potential harm.

Also switching from exclusive smoking to dual use, so that smoking and vaping, also reduced levels of biomarkers of potential harm.

People exclusively vaping had lower levels of biomarkers of potential harm than dual users. However, we had insufficient data on people who were not vaping or smoking. So people who had managed to stop both behaviours.

JHB: Thanks Nicola. It's really exciting that that paper is out. Now in terms of our new included study that we found in this month's searches, you're about to hear more about it in this month's deep dive.

So this month's new study was conducted by Dr Markos Klonizakis at Sheffield Hallam University in the UK. It was funded by Heart Research UK and published in *BMC Medicine*, and it looks at the medium and longer-term cardiovascular effect of e-cigarettes in adults trying to quit smoking. It was undertaken for the most part by the team at Sheffield Hallam in the UK, but it was also supported by

Dr Leoni Brose, who's a reader in addiction education and nicotine research at King's College London. This month I had the pleasure of speaking with Dr Brose about this research, and I also took the opportunity to talk to her about an important report she's been involved in. That's also recently out. It's called Nicotine Vaping in England, An Evidence Update, and it was commissioned by the Office of Health Improvement and Disparities, or OHID as we might call it. So, if we could start by you just telling us a little bit about yourself and what brought you into studying e-cigarettes in the first place.

LB: My name is Dr Leonie Brose. I'm a Reader in Addiction Education and Nicotine Research at King's College London. And how did I get into e-cigarette research? So I first, when I did my first degree, I actually finished by doing a dissertation on a smoking cessation project, and I enjoyed that. I then did my PhD on something completely unrelated, but after that, went back to do a post-doc in smoking cessation research at UCL. Oh, and I think really early on, maybe 2010, a friend actually emailed me saying, I've seen these things, these electronic cigarettes. Do you know anything about them? And I'm like, nope, no, I do not, not know anything about them. So that was really the first time I heard about e-cigarettes. And then obviously they became more common and research started happening around them and in 2013 I moved to King's College London, where Anne McNeill had started a survey that was looking at smoking, but also specifically looking at what people were using in terms of e-cigarettes and their smoking behaviour and lots of different aspects. So we started analysing those data, looking at, for example, how the use of e-cigarettes was then associated with changing smoking behaviour, so stopping smoking or reducing smoking. Yeah, it really took off from there. There was so much to do in that area.

JHB: And did you think, I suppose at that time, would you have anticipated that we'd be where we are now today in terms of e-cigarette research? I mean, I definitely didn't anticipate all the conflict around it. I was, I don't know if I thought about what would happen in future very much at all. But I was always surprised by how much people fought over how to interpret the data and what to do with it.

JHB: Absolutely. I remember, so I started working in this space in 2012 was when I joined the Cochrane Tobacco Addiction Group and like the first ever conferences I went to were so friendly and then all of a sudden e-cigarettes came on the scene and I was really shocked by how quickly things changed. So the reason we're having you on this month is particularly because of a new study that came up at our searches. So I was wondering if you could tell us a little bit about the motivation behind your recent study regarding the medium and longer cardiovascular effects of e-cigarettes and how it fits into the other work you and your team are doing.

LB: So, obviously we know that cardiovascular disease is one of the main killers linked to smoking, and that's why it's very interesting to know what happens if people stop smoking and then continue to use e-cigarettes. How does that affect their cardiovascular disease? And I have to say, I did not run this study, so this was really conducted by the colleagues at Sheffield Hallam University who did all the legwork and all the day to day work of this trial. I just provided some advice on smoking cessation and e-cigarettes. So how does it fit in? I mean, it fits really well with what we did for our recent review of health risks, obviously, where one of the big questions was well, what happens to cardiovascular disease risk when people use e-cigarettes?

JHB: Yeah. So will you tell us, first of all, a little bit about this one study, how it was designed and what it set out to look at and what it found?

LB: Yes. It was a small, randomized controlled trial with so smokers. Who were smoking at least 10 cigarettes a day and who were willing to attempt to stop smoking with some support. And they all received behavioural support to stop smoking. And then were randomized into three groups. So one group received e-cigarettes with nicotine, one e-cigarettes without nicotine, and the third one received nicotine replacement therapy. Then the main outcome was kind of blood vessel health, measure of blood vessel health.

JHB: And what did you find?

LB: So what we found was that smokers attempting to quit, they all saw an increase or an improvement in this measure after three months. After six months. And none of the groups really was better than the other. So all three groups were very similar in their improvement.

JHB: Great. Okay. And was there anything that surprised you or the team in terms of the study results or anything that surprised the participants either,

I suppose.

LB: So because I'm coming from a smoking cessation background, I was, I always thought, Oh, but we're not comparing cessation success and shouldn't we be looking at the subgroup of people who were successful to see, the change but the team wanted to look at the whole group overall, so all people who attempted to quit and what happened to their cardiovascular health. And actually we did see this improvement even without just looking at those who quit successfully. So that surprised me a little bit. Yeah. But, it's interesting.

JHB: But it is like we've recently done some work, which very much I think mimics some of what you've found looking at essentially what happens when you give people e-cigarettes who smoke and they don't stop smoking. And if there's any kind of suggestion of improvement or harm from that. And what we found was, if anything, a suggestion of improvement. But you're right. We focus on cessation as well. So we don't really think about the people who don't quit in terms of thinking there could be any benefit for them. Yeah. So now just switching topics, as you know, one of the other reasons we're really keen to get you on this month is to tell us a bit about your new OHID reports. So previously you were doing these reports for Public Health England and now they're called Office of Health Improvements and Disparities. So it's a huge report. You guys have gone through so much information. There's so much in there, I suppose I'm curious to hear from your perspective what its main headlines were.

LB: First of all, it was a huge report. I mean, it was an incredible amount of work done by everyone on the team, and I really have to say we were, it was all held together brilliantly by our postdoc Erikas Simonavičius is who completed an unbelievable amount of work in what was initially supposed to be a part-time short term role. So, it really, I think it took over his life. So,

JHB: Oh my gosh.

LB: So it's got 16 chapters. I mean, we've got chapters on policy and regulation. Then we look at vaping and youth and adults in England. And then the biggest chunk really is evidence. Biomarkers of exposure, evidence of biomarkers with potential harm, and then outcome specific to cancer, respiratory disease, and cardiovascular disease. And then because there are other health outcomes that are not covered by those three kind of main diseases, we also looked at those. And then repeated our chapter on fires, poisons, and explosions associated with vaping devices, included a

summary of feature tobacco product use, and also a corporate review that we were involved in recently, because that clearly wasn't enough we also conducted a separate systematic view on harm perceptions and how perceptions of vaping and smoking can be influenced and how that is associated with behaviour as well. So really, almost impossible to

JHB: an enormous . What was it like working on it? Did you enjoy working on it?

LB: And I enjoyed the teamwork, so I think we had a really good team on it and everyone really worked quite hard. And looking back, just the number of papers we reviewed and the amount of work, yeah, I did enjoy how well we worked together. It was definitely too much work for the amount of people and the amount of time we had. So I wouldn't want to do that again in the same way.

JHB: So, and year on year, there will just be more and more research too. Right? So if you were given that same brief in 2015, it might have been very manageable. But the way research is going in this field everywhere, but particularly in e-cigarettes, is that it's exploding. So reviewing it, I think, at least from our perspective becomes more and more resource intensive every time.

LB: Exactly. Yeah. I mean we, we did one in 2015 and that also had a wide brief. We did a review, but that there was so much less out there. It was so much easier to actually summarise what had been done and now it's so much work that people have been doing and so much research in the area.

JHB: And what would you say the reception of the review has been?

LB: Um, so far it's been mostly positive from what I've seen. I mean, I know that in 2015 we got quite a big backlash because we, um, had this 95% less harmful statement and there was a lot of debate about that. This time, the top line basically was vaping poses only a small fraction of the risk of smoking, which isn't that different from, from saying it's 95% less harmful but somehow the reception has been so far has been less controversial. I mean, maybe this is something in the pipeline that would come out, but generally, most reports have been quite positive for not, not positive, but neutral kind of reporting the findings. And saying this is what the review found.

JHB: Yeah. And why, You don't have to answer this question if you don't want to, but just because I think our listeners might be wondering, what made you guys decide to move away from the 95% figure? Is it that different evidence emerged or what? What kind of fed into that change?

LB: It's various things. It's that we still think it's not an unreasonable estimate, but because there are so many different devices, so many different behaviours, so many different situations, we just felt that a single figure was a bit too simple to kind of summarize all these different possibilities and so we, we thought, well, saying something that's a bit more flexibility is maybe more unifying or create less controversy, although at the same time, we then get asked, but can't you put a number on it? We really would like a number to communicate the findings. So it is quite difficult. So a lot of, journalists and also, um, when presenting the findings elsewhere, people have asked, So can we have a number? We'd really like a figure to communicate what you found to our. So, yeah, it's a bit of a balance.

JHB: It is. It's so, It's a really tricky one. I think it is. One of the challenges of researching in this area is the fact that the devices continuously change as well. So pinning things down can be tricky. But then as you say, I know that a lot of people involved in communication of this are really keen to have numbers, and that's not just e-cigarettes, that's across the board with research people want numbers. They make better headlines and they're easier to understand immediately. So now that

you've kind of reviewed this enormous body of literature, my last question is, what research would you like to be seeing done next regarding e-cigarettes?

LB: Um, various. Things. I mean, I would like to see more studies that follow people over a longer period of time.

JHB: Yeah.

LB: Because looking for example, at the cardiovascular health outcomes, so many studies exposed people to vaping for 20 minutes and then measured heart rate or blood pressure. While that's interesting, I don't think that's telling us a huge amount about the public health impact of a behaviour. So I'd like outcomes that are closer to actually health outcomes.

JHB: Yeah.

LB: And then also studies that take into account previous smoking when assessing potential health effects of vaping. And of course that's complicated and some studies attempted to do it but just we all need to think a bit more about how we can best account for how much and how long or whether someone smoked before they started vaping. Cuz that will, we know that smoking has huge impact. Health. So we can't just kind of leave that aside and just look at the current vaping behaviour.

JHB: Yeah, absolutely.

LB: And also something I noticed was that very few studies looked at people who already had some health problems and often studies, exclude specifically excluded someone who had had a cardiovascular health problem and the same for respiratory or cancer and I think looking at people who already have health condition and how vaping may affect the progression of these conditions would be really informative and really helpful.

JHB: Yeah, absolutely. I think that in fact there's some teaching I do around evidence-based medicine and problems with it, um, not specific to e-cigarettes at all and one of them that we explore is the fact that a lot of interventions are not tested in people with pre-existing conditions, and yet so much of the public has pre-existing conditions. These interventions really might stand to benefit those groups even more than people without them. And yet we don't have evidence in those groups, so it is a problem all over the place and, and here a really big one too. Uh, well that is it for me. Do you have anything else you'd like to add?

LB: No, I think that's fine. Thank you so much.

NL: Well, that was great, Jamie, and really good that you were able to catch up with Leon, not just about her own study, but about the OHID report as well as that's been a, a major thing in the field in the last few weeks. I think what was also really good to hear from Leonie was the fact that she's calling for more longer term studies, because obviously that's something that's a big part of our review. We are also in our conclusions calling for more longer term studies. The, the maximum follow up in our review is two years, but even so not all studies follow up to two years, and it's a really interesting point that Leonie makes, that until we actually start to be able to measure potential health harms and benefits we won't know definitely that those biomarkers that we are seeing and measuring actually do map on to what we see happening in people's health. So that's where those longer term studies are really, really important. But, talking a future study, Jamie, I was wondering if you'd just be able to summarize for us what the OHID report recommends.

JHB: Yeah. Well, it's a massive report and it's been a long time coming. It was led by Professor Anne McNeil at King's College London commissioned, as I mentioned by OHID. This is the eighth in a series

of independent reviews. Previously they'd been referred to as commissioned by Public Health England. For those of you who are not keeping up to date with British acronyms or public offices, Public Health England became the Office of Health Improvement and Disparities recently. So, in this review, like the others, what they're aiming to do is summarize evidence on e-cigarettes to inform policies and regulations. And the predominant focus of this particular report is on the potential health risks of vaping, and they incorporate a systematic review of these. Consistent with previous reviews and indeed our biomarkers review that we spoke about earlier in this episode, the authors find evidence to support that though not risk free vaping poses only a small fraction at the risks of smoking, and that's what Leoni was talking about. The previous report had that 95% figure. Now, very similar message, poses only a small fraction of the risks of smoking. The report, which was of interest to me, also highlights some methodological weaknesses in the research they've reviewed. And I think one of the things in this area is that we keep on getting more and more and more research, but uncertainties persist. And part of that reason is that some of the time, maybe we're not doing quite the right research to answer some of our big questions. So, what the report recommends is that further research standardizes terms and measures. It operates with greater transparency and also it involves people who vape and or smoke in its design. And that really helps us, I think, in terms of thinking through relevant questions in this, in other areas of research. The report also reinforces the need to discourage non-smokers from vaping or smoking and, consistent with the evidence they've reviewed, consistent with the evidence in our Cochrane review, they go on to suggest the people who smoke should be encouraged to use e-cigarettes to quit smoking. So, it's really nice to see another big review out with a really thorough review of the literature that is really consistent with what we're seeing emerge overall when it comes to public health consensus in this area. Hopefully, we will have more interesting evidence to cover next month. And that sort of evidence that keeps coming, keeps feeding into these reports and helps us have more clarity. So that's it from us. Thanks so much for listening and thanks so much for Dr Brose to coming on and hopefully speak to you next month.

JHB: Please subscribe on iTunes or Spotify and stay tuned for our next episode.

**Musical extract:** Vaping is safer than smoking may help you quit in the end. But remember to mention the findings we have can't tell us what will happen long term, even though we know vaping is safer than smoking we may still find cause for concern. If you're thinking of switching to vaping do it, that's what the experts agree, smoking's so bad for you they all concur that vaping beats burning there's much to learn of effects long term yet to be seen.

JHB: thank you to Jonathan Livingston Banks for running searches to Ailsa Butler for producing this podcast. And to all of you for tuning in music is written with Johnny Berliner and I, and performed by. Our living systematic review is supported by funding from Cancer Research UK, the Cochrane Tobacco Addiction Group also receives core infrastructure funding from the National Institutes for Health Research.

The views expressed in this podcast are those of Nicola and I, and do not represent those of the funder.