Three Hidden Disagreements over E-Cigarettes

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Debates over e-cigarettes continue to rage across public health circles. There are multiple policy questions on which experts disagree (Should e-cigarettes be banned? Regulated like cigarettes? Recommended by clinicians?), which connect to countless empirical questions (Do e-cigarettes affect cardiovascular function? Increase the risk of oral cancer? Cause DNA damage?). Although the respirology community can help inform these debates, respirologists frequently disagree on policy questions (1, 2). Here, we identify three underlying, often hidden disagreements over e-cigarettes and offer suggestions to improve the quality of policy debates, building on philosophical literature (3–8) and using a pressing question as an example: Should smokers be encouraged to switch to e-cigarettes? We suggest that it would improve the quality of the debate if all contributors would make three things explicit: *1*) What procedure should be followed to make the decision? *2*) What public health duties or outcomes are relevant to the decision, and what is their relative importance? and *3*) What evidence is appropriate to include in the decision-making process? In doing so, contributors could reflect on the influence of their ethical views on their responses and take the opportunity to anticipate and respond to likely objections from the opposing side. This process could help foster informed deliberation, encouraging all parties to identify the decision that best aligns with their values (6).

Hidden Disagreement 1: Decision Procedures

Recently, many have expressed concern about policies encouraging smokers to switch to e-cigarettes, such as England's "swap to stop" program (9). The American Lung Association, for example, tells smokers "Don't just switch; quit tobacco for good" and highlights a number of concerning facts about e-cigarettes, including that they contain toxic ingredients and produce dangerous chemicals such as acetaldehyde, acrolein, and formaldehyde (10). In a commentary, Lang and colleagues (1) argued that an influential claim that e-cigarettes are 95% less harmful than combustible cigarettes "has no scientific validity" (p. 1024) and emphasized that the health effects of e-cigarettes are unknown, citing evidence suggesting a link between e-cigarettes and DNA damage and increased risk of cardiopulmonary disease (1). Similarly, O'Shea and McElvaney (11) argued that the "swap to stop" program "means swapping one health risk with another," pointing to evidence that vaping can induce bronchiolitis and cause cellular changes similar to those produced by smoking. Such harmful effects are clearly worrying, and these statements will prompt many to reconsider the wisdom of e-cigarette programs. However, others might want more information, including the magnitude of the negative outcomes linked to e-cigarettes and how they compare with smoking. Although recent commentaries on e-cigarettes have the potential to enrich policy debates, useful information is often left out. To foster informed deliberation, we think it would help to explicitly acknowledge the different ways policy decisions can be made, how different decision-making procedures require different information, and the role ethical considerations play in the process.

In deciding whether to implement public health programs such as "swap to stop," policymakers have more than one way to inform the decision. Just two broad categories of options include cost–benefit analysis and duty analysis (8). Using cost–benefit analysis to make a decision

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means taking a number of sequential steps, with an emphasis on quantification. These include *1*) identifying the relevant costs and benefits of each alternative, *2*) determining what evidence is sufficient to estimate those costs and benefits, and *3*) performing corresponding calculations and comparisons, incorporating relevant probabilities and magnitudes (e.g., the probabilities that using e-cigarettes will help smokers quit tobacco or cause youth to start using it, and the magnitude of various types of lung damage linked to cigarettes and vaping, respectively). According to the thinking that underlies cost–benefit analysis, decision makers should favor the action with the greatest expected net benefit. In contrast, using duty analysis to make a decision means something quite different. Duty analysis simply involves identifying a core responsibility—such as to do no harm—and then acting to uphold it without appealing to any particular calculations. According to the thinking that underlies duty analysis, decision makers should favor the action that allows them to maintain their most important professional responsibility (e.g., nonmaleficence) in a context at hand. Deciding between decision procedures is not an empirical question but an ethical one.

Public health decisions concerning e-cigarette policies should be democratic decisions that incorporate transparent procedures and criteria to be used by policymakers. Deciding what procedure should be used to make the policy decision is an important first question. If contributors addressed this question early on, their contributions could better shape the public discourse.

Hidden Disagreement 2: Relevant Duties or Outcomes

In recent viewpoints, Hopkinson (2) and Lang and colleagues (1) expressed conflicting opinions about England's "stop to swap" program, effectively arguing for and against it. However, Hopkinson and Lang and colleagues, respectively, focused their attention on different things, and neither is explicit about what exactly is relevant to the policy decision. In his article, Hopkinson (2) focused his attention on the relative safety of e-cigarettes as reflected in biomarkers; on the effectiveness of e-cigarettes for adult smoking cessation; and their benefits in reducing children's access to cigarettes, exposure to adult cigarette use, passive smoke, and smoking *in utero*. In addressing the concern that normalizing adult e-cigarette use will increase youth vaping, Hopkinson (2) emphasized that youth vaping is "driven by aggressive marketing of the products to children" (p. 1008), implying that the effects of adult e-cigarette use on youth's own initiation are negligible. Yet, Hopkinson (2) did not state explicitly whether the impact of adult e-cigarette use on youth vaping should be accounted for in the decision-making process. He remarked only that the "swap to stop" policy is "at most, simply irrelevant to the issue of youth vaping and, in fact, is likely to provide substantial benefits for the health of children and young people through its effect in reducing adult smoking" (p. 1008). From this, we are not sure whether Hopkinson believes *1*) the impact of adult e-cigarette use on youth vaping is "simply irrelevant" to the policy decision in the sense that it should be excluded from decision making or *2*) the impact of adult e-cigarette use on youth vaping should be accounted for in decision making alongside its other effects on children, because we can be assured the former is negligible and the latter beneficial. This is an important distinction, and clarification would be helpful to understand the disagreement between Hopkinson and Lang and colleagues and inform the overarching debate.

In contrast to Hopkinson, Lang and colleagues (1) focused their attention on undesirable outcomes, including cardiopulmonary disease, DNA damage in oral cells, detrimental effects on the developing brain, e-cigarette use in youth, long-term use of e-cigarettes, and dual use of e-cigarettes and combustible cigarettes. Although Lang and colleagues perhaps consider all of these outcomes to be relevant to the policy decision, they did not say why these outcomes merit listing over others or give refined characterizations of them (e.g., what effects on the developing brain are important to the decision?) and the appropriate harm thresholds (e.g., how detrimental must such effects be to matter to the decision?). It would be helpful to the debate for us to hear these details, as well as Lang and colleagues' reply to likely objections, including the fact that these outcomes range widely in the depth and quality of evidence suggesting harm.

For every factor that is weighed (or not) as part of a health policy decision, the public will be better informed when the justification is more clearly specified. To advance informed deliberation about e-cigarette policies, we would hope for contributors to say explicitly what should be considered in the decision-making process and why.

Hidden Disagreement 3: Standards of Evidence

Behind the disputes over e-cigarettes lie specific disagreements about what empirical facts can be inferred from current scientific evidence. For example, the American Lung Association highlights that "The Food and Drug Administration has not found any e-cigarette to be safe and effective in helping smokers quit" (10), whereas the United Kingdom's National Health Service suggests this evidence exists (12). What should we make of discordances such as these?

A widely appreciated insight is that our ethical values play a role in determining what standard of evidence we demand in a given context (3, 7, 13). There is no single, indisputable threshold at which we know we have sufficient evidence to determine whether a hypothesis is true or false. We must use our judgment to draw the line somewhere, and this has ethical significance: If we perceive the ethical consequences of error to be more (or less) serious, we will demand more (or less) evidence. Another widely appreciated insight is that certain types of evidence are generally more robust for some purposes than for others (e.g., randomized controlled trials are generally more robust for drawing causal inferences, observational studies less so), but experts continue to dispute the nuances. As a result, when experts disagree about whether there is sufficient evidence to infer an empirical fact, we cannot know exactly what is going on. Either they disagree about how powerful a certain line of evidence is in supporting a particular inference or they disagree about how cautious we should be before making an inference—or some combination. These reasons underlying disagreement are conceptually distinct but impossible to pull apart in practice. One helpful thing we can do is encourage contributors to reflect on what has influenced their assessments and standards of evidence in a given context, speaking in terms of scientific criteria and their own values (7, 13).

What would debates around "swap to stop" look like if we encouraged this sort of

reflection? To start, debates would include direct discussion of what sort of caution contributors think is most warranted in this context. One way to be cautious is to restrict e-cigarette use for smoking cessation, lest their promotion cause undue harm; another is to promote e-cigarettes for smoking cessation, lest their restriction cause undue harm. For some, the first sort of caution will appeal because of certain intuitions: It is essential for public health to avoid a reputation for distributing toxic interventions; it is a priority to model a nicotine-free lifestyle to youth; it is wrong to stir up profits for Big Tobacco. For others, the second sort of caution will appeal because of other instincts: Smokers are overwhelmingly a disadvantaged and thus priority population; deaths from cigarette use are particularly tragic; the harms from tobacco are so significant that any missed opportunity to reduce its consumption is likely to produce net harm. For people with the first set of intuitions, it would be acceptable for some number of smokers to fail to quit to protect their other values. For people with the second set of intuitions, it would be acceptable for some number of youth to start vaping to protect theirs.

The exact numbers in the above examples turn on two things: the value one places on different duties or outcomes (e.g., protecting institutional reputations, helping smokers quit smoking, preventing youth from vaping) and one's degrees of belief regarding empirical facts (e.g., the harmfulness of e-cigarettes in various respects). Because these things are entangled and complex, it is unreasonable to require contributors to quantify all the values and degrees of belief that drive their decisions (14). However, it is reasonable to ask contributors to speak to them qualitatively when discussing policy decisions. This includes articulating the relative importance that contributors attach to different duties or outcomes and specifying what evidence (if any) would be sufficient to change their views. Contributors for whom the decision hinges solely on a single duty or outcome could make this known, and all contributors could be explicit about what, for them, is irrelevant to the decision.

Conclusions

We have identified three disagreements over e-cigarettes, suggesting ways to improve policy debates and better inform public deliberation. These types of disagreements reflect common differences in ethical values and commitments, meaning our suggestions may be effectively applied to other debates within respiratory medicine and beyond. When contributing to these debates, we encourage respirologists to be explicit about their reasoning, including elements that are often implicit. ■

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