those concerns; and cardiologists, who recognize the growing evidence linking components of e-cigarette vapor to endothelial damage in particular.

LACK OF HARD EVIDENCE FOR HARMS

It seems necessary to look beyond these differences in emphasis. PHE was one of the first organizations to support e-cigarettes. It has actively promulgated the claim that they are 95% safer than conventional cigarettes. Crucially, that claim is derived not from empirical evidence but from a meeting attended by 12 people, many who had previously expressed support for e-cigarettes. The report, often referred to as the "Nutt report" after its lead author, provided this remarkably precise and memorable figure even though their article conceded, "A limitation of this study is the lack of hard evidence for the harms of most products on most of the criteria."[5(p224)] Despite this most fundamental of caveats, a senior PHE official told an Australian parliamentary inquiry, "We are very clear that this is just one of the figures that we have used, and there are plenty more. *We say what really matters is the evidence underlying this figure came from the Nutt report.*"[6] [emphasis added] To complicate matters further, there are important questions about the funding of the meeting, specifically any role of the tobacco industry, that are yet to be answered satisfactorily.[7]

Of course, considering how little time has elapsed since e-cigarettes entered widespread use, it is impossible to put a precise figure on harm, and the emerging evidence indicates that it is inappropriate to view them as a safer form of cigarette, as both types contain substances not found in the other, ensuring that dual users will have the worst of both worlds. But, because of the prominence of this claim, now afforded extensive visibility via e-cigarette industry promotion, it has been hard to retreat from it.

This is an example of what is termed "escalation of commitment" or, by economists and behavioral scientists, "sunk cost fallacy" (see Appendix). Once embarked on a course of action or line or argument, it is difficult to extract oneself. It leads to a situation in which evidence that supports the position being held is promoted, whereas that which challenges it is dismissed. Thus, even though Juul e-cigarettes—which have come to dominate the US market in just three years—are only now entering the UK market—with evidence already of an increase in adolescent e-cigarette use—we are to believe that the situation is somehow completely different from that in the United States, where adolescent vaping has assumed epidemic proportions. Considering a common language and the strong cultural links between the two countries, the idea that the powerful provaping imagery on the Internet will somehow disperse in a puff of smoke on its journey across the Atlantic seems, to say the least, implausible. So, as we seek to explain this example of English exceptionalism, the answer may lie in the growing literature on cognitive biases. AJPH

Martin McKee, MD, DSc

CONFLICTS OF INTEREST

M. M. is immediate past president of the European Public Health Association, which has expressed major concern about the promotion of e-cigarettes.

REFERENCES

1. Byrne S, Brindal E, Williams G, et al. *E-cigarettes, smoking and health: a literature review update*. Canberra, Australia: Commonwealth Scientific and Industrial Research Organisation; 2018.

2. Ferkol TW, Farber HJ, La Grutta S, et al. Electronic cigarette use in youths: a position statement of the Forum of International Respiratory Societies. *Eur Respir J*. 2018;51(5):1800278.

3. Coleman B, Rostron B, Johnson SE, et al. Transitions in electronic cigarette use among adults in the Population Assessment of Tobacco and Health (PATH) study, waves 1 and 2 (2013–2015). *Tob Control*. 2019;28(1):50–59.

4. Fernandez E, Lugo A, Clancy L, Matsuo K, La Vecchia C, Gallus S. Smoking dependence in 18 European countries: hard to maintain the hardening hypothesis. *Prev Med*. 2015;81:314–319.

5. Nutt DJ, Phillips LD, Balfour D, et al. Estimating the harms of nicotine-containing products using the MCDA approach. *Eur Addict Res*. 2014;20(5):218–225.

6. Parliament of Australia. Standing Committee on Health, Aged Care and Sport: 18/10/2017: use and marketing of electronic cigarettes and personal vaporisers in Australia. 2017. Available at: https://parlinfo.aph.gov.au/parlInfo/search/display/display.w3p. Accessed April 4, 2019.

7. Gornall J. Public Health England's troubled trail. *BMJ*. 2015;351:h5826.

Public Health, Politics, and the Creation of Meaning: A Public Health of Consequence, July 2019

See also Jakubowski et al., p. 1034.

Our health is the product of the social, economic, and environmental context within which we live. The air we breathe, the water we drink, our education, our friend networks, the places where we live, and the conditions of our work are foundational drivers of our health. This observation, perhaps obvious at this point in time for the readers of *AJPH,* has one fundamental implication that colors the science of population health and the practice of public health. It suggests, centrally, that the health of populations is inherently political.

It is impossible to separate our social, economic, and environmental conditions from the political decisions and actions that create this context. Decisions that drive quality and availability of housing, for example, inevitably pertain to the allocation of resources and must rest on prioritization of the same through political processes. The conditions of our employment are inextricable from economic circumstance and the motives—including financial—that inform occupational structures, salaries, and

ABOUT THE AUTHORS

Sandro Galea is with the School of Public Health, Boston University, Boston, MA. Roger D. Vaughan is an AJPH *associate editor and is with The Rockefeller University, New York, NY.*

Correspondence should be sent to Roger D. Vaughan, The Rockefeller University, 1230 York Ave, Box 327, New York, NY 10065 (e-mail: roger.vaughan@rockefeller.edu). Reprints can be ordered at http://www.ajph.org by clicking the "Reprints" link.

This editorial was accepted April 11, 2019.

doi: 10.2105/AJPH.2019.305128

opportunities for occupational mobility.

Appreciating that the health of populations is inherently political challenges public health to consider how it can generate the right political conditions that can create health. How may those engaged with the science of population health and the practice of public health grapple with the inexorable entanglement of politics and health? We suggest three approaches that may help us rise to this challenge.

ALIGNING POLITICS AND POPULATION HEALTH

First, we might start with the education of public health practitioners and population health scholars of the future. Public health practitioners typically are trained through an academic public health system that, until recently, was focused on teaching epidemiology, biostatistics, and other canonical public health disciplines and was far less concerned with teaching the practical leadership or advocacy skills needed to engage with and influence political processes. Similarly, population health scientists are trained in these same disciplines to identify causes of the distributions of health in populations; those causes seldom extend to the macro-social and hard-to-assess political processes that are at the foundation of the generation of population health.

There are encouraging signs that this is beginning to change.[1,2] Public health education is moving beyond its traditional disciplinary silos to a more integrative approach to education, one that recognizes that the solutions to complex problems lie at the interstices of disciplines and must draw on eco-social frameworks that start perhaps with the political, moving through levels of influence to include then the behavioral and personal.[3,4] We remain far from having arrived on this front. New accreditation criteria from the Council on Education for Public Health that privilege integration of knowledge across disciplines only came into place in 2016 and the implications of those changes are only now slowly beginning to influence curricula across schools and programs of public health. Population health science continues to emerge as a discipline and, as that proceeds, its remit is slowly coming into focus.[5] Both these shifts portend well, even as the eventual form of public health education and future scholarship remain to be defined.

Second, it seems to us important that the current practice of public health and the scholarship of population health science embrace the political implications of our work and assertively take on issues of consequence. This is illustrated aptly in an article in this issue of *AJPH* that considers whether US investments in aid are associated with perception of the United States in recipient countries (Jakubowski et al., p. 1034). Our engagement in public health with issues of health aid investments typically are concerned with either a moral argument—health aid as a means to fulfilling the social justice agenda that is at the heart of public health—or a health outcome argument—health aid as a way of improving the health of global populations. Both these arguments are important and indeed should remain at the heart of public health thinking around our motivation for much of what we do, whether that is around health aid or other matters.

However, health aid does not happen without a political calculus, and Jakubowski et al. provide data that tackle the political implications of health aid in a way that can usefully inform this discussion. We appreciate that there may be some unease in public health about arguments that are nakedly political. After all, if the moral argument is strong and an approach improves health, should it then not be adopted widely? Is the case of public health not made? In a pragmatic world, the political calculus that dictates which resources are deployed, how, and when cannot be ignored, and our playing a role in providing data that can sway that calculus is both worthwhile and a core part of our responsibility.

Third, we will not achieve improved population health without creating a narrative that makes the creation of health in populations meaningful. Political action is motivated by meaning, often by money, and by the implied or explicit significance of a particular outcome. Political actions are beholden to dominant narratives. While the romantic notion of the maverick leader who acts against the tide to achieve what is right has a noble place in stirring fiction, it is largely that: fiction. Political actions represent efforts to implement approaches that are meaningful to the various constituencies represented, be they community members who demand local parks, workers looking for salary equity within the workplace, or citizens demanding clean air in the face of global environmental climate change.

This meaning, however, is created; it is a function of the perspectives we adopt to inform our worldview and the value we attribute to particular states. That suggests that public health practice and population health science must be in the business of creating meaning, informing the political action that generates our health. The article by Jakubowski et al. can be seen to be doing just that—it is generating a narrative around the significance of health aid that gives meaning, informs our motives, and shifts the playing field that informs political action. The creation of meaning may be an unfamiliar role for public health, but one whose import comes into sharp relief when we recognize the inevitability of the political at the heart of what we do.

OUT OF THE PUBLIC HEALTH COMFORT ZONE

In sum, a forward-looking public health, cognizant of its responsibility to tackle the political imperatives that underlie the generation of health in populations, may do well to embed this approach in educating future generations and in our work on a day-to-day basis. Recognizing that we play a role in creating meaning, in generating the narratives that shift political actions, urges us to consider how our science and practice can rise to this responsibility. It is a bolder conception of the work of public health than we may be comfortable with, but is perhaps truer

to the core concerns of health than much else with which we engage. AJPH

Sandro Galea, MD, DrPH
Roger D. Vaughan, DrPH, MS

CONTRIBUTORS

The authors contributed equally to this editorial.

CONFLICTS OF INTEREST

The authors have no conflicts of interest to declare.

REFERENCES

1. Sullivan L, Galea S. A vision for graduate public health education. *J Public Health Manag Pract*. 2017;23(6):553–555.

2. Sullivan L, Magana L, Galea S. Peering into the future of public health teaching. *Lancet Public Health*. 2018;3(6):e268.

3. Sullivan LM, Velez A, Edouard VB, Galea S. Realigning the Master of Public Health to meet the evolving needs of the workforce. *Pedagogy Health Promot*. 2018;4(4):301–311.

4. Begg MD, Galea S, Bayer R, Walker JR, Fried LP. MPH education for the 21st century: design of Columbia University's new public health curriculum. *Am J Public Health*. 2014;104(1):30–36.

5. Keyes KM, Galea S. Setting the agenda for a new discipline: population health science. *Am J Public Health*. 2016;106(4):633–634.