Reviewer’s report

Title: Structural Racism in Precision Medicine: Leaving no one behind

Version: 1 Date: 08 Oct 2019

Reviewer: Leslie Francis

Reviewer's report:

This article presents a discussion of structural racism in precision medicine. It emphasizes three "nodes": initial bias in data collection, integration of biased data into PM initiatives, and influence of structural racism in the deliverables of PM initiatives for minority groups. As a general matter, the influence of structural racism on health care is a critically important topic. More specifically, awareness of the actual impact of structural racism in PM is also critically important. Any assessment of this article must begin with these points. In what follows, my goal is to evaluate the article on its own terms: does it raise awareness of how structural racism influences PM initiatives? To do this, the article would need (1) to bring to light important and under-recognized information about the impact of structural racism on PM and (2) to do so in a manner that will catch readers' attention. The argument of the article as presented really amounts to this: because structural racism has had major impacts on clinical care and research to date, in the US particularly but also in Europe, we need to take care to ensure that it does not also infect PM. This is a useful caution, but one that many involved in PM are trying to address; for example, the "all of us" initiative in the US is seeking to collect data directly from individuals and to oversample individuals in underrepresented groups. My concerns relating to these points are discussed below.

Regarding (1).

L. 90. That most genetic databases contain primarily Euro-ancestry data is not an illustration of how the research field has been characterized by exploitation and abuse, although it does indicate how research has disproportionately yielded information about those of Euro-ancestry.

L. 106 ff. This information is well known and terrible. Its relevance to the specific conduct of precision medicine is less clear, however. The article would be far better served to focus on precision medicine, rather than structural racism in health care generally. Otherwise, it's a speculative caution, leaving open the possibility that PM might serve as a counter to the structural problems with contemporary health care.

L. 201 ff. There's an important difference between the bias exhibited by health care personnel in treating patients (e.g. all the material in the Unequal Treatment 2002 report in the US) and "biased data" in the form of data that disproportionately represent people of Euro ancestry. This first section is largely a critique of the former; however, it's important to also emphasize the latter: even if people get similar treatment when they get into the system, if fewer people of color get into the system, there will be less informative data about them. This section needs to bring out this difference more sharply than it does. Discussing how structural racism affects each of these ways in which data might be biased would be a very helpful contribution but right now, this section risks just re-iterating important concerns about bias in health care generally.

The discussion of the second node again is about general problems with AI in clinical medicine and research. It does not explain how these issues with AI are appearing specifically in PM. L. 305-308 raise the central point, but only in speculation. Also, l. 318 ff. it would be great to have an example of this in action in PM.

The discussion of the third node is much better—it sends a direct and informative caution about
current outcomes of the PM initiative. Correspondingly, the discussion of correctives at this node is also directly aimed at PM. For the first node, it would be great to see discussion of whether the "all of us" initiative is addressing the problems of limited data in populations not of Euro ancestry, along with whether private sector initiatives such as Ancestry.com or the biobanks mentioned in the discussion of node 3 are doing so. It would also be useful to consider whether there are any promising initiatives to deal with correcting data arising from bias in treatment. Right now, this discussion aims to correct health care more generally.

Regarding (2).
Starting with Animal Farm introduces a confusion between metaphysics and social structures. Orwell's novel is a scathing critique of a metaphysical view: that some have lesser moral status than others. Social structures perpetuating racism may have originated in such views as they reflect the heritage of slavery. However, today the primary aim of the critique is not assumptions about differential moral status. Rather, the primary aim is to have us notice how social structures have different effects on people who are agreed to be equal in moral status, effects that are correlated with a difference, race, that is utterly irrelevant to moral status. There's some recognition of this difference beginning at p. 156.

To the extent that this article attacks bias in health care more generally, it is unlikely to raise awareness among the PM crowd. PM folks might argue that their efforts—at collecting new data, for example—are aimed to counter the background problems with structural racism and health care. The discussion of the third node comes closest to raising awareness of PM—I would encourage the authors to be far more targeted in their consideration of the other nodes. Otherwise, this article will read as a general critique of health care and research, rather than as a specific concern about PM as it is currently practiced.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

No

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Unable to assess

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

No

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

Not relevant to this manuscript

Quality of written English
Please indicate the quality of language in the manuscript:

Acceptable

**Declaration of competing interests**

Please complete a declaration of competing interests, considering the following questions:

1. Have you in the past five years received reimbursements, fees, funding, or salary from an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

2. Do you hold any stocks or shares in an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

3. Do you hold or are you currently applying for any patents relating to the content of the manuscript?

4. Have you received reimbursements, fees, funding, or salary from an organization that holds or has applied for patents relating to the content of the manuscript?

5. Do you have any other financial competing interests?

6. Do you have any non-financial competing interests in relation to this paper?

If you can answer no to all of the above, write 'I declare that I have no competing interests' below. If your reply is yes to any, please give details below.

I have no competing interests.

I agree to the open peer review policy of the journal. I understand that my name will be included on my report to the authors and, if the manuscript is accepted for publication, my named report including any attachments I upload will be posted on the website along with the authors' responses. I agree for my report to be made available under an Open Access Creative Commons CC-BY license ([http://creativecommons.org/licenses/by/4.0/](http://creativecommons.org/licenses/by/4.0/)). I understand that any comments which I do not wish to be included in my named report can be included as confidential comments to the editors, which will not be published.

I agree to the open peer review policy of the journal