COMMENTARY

Precision Medicine Research: An Exception or An Exemplar?

Emily A. Largent

Precision medicine is "an emerging approach for disease treatment and prevention that takes into account individual variability in genes, environment, and lifestyle for each person."[1] There is growing interest in precision medicine research as an alternative to traditional research because it holds the potential to identify interventions tailored to the needs of particular patients rather than to the needs of the average patient.

Precision medicine has been described as "a paradigm shift"[2] and "a new era of medicine."[3] This perception of novelty has, in turn, led some to call for new approaches to precision medicine research oversight to ensure that participants are protected and that scientific progress is not impeded.[4] Such calls demand our attention because legal, regulatory, ethical, and even technical challenges could erect barriers to major precision-medicine initiatives like the *All of Us* Research Program and hamper medical advancement.

Hammack and colleagues make a welcomed contribution to the field by studying the risks to and protections for precision medicine research participants from the perspective of precision medicine thought-leaders.[5] They focus on the subset of risks and protections related to participant privacy and confidentiality. These are important findings, as privacy and confidentiality have been identified as essential to the sucess of precision medicine research.

These findings suggest that precision medicine research is not exceptional so much as it is an exemplar of the inadequacy of protections for participant privacy and confidentiality more generally. Consider the following examples:

First, identifiability of data is not solely a concern in precision medicine research. It has, for example, been demonstrated that the proliferation of publicly available databases — in combination with increasingly powerful computing technology — makes it possible to re-identify "anonymized" data (e.g., by combining two or more datasets to find the same user in both). Questions about identifiability also arise in biospecimens research. In these other contexts, as with precision medicine research, the fundamental concern is not just identification *per se* but subsequent harms that may arise as a result.

This leads to a second, closely-related point. Genes are not the only research data to give rise to concerns about potential misuse, particularly discrimination. For example, researchers are presently moving toward a biomarker-based understanding of Alzheimer's disease. As recently pointed out by Arias et al. in this journal, current laws — including the Genetic Information Nondiscrimination Act — do not provide meaningful protections from discrimination based on Alzheimer's disease biomarkers.[6] Further, it merits noting that research data do not have to be novel to be highly sensitive. Think of pregnancy status and the persistence of pregnancy-based discrimination.[7]

Third, questions about the value of institutional review board (IRB) oversight are not limited to precision medicine research. There is a substantial body of literature documenting IRB inefficiency and inconsistency, which leads to fundamental questions about whether IRBs are effective in achieving their goals of advancing ethical research and protecting research participants.[8]

Emily A. Largent, J.D., Ph.D., R.N., *is with the Department of Medical Ethics and Health Policy, University of Pennsylvania Perelman School of Medicine, Leonard Davis Institute of Health Economics.*

The Journal of Law, Medicine & Ethics, 47 (2019): 149-151. © 2019 The Author(s)
DOI: 10.1177/1073110519840494

Finally, Hammack et al. conclude by noting the importance of trust: "The success of precision medicine research depends on the public's trust in the research enterprise." Yet, the success of *all* human subjects research depends on earning and maintaining the trust of research participants and other stakeholders.[9]

The thought-leaders interviewed by Hammack and colleagues are clearly aware of these overlaps between precision medicine research and other areas of human subjects research. In fact, several interviewees explicitly reject as problematic "genetic exceptionalism" or the idea that genetic information is meaningfully different than other kinds of research-derived information.

So, what conclusions should we draw from these findings? The thought-leader interviewees had a generally poor view of the panoply of privacy and confidentiality protections for precision medicine research participants. If one (correctly, I believe) rejects genetic exceptionalism, the implication is that we need to rethink privacy and confidentiality protections for all human subjects research — not just for precision medicine research. I would suggest that comprehensive reform is indicated for the complementary reason that if we were to regulate in a piecemeal fashion (domain-by-domain, but equally true of state-by-state), it is both more burdensome to administer and to enforce and leads to gaps and redundancies in protections, among other problems.

I, like many others, would prefer to avoid treating human subjects research protections as a one-way ratchet by which we can strengthen protections but never remove or dilute them. It is wholly consistent with a rejection of genetic exceptionalism to argue that human subjects research protections may need to be ratcheted up but also down as appropriate. As Hammack et al. rightly note, there can be trade-offs between research effectiveness and efficiency, on the one hand, and participant protections, on the other. This balance will be important to bear in mind moving forward. Hammack et al. specifically disclaim the ability to definitively answer questions about how to construct the web of protections for precision medicine research participants' privacy and confidentiality. However, their data should serve as a useful jumping off point for ongoing discussions.

Many of the participant protections suggested by the precision medicine thought-leaders — such as transparency, improved informed consent, and participant engagement — are appropriate for all kinds of research. The need for such protections has been highlighted in other evolving areas of research, such as learning health care systems and patient-centered outcomes research.[10] This overlap only serves to underscore further the exceptionally unexceptional nature of precision medicine research.

So, what conclusions should we draw from these findings? The thought-leader interviewees had a generally poor view of the panoply of privacy and confidentiality protections for precision medicine research participants. If one (correctly, I believe) rejects genetic exceptionalism, the implication is that we need to rethink privacy and confidentiality protections for all human subjects research — not just for precision medicine research. I would suggest that comprehensive reform is indicated for the complementary reason that if we were to regulate in a piecemeal fashion (domain-by-domain, but equally true of state-by-state), it is both more burdensome to administer and to enforce and leads to gaps and redundancies in protections, among other problems.

Note

The author has no conflicts to disclose.

References

1. Genetics Home Reference, "What Is Precision Medicine?" *Genetics Home Reference*, *available at* <https://ghr.nlm.nih.gov/primer/precisionmedicine/definition> (last visited January 31, 2019).
2. P. Sankar and L.S. Parker, The Precision Medicine Initiative's All of Us Research Program: An Agenda for Research on Its Ethical, Legal, and Social Issues," *Genetics in Medicine* 19, no. 7 (2017): 743-750.
3. E. Ashley, "The Precision Medicine Initiative: A New National Effort," *JAMA* 313, no. 21 (2015): 2119-2120.
4. See, e.g., R. Mirnezami, J. Nicholson, and A. Darzi, "Preparing for Precision Medicine," *New England Journal of Medicine* 366, no. 6 (2012): 489-491.

The Journal of Law, Medicine & Ethics, 47 (2019): 149-151. © 2019 The Author(s)

5. C. M. Hammack, K. M. Brelsford, and L. M. Beskow, "Thought Leader Perspectives on Participant Protections in Precision Medicine Research," *Journal of Law, Medicine & Ethics* 47, no. 1 (2019): 134-148.
6. J.J. Arias, A.M. Tyler, B.J.Oster, and J. Karlawish, "The Proactive Patient: Long-Term Care Insurance Discrimination Risks of Alzheimer's Disease Biomarkers," *Journal of Law, Medicine & Ethics* 46, no. 2 (2018): 485-498.
7. S.R. Morain, L.R. Fowler, and J.L. Roberts, "What to Expect When [Your Employer Suspects] You're Expecting," *JAMA Internal Medicine* 176, no. 11 (2016): 1597-1598.
8. H.F. Lynch, S.G. Nicholls, M. Meyer, and H.A. Taylor, "Of Parachutes and Participant Protection: Moving Beyond Quality to Advance Effective Research Ethics Oversight," *Journal of Empirical Research on Human Research Ethics* (2018), *available at* <https://journals.sagepub.com/doi/abs/10.1177/1556264618812625> (last visited January 31, 2019).
9. E.A. Largent, "What's Trust Got to Do With It? Trust and the Importance of the Research–Care Distinction," *The American Journal of Bioethics* 15, no. 9 (2015): 22-24.
10. L. Gelinas, J. Weissman, H. Fernandez Lynch, A. Gupta, R. Rozenblum, E. Largent, and I.G. Cohen, "Oversight of Patient Centered Outcomes Research: Recommendations from a Delphi Panel," *Annals of Internal Medicine* 169, no. 8 (2018): 559–563; E.A. Largent, S. Joffe, and F.G. Miller, "Can Research and Care Be Ethically Integrated?" *Hastings Center Report* 41, no. 4 (2011): 37-46.

The Journal of Law, Medicine & Ethics, 47 (2019): 149-151. © 2019 The Author(s)