Received: 11 January 2023 | Revised: 24 March 2023 | Accepted: 29 March 2023

DOI: 10.1002/lrh2.10366

RESEARCH REPORT

Learning Health Systems

Stakeholder perspectives on data sharing from pragmatic clinical trials: Unanticipated challenges for meeting emerging requirements

Stephanie R. Morain [1,2] | Juli Bollinger [1] | Kevin Weinfurt [3] | Jeremy Sugarman [1,2,4]

[1]Berman Insitute of Bioethics, Johns Hopkins University, Baltimore, Maryland, USA

[2]Department of Health Policy & Management, Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland, USA

[3]Department of Population Health Sciences, Duke University Medical Center, Durham, North Carolina, USA

[4]Department of Medicine, School of Medicine, Johns Hopkins, Baltimore, Maryland, USA

Correspondence
Stephanie R. Morain, 1809 Ashland Ave, Baltimore, MD 21205, USA.
Email: smorain1@jhu.edu

Funding information
National Center for Complementary and Integrative Health, Grant/Award Number: 3U24AT010961-01S1; National Institutes of Health, Grant/Award Numbers: U24AT009676, U24AT010961

Abstract

Introduction: Numerous arguments have been advanced for broadly sharing de-identified, participant-level clinical trial data. However, data sharing in pragmatic clinical trials (PCTs) presents ethical challenges. While prior scholarship has described aspects of PCTs that raise distinct considerations for data sharing, there have been no reports of the experiences of those at the leading edge of data-sharing efforts for PCTs, including how these particular challenges have been navigated. To address this gap, we conducted interviews with key stakeholders, with a focus on the ethical issues presented by sharing data from PCTs.

Methods: We recruited respondents using purposive sampling to reflect the range of stakeholder groups affected by efforts to expand PCT data sharing. Through semi-structured interviews, we explored respondents' experiences and perceptions about sharing de-identified, individual-level data from PCTs. An integrated approach was used to identify and describe key themes.

Results: We conducted 40 interviews between April and September 2022. Five overarching themes emerged through analysis: (1) challenges in sharing data collected under a waiver or alteration of consent; (2) conflicting views regarding PCT patient-subject preferences for data sharing; (3) identification of respect-promoting practices beyond consent; (4) concerns about elevated risks or burdens from sharing PCT data; and (5) diverse views about the likely benefits resulting from sharing PCT data.

Conclusion: Our data indicate unresolved tensions in how to fulfill the expectation to broadly share de-identified, individual-level data from PCTs, and suggest that those promulgating and implementing data-sharing policies must be sensitive to PCT-specific considerations. Future work could inform efforts to tailor data-sharing policy and practice to reflect the challenges presented by PCTs, including sharing experiences from trials that have successfully navigated these tensions.

KEYWORDS
data sharing, ethics, individual participant data, pragmatic clinical trials

1 | INTRODUCTION

There is incredible momentum to encourage, and even require, data sharing in research, driven by initiatives set forth by a range of actors, including the US federal government,[1] other research funders,[2] and scientific journals.[3,4] Numerous arguments have been advanced for broadly sharing clinical trial data, including promoting research transparency and reproducibility, honoring trial participants by increasing the validity and extent of knowledge generated from their contributions, and shielding future participants from unnecessary risk by avoiding redundant trials.[5-7] Yet data sharing also presents complex ethical, regulatory, cultural, and financial challenges, including the need to balance the concerns and interests of a range of key stakeholders, such as trial participants, sponsors and funders, clinical trialists, and downstream data users.[7,8]

The push for more broadly sharing clinical trial data is paralleled by a concurrent rise in the conduct of pragmatic clinical trials (PCTs). In contrast to traditional or "explanatory" trials, "pragmatic" trials embed research activities into routine clinical workflows in settings in which patients typically receive care. While PCTs, like efforts to expand data sharing, offer the promise to increase the efficient generation of socially valuable knowledge to guide future health decisions, they also present diverse challenges.

The challenges presented by sharing data from clinical trials, including those involving genetic and genomic data, as well as the ethical challenges associated with the design and conduct of PCTs have been extensively explored.[7-13] Yet the particular challenges for PCT data-sharing efforts are not widely recognized. While most trials are neither fully explanatory nor fully pragmatic, but instead lie on a spectrum,[14,15] there are nevertheless some features common to many PCTs that raise distinct considerations for data sharing. For example, informed consent is generally viewed as the primary tool to fulfill the ethical obligation to respect those whose data are shared, yet PCTs frequently use waivers and alterations of informed consent.[17] In addition, compared to traditional clinical trials, some PCTs may pose greater risks of reidentification due to the use of extant data.[16-18] Examples of extant data collected and analyzed in PCTs include electronic health records (EHRs), administrative claims, and registries, although the nature and extent of these data (and the subsequent sharing) will vary across trials. However, there have been no reports of the experiences of those at the leading edge of data-sharing efforts for PCTs, including how these particular challenges have been navigated.[18] To address this gap, we conducted interviews with key stakeholders, with a focus on the ethical issues presented by sharing data from PCTs.

2 | METHODS

We recruited respondents using purposive sampling to reflect the range of stakeholder groups affected by efforts to expand PCT data sharing, including investigators, data scientists, health system leaders, sponsors, leaders of data repositories, patient advocates, and those responsible for ethical and regulatory oversight, such as Human Research Protection Program (HRPP) professionals. Letters of invitation describing the project were sent via email. The Johns Hopkins Bloomberg School of Public Health Institutional Review Board determined this study did not constitute human subjects research.

We conducted hour-long, semi-structured interviews via Zoom. The interview guide (see Data S1) focused on the respondents' experiences and perceptions about sharing de-identified, individual-level data from PCTs, and included probes aimed at distinguishing features unique to the PCT context. While we sought to explore the same broad domains across all interviewees, the specific questions and focus varied by role type. Interviews were conducted by one or both members of the research team (SM and JB), audio-recorded, professionally transcribed, and reviewed for accuracy. Respondents were offered $100 for completing the interview.

We used an integrated approach to developing the code structure, including both a priori codes drawn from the interview guide, and emergent, inductive codes.[19] Two investigators (SM and JB) independently reviewed a sample of transcripts to identify key themes and iteratively develop a codebook. Each transcript was then coded by one of these two investigators and then reviewed by the other using the Dedoose software package.[20] Memos were used to describe relevant themes and present exemplary quotations. Speech disfluencies were edited in quotations to improve clarity.

3 | RESULTS

We conducted 40 interviews between April and September 2022 (Table 1). The most common respondent type was PCT investigators (n = 14), followed by data scientists (n = 7) and those responsible for human subjects research oversight (n = 7). Five overarching themes emerged through data analysis: (1) challenges in sharing data collected under a waiver or alteration of consent; (2) conflicting views regarding PCT patient-subject preferences for data sharing; (3) identification of

TABLE 1 Interview respondent characteristics.

Role	Number of respondents
Researchers (Principal Investigators, Co-Investigators)	14
Human Research Protection Program Officials	6
Data Scientists	6
Research Funders/Sponsors	5
Data Repository Leaders/Experts in Data Governance	4
Patient Advocates	3
Health Care System Leaders	2
Total	40
Sex	
Male	23
Female	17
Total	40

respect-promoting practices beyond consent; (4) concerns about elevated risks or burdens from sharing PCT data; and (5) diverse views about the likely benefits resulting from sharing PCT data. We describe each of these in turn.

3.1 | Theme 1: Challenges in sharing data collected under a waiver or alteration of consent

Respondents emphasized the role of informed consent when assessing the ethical permissibility of and considerations for sharing PCT data. A consistent theme across nearly all respondents was that decision-making regarding sharing data collected under a waiver of informed consent required "increased sensitivity" (*Interviewee 5; Investigator*) as compared to trials in which participants have had the opportunity to consent to the research and were notified about the potential for sharing and reuse of research data.

However, respondents differed regarding the ethical acceptability of sharing these data. Some expressed hesitancy, viewing it as ethically problematic if not outright impermissible. As one respondent explained, as at least some set of those enrolled in a trial operating under a waiver of informed consent would likely have preferred not to have been included in the research, further sharing of their data might be viewed as "exponentiating" on the initial "ethical infringement" (*Interviewee 29; Investigator*). A second declared it would be "completely counter to any research ethics that I took to share people's individual-level data within the context of a research study without their permission, or a specific waiver [for that sharing] by an ethical body." (*Interviewee 5; Investigator*)

A third stopped short of suggesting that sharing PCT data collected under a waiver of consent would be categorically impermissible, characterizing it instead as meriting a heightened level of responsibility of investigators and institutions to maintain adequate data protections.

> If patients have not consented to the research…I would think maybe that's an instance where there should be a different approach and maybe data should only be used within an enclave within the health systems or having some additional bar raised. (Interviewee 37; Investigator)

Differences in the permissibility of sharing data collected under a waiver appeared to reflect, at least in part, differences in respondents' perceptions regarding the likelihood that harm might result from such sharing, were data to be reidentified. For those that perceived this risk as low, sharing data collected under a waiver was relatively unproblematic. As one explained, "if it's deidentified, the chances that an individual person is going to be harmed are really minimal." (*Interviewee 15; HRPP*)

This view, however, was sharply criticized by other respondents who described the risk of reidentification as fairly high, invoking as evidence both empirical scholarship and media reports documenting the ease with which individuals can be reidentified using a relatively limited number of variables.

> These folks don't understand the technology, they don't understand how easy re-identification is and they don't understand the potential harms… they're going with that 1996 version, "If I de-identify it it's safe." … you can pull all the different papers and whatnot to show how easily people can be re-identified. (Interviewee 41; Data Scientist)

Further, several respondents described the risk of reidentification as being elevated for PCTs, given the use of extant data.

> The key issue that people are not aware of or not as aware of as they should be is the possibility of re-identifying individuals using those data [extracted from health systems]…In a [conventional] clinical trial where all data are created within the trial envelope, those data do not exist anywhere else in the world, so the potential for re-identification is considerabl[y] lower. (Interviewee 16; Investigator)

3.2 | Theme 2: Conflicting views regarding PCT patient-subject preferences for data sharing

We also identified conflicting expectations regarding the likelihood that patient-subjects would be supportive of sharing PCT data, particularly for trials conducted with waivers or alterations of informed consent.

Some respondents perceived patient-subjects would be supportive of data sharing, and even would expect that such sharing already regularly occurs. Several respondents invoked prior empirical work from related contexts to support these expectations:

> [Our health plan] sends out surveys to their members… there's always a survey question like 'Would you be concerned if your clinical care data and other information in your health record or claims data was being used to improve healthcare, to make decisions?' … Most people are quite altruistic and if their data can help other people as well as help them by more broad utilization of it, they're all for it…" (Interviewee 15; HRPP)

> So we did a little research when we started our DNA databank…shockingly, it was like 80% of people want to contribute, want their data used… (Interviewee 27; HRPP)

In contrast, others anticipated that at least some patient-subjects would prefer not to be enrolled in research without consent, and,

correspondingly, might object to sharing the resulting data. Notably, these respondents also invoked empirical research to explain their views:

> There was a paper done several years ago that said research participants want to be asked…or at least notified…when we talk about downstream sharing of deidentified data it would probably run along the same lines of whether or not people would be willing to or would be bothered by the fact that they were in a study under a waiver in the first place… (Interviewee 26; Investigator)

> And we actually did some surveys many years ago… about the use of medical records data for research … a lot of people endorsed the idea of research but there is a significant minority of people who said, no, I should be asked [for the data to be used]. (Interviewee 16; Investigator)

A few respondents suggested that patient-subject expectations regarding data sharing might vary based upon the institutional setting, with several hypothesizing that individuals seeking clinical care at an academic medical center would be more likely to support research, and, correspondingly, more likely to support sharing of research data:

> When patients go to especially large academic medical centers, they already know probably that in some way those places do research. And the potential is there that maybe they might look at your data…I think the common thought is they want to go to those places because they want to contribute, but they also want to be able to get care that'd driven by research outcomes…I don't know, that may be totally different in a rural hospital. (Interviewee 27; HRPP)

Finally, some respondents appeared to question the centrality or relevance of individual patient-subject preferences regarding decisions to share de-identified research data, due either to perceive the risk of patient harm as low or the related belief that individuals should not be able to opt out of certain socially valuable research activities that pose little burden or risk.

3.3 | Theme 3: Identification of respect-promoting practices beyond consent

Several respondents identified additional considerations, beyond consent, as relevant to the ethical conduct of sharing data from PCTs. A few respondents called for greater transparency to patients, both about the uses of their data, and the potential for the use and sharing of these data to advance research.

> We're not being explicit enough with patients at the very start, when that data is initially being collected… we should be more transparent about how data collected during the care experience has potential for reuse for important research questions. (Interviewee 43; Patient Advocate)

In addition, a few respondents emphasized the importance of sharing research findings with patients and other stakeholders.

> There should be some plan to share back results to those sites that participated …it's a way to get some additional input that can often enrich interpretation of findings. And then it's about the ethical responsibility of sharing the results. Not just to the journal, but really to the groups that were impacted by the study. (Interviewee 30; Investigator)

> I think we tend to minimize how valuable just learning something or getting something back that was the result of them participating in a [research] experience. We minimize the value back to that individual. And I think that that's something we should correct… Even just being able to say, "We've been conducting a PCT in your healthcare system for the last year, and here's some of the information that we've learned about the people participating." … I think would give people the opportunity to appreciate that their participation …in research generates something, and that something could come back to them in a way that actually might be of interest to them. (Interviewee 43; Patient Advocate)

Respondents described both transparency and sharing research findings with relevant stakeholders as means to respect individuals, while also building public support for the importance of (and potentially an obligation to participate in) health research.

> We have failed as a research community to engage on a societal level [about] our mutual responsibility and to have that explicit discussion about what kinds of risk we are willing to take for the benefit of society, and when does the individual trump that. (Interviewee 7; Investigator)

> We do a terrible job of communicating what research is….people just don't have any idea of the fact that there is research going on all the time with their data. All the time. And yet we're not really helping people understand why that is valuable to them…We just have done an awful job at helping people appreciate and understand what their value is to the healthcare system and improving care for everyone. We can all

> contribute to that, but we're not being engaged to do that, or even being given the opportunity to understand exactly what that could mean. (Interviewee 43; Patient Advocate)

3.4 | Theme 4: Concerns about elevated risks or burdens from sharing PCT data

Many—although not all—respondents characterized sharing PCT data as creating additional risks and burdens as compared to sharing explanatory trial data. We identified at least six distinct features described as contributing to this increased burden.

First, the use of extant data characteristic of many PCTs might elevate the risk of privacy violations, due to the: (a) greater potential for the data to inadvertently contain identifiable information; (b) enhanced logistical challenges to ensure initial deidentification, due to a large number of individuals enrolled; and (c) enhanced potential for reidentification through data linkage. As one investigator explained, in describing differences in sharing PCT data as compared to data from explanatory trials:

> Just the sheer volume and the type of data that we were getting [for our PCT], which was essentially dumps from the EHR, we had much less control over what was actually in those databases than in the traditional explanatory trial where you're collecting data on various forms or doing targeted polls of a limited number of variables…there was always the concern that, if we're going to do data sharing, that somebody would be able to and want to do reidentification of the patients, which they potentially could just because of the large amounts of data that we had on various patients. (Interviewee 6; Investigator)

Second, the risk that individuals might be reidentified has implications not only for individuals themselves but also for health systems. Respondents expressed concern that any data breaches resulting from sharing patient data could lead to patients learning that their health system conducted research without their informed consent and subsequently undermining patient trust.

> It's those two scenarios—no individual informed consent, and potential for re-identification risk—that create the concern… the healthcare systems we work with, obviously, their nightmare scenario is some public embarrassing revelation about individuals being re-identified. (Interviewee 16; Investigator)

> With PCTs, the thinking is 'what's going to happen if people find out they were in the study and they didn't know it.' I think that's absolutely fair for any of [our patients] to feel angry if they find out they're in a trial and they didn't know about it. (Interviewee 18; HRPP)

Third, PCT data includes information about not only patients but also health systems. Consequently, respondents described concerns about reputational risks for health systems resulting from sharing PCT data, including the potential for inappropriate assessments of clinical care quality or performance, and an elevated risk of malpractice claims.

> You have reputational concerns, because, at the end of the day, we are doing research within a delivery system that needs to promote its reputation… (Interviewee 2; Investigator)

Fourth, the nature of PCT data present an increased risk for biased or misleading secondary analysis. Consequently, sharing PCT data was perceived as involving greater costs and burdens than sharing explanatory trials data not only for the time needed to ensure deidentification but also for the development of ancillary materials to support appropriate downstream data use:

> …the typical explanatory trials have a very strong protocol that drives primary data collection. And so, the provenance of the data–why was it generated–is clear. and it's typically unambiguous… but when PCTs try to leverage electronic medical record data, there's an enormous number of issues around the provenance of that data. What generated it? How does it vary from site to site? That's all out of control now. And so, the downstream use of those data in my experience is hard… It's not that folks won't be able to use it. It's just you need to have so much knowledge about the nuances of that data to ultimately use it well. (Interviewee 17; Data Scientist)

Fifth, there are a range of considerations related to the proprietary nature of health system data, including that health data are a business asset, and that sharing data could compromise financial negotiations.

> For [health care] organizations, the data are very valuable … These companies sell data…and they sell it for a lot of money. And so the more data they make freely available in this repository, the less they can sell now. (Interviewee 4; Investigator)

> Say, for example, you were aggregating the kind of drugs that people were being prescribed as part of a clinical trial, and that got shared. A competitor to a health system might be able to figure out a prescribing practice, and maybe they got a great deal from the provider of that drug, and they could use that as a way to better their business interests. (Interviewee 9; Investigator)

Sixth, investigators may be explicitly prohibited from sharing at least some PCT data due to prior data use agreements:

> In a pragmatic trial you're using existing health records—sometimes claims data, sometimes EMR data, sometimes [data from CMS]—that isn't yours to begin with… they have existing safety and privacy rules that are already established before the researcher even gets there. (Interviewee 5; Investigator)

Ultimately, the perceived harms and burdens attributed to sharing PCT data led several respondents to express concern that requirements to share PCT data would disincentivize the health system's willingness to participate in future pragmatic research.

> If NIH is going to make rules around what you have to share, and the community institutions—who are not fundamentally research institutions, their job is to provide care, not to do research—then I can see the community institutions where you want pragmatic trials to be happening, saying, 'it's just not worth it'. … if you raise the risk unacceptably high for community institutions, they're just going to walk. It's just worth it to them. (Interviewee 7; Investigator)

This concern about the costs and burdens of sharing PCT data, however, was not universal. For example, research sponsors generally did not characterize sharing data from PCTs as presenting distinct burdens as compared to sharing data from explanatory trials. Instead, they generally characterized data sharing as a worthwhile investment, noting the costs to support such sharing comprised only a small fraction of overall sponsor budgets:

> The resources needed for repositories are actually quite modest compared to the resources needed to actually conduct the study… you have an institute with a couple billion dollars and so it cost you $3 million a year to maintain a repository of data. It's a very small percent of the total cost… (Interviewee 31; Sponsor)

> The investment to support data sharing is less than one percent… of the research spend, so on those grounds it's a no-brainer when you look at the long-term benefits… it's completely worth the investment. (Interviewee 28; Sponsor)

3.5 | Theme 5: Diverse views about the likely benefits resulting from sharing PCT data

In addition to identifying mixed views regarding the challenges and burdens associated with sharing PCT data, we similarly observed mixed views about the nature and scope of the likely benefits. As one interviewee explained:

> The amount of effort that goes into sharing and secondary analyses… what comes out of it is hard to quantify and has [produced] a couple real wins but it is not this massive source of value that people thought it might be…this is about methods innovation and other things, but it's not really generating high-impact, important work. (Interviewee 12; Investigator)

For some, this skepticism related to the aforementioned concerns that PCT data presented heightened challenges for appropriate use by those unaffiliated with the original study, reducing the perceived likelihood that secondary analyses would yield socially valuable knowledge. Additional reasons for skepticism about the likely benefits offered by interviewees included the perception that PCT data were unlikely to be of broad interest to other researchers.

> How many people are really going to go in and say 'I want to double-check that analysis?' It's probably pretty rare. So, is the juice worth the squeeze for that? I'd say the answer is probably no. (Interviewee 33; Investigator)

Yet, this projection of low demand for PCT data was not universal.

> The same people are telling us how important these clinical trials are should not be also saying, "Well, it's not really going to be that helpful or interesting for someone else to use the data," because that really undermines the importance of their trials in the first place. You can't say what you're doing is vitally important and then also say that if someone else were to use the data, it probably wouldn't be that important. (Interviewee 37; Data Repository)

Further, some rejected the premise that downstream use was the relevant metric for ascertaining the benefits associated with sharing PCT data, emphasizing instead the benefits of "open science" for promoting research integrity and data stewardship.

> Is the juice worth the squeeze to collect your data better and practice better data stewardship? …Yes, that's important. Is the juice worth the squeeze that everyone needs to put their data in a platform…when they're done? I think that's a fair debate. I'm not sure if that juice is worth that squeeze. (Interviewee 34; Data Scientist)

However, as the above quotation illustrates, even those who endorsed the importance of "open science" did not necessarily support requiring all trials to be shared to a repository.

4 | DISCUSSION

This is the first qualitative study exploring the experiences and perspectives of diverse stakeholders regarding sharing individual-level data from PCTs. While prior scholarship has identified distinct considerations for sharing data from PCTs,[16-18] respondents' experiences signal key issues that must be addressed as part of ongoing efforts to encourage data sharing.

First, our findings reveal open questions about how to fulfill the ethical principle of respect for persons when sharing data from trials collected under a waiver or alteration of informed consent. Formal data-sharing policies, corresponding guidance, and scholarship all emphasize the role of informed consent in fulfilling this ethical obligation for those whose data are shared[1,5-7,21,22] Yet, as we have previously described,[17] this emphasis on consent is ill-suited for trials operating under a waiver or alteration of informed consent. This challenge is arguably greatest for trials operating under a full waiver of consent, such as occurs in some cluster-randomized trials in which patient-subjects may not even know they are enrolled in a research study, much less have had an opportunity to express a preference regarding downstream data use. However, it may also arise for trials operating under alterations of informed consent, which often employ streamlined approaches that neither include a discussion of nor solicit preferences about data sharing.

In the absence of explicit consent for data sharing, decisions about sharing fall to various gatekeepers, including investigators, health system operational leaders, and IRB or HRPP officials, who play an important role in protecting patient-subjects' interests.[23] Notably, our data suggest striking differences among these gatekeepers' assessments of the ethical permissibility of sharing data collected under a waiver of consent. These differences appear driven, at least in part, by different assumptions about the likely preferences of enrolled patient-subjects. Several respondents invoked prior empirical studies exploring attitudes regarding data sharing to explain their view that PCT patient-subjects would likely support efforts to share their de-identified research data.[24] These referenced studies, however, assessed preferences within contexts, such as explanatory clinical trials and genomics research, that diverge in ethically important ways from PCTs, and within which individuals have generally made a prospective decision to participate in research aimed at generating socially valuable knowledge. Yet, as other respondents noted, support for data sharing may be different for PCT patient-subjects, given other empirical data indicating that at least some individuals find the use of waivers of informed consent for PCTs ethically objectionable[25-29] and do not support the view that individuals have an obligation to participate,[30] suggesting at least some of those enrolled in a PCT might oppose data sharing and future use. Further empirical and normative scholarship should explore not only the actual preferences of PCT patient-subjects about data sharing but also the relevance of these preferences, particularly against the backdrop of current regulatory standards which permit broad sharing of individual-level clinical and administrative data for non-research purposes.

Second, and relatedly, our data highlight the key role of the healthcare institutions in PCT data sharing. Yet these critical roles for—and impacts on—institutions have gone unrecognized in existing data-sharing policies and guidance. For example, unlike in many explanatory trials, data from PCTs may include extant data from clinical or administrative activities. Consequently, decisions about data sharing may not be within the sole control of the investigator but may instead involve negotiations with the health care systems in which PCTs are embedded, as well as with payers. Furthermore, unlike other data-sharing contexts, in which the risks are generally conceived as being born by the individuals whose data are shared, sharing data from PCTs also presents diverse risks for institutions engaged in this socially valuable research, including disclosure of proprietary business information. Finally, many activities identified by our respondents as being supportive of respectful research practices (eg, transparency about research underway within the system, patient engagement in decisions about research and data sharing, etc.) require institutional coordination.

Third, discourse about how to secure public support for data sharing seems poorly aligned with current practice. In its influential report on data sharing, the National Academy of Medicine emphasized the importance of public awareness of data sharing and its benefits and asserted that increased awareness could drive public support.[7] Yet our data suggest there remains a relative lack of transparency to the public about research activities underway within their health systems, much less the downstream benefits associated with data sharing—benefits which, notably, the experts we interviewed did not have shared agreement about how to measure, much less the likelihood that they would be realized.

Our findings suggest important considerations that can inform future practice and policy. However, several potential limitations should be considered. We spoke with a relatively limited number of stakeholders; others may have different perspectives and experiences. In particular, our sample was weighted heavily towards PCT investigators and institutional leaders charged with the ethical oversight of human subjects research, who may understandably have a different view regarding the relative risks and benefits of data sharing as compared to other stakeholders.

5 | CONCLUSION

Funders and journals are increasingly calling for broad sharing of de-identified, person-level data from clinical trials. Our data indicate unresolved tensions in how to fulfill this expectation for PCTs. More specifically, our data also suggest that a "one size fits all" model for promoting broader sharing of clinical trials data is impracticable; those promulgating and implementing data-sharing policies must be sensitive to the complications presented by features commonly associated with PCTs, including the use of extant data as well as waivers or alterations of informed consent. The impact of these and other complications on the feasibility of and risks for sharing data will vary by features of both individual trials and specific data-sharing policies.

Future work could inform efforts to tailor data-sharing policy and practice to reflect these and other challenges, including sharing experiences from trials that have successfully navigated these tensions. Among the central tensions meriting exploration are the role of transparency to patients and the broader public about data use and the corresponding potential benefits, and, correspondingly, empirical assessments of the actual use of shared data and the corresponding benefits and harms resulting from that sharing.

ACKNOWLEDGMENTS

The authors thank the interview respondents who generously shared their time and insights to inform this research. This work is supported within the National Institutes of Health (NIH) Health Care Systems Research Collaboratory by the NIH Common Fund through cooperative agreement U24AT009676 from the Office of Strategic Coordination within the Office of the NIH Director. This work is also supported by the NIH through the NIH HEAL Initiative under award number U24AT010961. Supplemental funding for this work was provided by the National Center for Complementary and Integrative Health under award number 3U24AT010961-01S1. The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIH or its HEAL Initiative.

CONFLICT OF INTEREST STATEMENT

Jeremy Sugarman is a member of Merck KGaA's Ethics Advisory Panel and Stem Cell Research Oversight Committee; a member of IQVIA's Ethics Advisory Panel; a member of Aspen Neurosciences Clinical Advisory Panel; a member of a Merck Data Monitoring Committee; and a consultant to Biogen. None of these activities are related to the material discussed in this manuscript. No other authors have any conflicts to disclose.

ORCID

Stephanie R. Morain https://orcid.org/0000-0001-7278-7517
Jeremy Sugarman https://orcid.org/0000-0001-7022-8332

REFERENCES

1. Office of the Director, National Institutes of Health. Final NIH Policy for Data Management and Sharing. 2020 https://grants.nih.gov/grants/guide/notice-files/NOT-OD-21-013.html
2. Patient Centered Outcomes Research Institute. Policy for Data Management and Sharing. 2018 https://www.pcori.org/about-us/governance/policy-data-management-and-data-sharing
3. Taichman DB, Sahni P, Pinborg A, et al. Data sharing statements for clinical trials: a requirement of the International Committee of Medical Journal Editors. *JAMA*. 2017;317(24):2491. doi:10.1001/jama.2017.6514
4. Taichman DB, Backus J, Baethge C, et al. Sharing clinical trial data — a proposal from the International Committee of Medical Journal Editors. *N Engl J Med*. 2016;374(4):384-386. doi:10.1056/NEJMe1515172
5. Mello MM, Francer JK, Wilenzick M, Teden P, Bierer BE, Barnes M. Preparing for responsible sharing of clinical trial data. Hamel MB, ed. *N Engl J Med*. 2013;369(17):1651-1658. doi:10.1056/NEJMhle1309073
6. Bauchner H, Golub RM, Fontanarosa PB. Data sharing: an ethical and scientific imperative. *JAMA*. 2016;315(12):1238. doi:10.1001/jama.2016.2420
7. Institute of Medicine. *Sharing Clinical Trial Data: Maximixing Benefits, Minimizing Risks*. Washington, DC: National Academies Press; 2015.
8. Whicher D, Ahmed M, Siddiqui S, Adams I, Grossman C, Carman K. *Health Data Sharing to Support Better Outcomes*. Washington, DC: National Academy of Medicine; 2020.
9. Sugarman J, Califf RM. Ethics and regulatory complexities for pragmatic clinical trials. *JAMA*. 2014;311(23):2381-2382. doi:10.1001/jama.2014.4164
10. Califf RM, Sugarman J. Exploring the ethical and regulatory issues in pragmatic clinical trials. *Clin Trials*. 2015;12(5):436-441. doi:10.1177/1740774515598334
11. Morain SR, Mathews DJH, Geller G, et al. Identification and management of pragmatic clinical trial collateral findings: a current understanding and directions for future research. *Healthcare*. 2021;9(4):100586. doi:10.1016/j.hjdsi.2021.100586
12. Nicholls SG, Carroll K, Zwarenstein M, et al. The ethical challenges raised in the design and conduct of pragmatic trials: an interview study with key stakeholders. *Trials*. 2019;20(1):765. doi:10.1186/s13063-019-3899-x
13. Ali J, Andrews JE, Somkin CP, Rabinovich CE. Harms, benefits, and the nature of interventions in pragmatic clinical trials. *Clin Trials*. 2015;12(5):467-475. doi:10.1177/1740774515597686
14. Loudon K, Treweek S, Sullivan F, Donnan P, Thorpe KE, Zwarenstein M. The PRECIS-2 tool: designing trials that are fit for purpose. *BMJ*. 2015;350:h2147. doi:10.1136/bmj.h2147
15. Weinfurt K. Pragmatic Elements: An Introduction to PRECIS-2. In: The Living Textbook. NIH Collaboratory. 2017 10.28929/092
16. Simon GE, Coronado G, DeBar LL, et al. Data sharing and embedded research. *Ann Intern Med*. 2017;167(9):668-670. doi:10.7326/M17-0863
17. Morain SR, Bollinger J, Weinfurt K, Sugarman J. Ethical challenges in sharing data from pragmatic clinical trials. *Clin Trials*. 2022;19(6):681-689.
18. Platt R, Hernandez A, Curtis L. Statement by Individual Leaders and Investigators Involved in Pragmatic Clinical Trials Embedded in Healthcare Systems. https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwj8i8WBvc7uAhXULc0KHZyWCpsQFjABegQIBxAC&url=https%3A%2F%2Fdcricollab.dcri.duke.edu%2Fsites%2FNIHKR%2FKR%2FCollaboratory_Response_to_Draft_NIH_Data_Sharing_Policy_Jan9_2020.pdf&usg=AOvVaw15o8fP7v0hmjSGV0DaCFLt. Published online January 9, 2020. Accessed February 3, 2020
19. Bradley EH, Curry LA, Devers KJ. Qualitative data analysis for health services research: developing taxonomy, themes, and theory. *Health Serv Res*. 2007;42(4):1758-1772. doi:10.1111/j.1475-6773.2006.00684.x
20. Dedoose version 9.0.62 web application for managing, analyzing, and presenting qualitative and mixed methods research data. www.dedoose.com. Published online 2021
21. White House Office of Science and Technology Policy (OSTP). Desirable characteristics of data repositories for federally funded research. Executive Office of the President of the United States. 2022 10.5479/10088/113528
22. Coady SA, Wagner E. Sharing individual level data from observational studies and clinical trials: a perspective from NHLBI. *Trials*. 2013;14(1):201. doi:10.1186/1745-6215-14-201
23. Whicher DM, Miller JE, Dunham KM, Joffe S. Gatekeepers for pragmatic clinical trials. *Clin Trials*. 2015;12(5):442-448. doi:10.1177/1740774515597699
24. Mello MM, Lieou V, Goodman SN. Clinical trial participants' views of the risks and benefits of data sharing. *N Engl J Med*. 2018;378(23):2202-2211. doi:10.1056/NEJMsa1713258
25. Morain SR, Largent EA. Public attitudes toward consent when research is integrated into care-any "ought" from all the "is"? *Hastings Center Rep*. 2021;51(2):22-32. doi:10.1002/hast.1242

26. Weinfurt KP, Bollinger JM, Brelsford KM, et al. Comparison of approaches for notification and authorization in pragmatic clinical research evaluating commonly used medical practices. *Med Care*. 2017;55(11):970-978. doi:10.1097/MLR.0000000000000762
27. Nayak RK, Wendler D, Miller FG, Kim SYH. Pragmatic randomized trials without standard informed consent?: a National Survey. *Ann Intern Med*. 2015;163(5):356-364. doi:10.7326/M15-0817
28. Cho MK, Magnus D, Wilfond BS. Informed consent for research on medical practices. *Ann Intern Med*. 2015;163(9):725-726. doi:10.7326/L15-5152-2
29. Kass N, Faden R, Fabi RE, et al. Alternative consent models for comparative effectiveness studies: views of patients from two institutions. *AJOB Empiric Bioethics*. 2016;7(2):92-105. doi:10.1080/23294515.2016.1156188
30. Weinfurt KP, Lin L, Sugarman J. Public views regarding the responsibility of patients, clinicians, and institutions to participate in research in the United States. *Clin Trials*. 2019;16(6):574-579. doi:10.1177/1740774519858917

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

How to cite this article: Morain SR, Bollinger J, Weinfurt K, Sugarman J. Stakeholder perspectives on data sharing from pragmatic clinical trials: Unanticipated challenges for meeting emerging requirements. *Learn Health Sys*. 2024;8(1):e10366. doi:10.1002/lrh2.10366