VIEWPOINT

Sharing Clinical Trial Data
Maximizing Benefits, Minimizing Risk

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All patients and their relatives want the best information possible regarding the effectiveness and safety of therapies. Responsible sharing of clinical trial data serves this public interest by strengthening the science that is the foundation of safe and effective clinical care. Sharing also fosters sound regulatory decisions, generates new research hypotheses, and increases the scientific knowledge gained from the contributions of clinical trial participants, the efforts of clinical trial investigators, and the resources of clinical trial funders. However, results from about one-third of clinical trials remain unpublished 4 years after trial completion,[1] and much data from trials are never analyzed. Several large pharmaceutical companies[2] and some academic investigators are already sharing clinical trial data, and the European Medicines Agency will do so beginning in 2015.[3]

There are compelling reasons to share clinical trial data. The issue now is no longer whether to share clinical trial data but instead what specific data to share, when the data should be shared, and with what controls and safeguards. Sharing of clinical trial data presents risks, burdens, and challenges as well potential benefits. Key stakeholders—clinical trial participants, sponsors and funders, clinical trialists, and regulatory authorities—have important concerns and interests that must be addressed and balanced.

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The Institute of Medicine (IOM) has issued a consensus, peer-reviewed, publicly available report that recommends how to promote responsible clinical trial data sharing while minimizing the risks and burdens of sharing.[4] The report distinguished sharing trial data from sharing a summary of trial results, which is already expected. Data sharing does not necessarily mean posting data on a public website without conditions.

The committee first articulated principles to guide sharing of clinical trial data: (1) maximize the benefits while minimizing the risks of sharing clinical trial data; (2) respect individual participants whose data are shared; (3) increase public trust in clinical trials and the sharing of trial data; and (4) conduct the sharing of clinical trial data in a fair manner.

The IOM report sought to balance multiple goals. The privacy and consent of clinical trial participants must be respected. Trial investigators want a fair opportunity to publish their analyses and receive credit for carrying out trials and collecting data. Other investigators want to analyze data that would otherwise not be published in a timely manner and to replicate the findings of a published paper. Sponsors want to protect their intellectual property and commercially confidential information and allow a quiet period to review marketing applications. All stakeholders want to reduce the risk of invalid analyses of shared data.[5,6]

The IOM recommended that clinical trial stakeholders create a culture of responsible clinical trial data sharing and mutually reinforcing incentives for sharing. Funders and sponsors should require funded investigators to share clinical trial data as recommended in the report, consider prior data sharing during review of grant applications, and provide appropriate support for sharing. Investigators and sponsors should share clinical trial data as recommended and design and carry out future trials assuming that data will be shared. Research institutions and universities should ensure investigators share data and consider sharing of clinical trial data in promotion of faculty members. Medical journals should require that authors share the analytic data set supporting publications of clinical trial results. Membership and professional societies should require investigators who submit abstracts at meetings to share clinical trial data as recommended. Institutional review boards should provide guidance and informed consent templates to enable responsible data sharing. Disease advocacy organizations should consider data sharing plans as a criterion for funding grants and promoting clinical trials to their constituents. Regulatory agencies around the globe should harmonize requirements and practices for clinical trial data sharing. For responsible clinical trial data sharing to be sustainable, significant changes will be needed in funding clinical trial sharing, the culture of academic medicine, and incentives for sponsors and investigators to share data.

The report recommended which specific data should be shared after various milestones in a clinical trial. Many clinical trialists feel strongly that they should have the opportunity to write a series of manuscripts analyzing the data before other investigators have access to the data. However, after publication of trial results, medical science best progresses if independent researchers can reproduce the results, assess

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the robustness of the findings, and initiate a vigorous discussion of the findings. After publication of an article reporting clinical trial results, the analytic data set supporting the findings, tables, and figures should be shared no later than 6 months after publication. As a future goal, the committee favored sharing the analytic data set immediately at the time of publication. However, many practical constraints and challenges need to be addressed to implement such immediate sharing.

The full analyzable data set should be shared no later than 18 months after study completion (unless the trial will support a regulatory application). For trials submitted to regulatory authorities for marketing approval, the full analyzable data set and the data summaries in clinical study reports (CSRs) should be shared 30 days after regulatory approval. CSRs may contain participant identifiers and commercially confidential information that need to be redacted. The report also recommended sharing individual participant data at specified times but recognized that this presents greater risks than sharing summary data, such as CSRs.

For all types of clinical trial data sharing, metadata, the protocol, the statistical analysis plan, and the analytic code should also be shared. The report recognized that there will be justifiable exceptions to the recommended time points for sharing. The committee also concluded that for most trials, sharing raw data would be overly burdensome and impractical; however, on a case-by-case basis, it may be beneficial to share raw data in response to requests.

The report also analyzed how risks of sharing clinical trial data may be mitigated through controls over with whom the data are shared and under what conditions, without compromising the scientific usefulness of the shared data. Organizations that share clinical trial data should make use of data use agreements, observe additional privacy protections beyond deidentification and data security as appropriate, and appoint an independent panel that includes members of the public to review data requests. These safeguards should not unduly impede access to clinical trial data. Data sharing organizations should collect data on the disposition of data requests and the outcomes of sharing and publish their experience, best practices for sharing, and lessons they learned.

The report also presented a future vision characterized by a culture of sharing clinical trial data with effective incentives for sharing and protections to minimize risks; multiple interoperable platforms for sharing clinical trial data, with different data access models; adequate financial support for sharing clinical trial data; and fair allocation of costs among stakeholders. The committee identified infrastructure, technological, workforce, and sustainability challenges to achieving this vision of data sharing. In a sustainable and equitable business model, those who benefit from clinical trial data, including the users of shared data, should also bear some of the costs of sharing. A market analysis of the costs of data sharing and of the options for data sharing would provide valuable evidence on which to base cost allocation. In the future, the costs of sharing clinical trial data will decrease if data collection and management are designed to facilitate sharing.

As a next step toward achieving this vision, the report recommended that a trusted, impartial organization or set of organizations convene multiple stakeholders with global representation to address remaining and emerging challenges in implementing responsible clinical trial data sharing. While individual stakeholders can take steps to foster clinical trial data sharing, a broad range of stakeholders must act together to build an ecosystem in which responsible data sharing is expected, flourishes, and continuously improves.

ARTICLE INFORMATION

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