A Focus on Clinical Research at the Investigative Site

Rebecca Daniels Kush is Founder and President of the Clinical Data Interchange Standards Consortium (CDISC), a non-profit organization with a mission to develop and support global, platform-independent data standards that enable information system interoperability to improve medical research and related areas of healthcare. Dr Kush has over 25 years of experience in clinical research and related areas, including work for the National Institutes of Health, academia, a global contract research organization and pharmaceutical companies in the US and Japan. Prior to becoming full-time President of CDISC, Dr Kush founded Catalysis, Inc., a consulting company that focuses on strategy, project management, process analysis and redesign, and is particularly associated with the implementation of new technologies for clinical research. Among numerous publications, Dr Kush is the lead author of the book eClinical Trials: Planning and Implementation, which conveys the vision of linking clinical research and healthcare. Dr Kush serves on the Board of Directors for the US Health Information Technology Standards Panel (HITSP) and the Pharmaceutical Safety Institute, and she was invited to serve on the Scientific Advisory Group of the International Clinical Trials Registry Platform, established by the World Health Organization. She earned a PhD in physiology and pharmacology from the University of California (UCSD) School of Medicine in La Jolla.

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The investigative site is, or should be, the focus of clinical research. This is where the subjects are identified and enrolled, where treatments are sought and tested, where assessments are made and data are collected and entered into case report forms. Over the past two decades, electronic data capture tools have been deployed in an attempt to automate the clinical trial process and decrease the use of multi-part paper case report forms. However, the adoption of such tools has not been as rapid as many of us believed it would be. In fact, it is used in only ~30% of clinical studies, and the majority of those still have a paper back-up component. It is time to reflect on why this adoption has been slow and what can be done to improve the situation.

The Plight of the Site

Imagine being a research investigator or a study co-ordinator at a busy site today. The average active site has at least three different data collection systems for three different studies (along with the notebooks of paper case report forms that are used for the remaining studies they are conducting); and there are many sites with up to a dozen computers or laptops for various studies they are conducting. Each of these applications has its own set of electronic data collection forms and requirements, edit checking criteria and data clarification process. Now, compound this with the fact that much of the requested information has to be entered not only into these systems, but also into the patient’s medical record, which may be paper or electronic. The investigator is responsible for all of this information and its accuracy, in addition to the patients’ medical care and safety. It is no wonder that physicians must carefully consider whether they are willing to participate in clinical research studies today. These decisions clearly impact the ability to recruit subjects and obtain the answers that are needed to make educated decisions on therapies intended to improve healthcare.

Three current initiatives share the goal of facilitating clinical research at the investigative site:

- the development of common data collection criteria (standard data collection);
- the use of a data transmission standard that can be leveraged in the collection, audit, exchange and archive of eSource data; and
- the development of an integration profile to enable the use of one system for both clinical care and clinical research.

Opportunities to Facilitate Data Collection

Data Collection Standards (Case Report Form Standards) – A Critical Path Initiative (CPI) Opportunity

Identified as Critical Path Opportunity #45 is ‘Consensus on Standards for Case Report Forms (CRF)’.

“Clinical trial data collection, analysis, and submission can be inefficient and unnecessarily expensive. A wide array of different formats and standards are used to collect clinical trial information, and most data are submitted to the FDA on paper. Differences in case report forms across sponsors and trials creates opportunities for confusion and error. Standardization of the look and feel of case report forms could reduce these inefficiencies and also help accelerate progress toward electronic data capture and submission.”


Clinical Data Acquisition Standards Harmonization (CDASH) is now a Clinical Data Interchange Standards Consortium (CDISC)-led project, originally initiated by the Association of Clinical Research Organizations (ACRO). CDASH strategy and resources are the responsibility of a Collaborative Group comprising 16 organisations. The project goal is to develop a set of ‘content standards’ (element name, definition and related metadata) for a basic set of global data collection fields (i.e. case report form variables or fields) that will support clinical research studies. The initial scope of the project will be the ‘safety data domains’ (i.e. adverse events, prior and concomitant medication, demographics and subject characteristics, medical history, etc). Further information on CDASH can be found at:

http://www.cdisc.org/standards/cdash/index.html

The overarching goal of this project is to provide for a standard format for collecting data at investigative sites, across applications and study sponsors. Results of another CDISC Project, The CDISC Business Case,
Setting the Global Standard for Clinical Data

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5701 Marinelli Road
N. Bethesda, MD 20852
USA

Further details will be announced via e-mail and on the CDISC website:

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indicate that, if standards are implemented ‘up front’ in the clinical study process (e.g. with study design and data collection), there can be as much as a 60% saving of time and resources in the overall time and cost of the study. In addition, higher data quality and better communication among team members and business partners have also been experienced with the use of standards for data interchange.

Leveraging the Operational Data Model for eSource Data Interchange

The eSource Data Interchange (eSDI) initiative began upon the encouragement of the US Food and Drug Administration (FDA) to have a neutral organisation with available standards (CDISC) address issues that are unclear with respect to data collected electronically initially (eSource data). This initiative has recently resulted in a document titled ‘Leveraging the CDISC Standards to Facilitate the use of Electronic Source Data Within Clinical Trials’.

The purpose of the eSDI initiative was “to facilitate the use of electronic technology in the context of existing regulations for the collection of eSource data in clinical trials for regulatory submission by leveraging the power of the CDISC standards, in particular the Operational Data Model (ODM).” The CDISC ODM is a ‘transport standard’ that facilitates the acquisition, exchange and submission of electronic clinical trial data; it is a vendor-neutral, platform-independent standard that is openly available. It can be found online at: http://www.cdisc.org/models/odm/v1.3/index.html

The overarching goals of the project are:

- to make it easier for physicians to conduct clinical research;
- to collect data only once in an industry standard format for multiple downstream uses; and thereby
- to improve data quality and patient safety.

The document (outcome of the project) includes the following content:

- extensive review and analysis of the relevant existing regulations;
- 12 requirements for conducting regulated clinical research using eSource data collection in the context of existing regulations;
- five potential eSDI-based scenarios, three of which include the use of electronic health record systems (EHRs);
- an appendix on responsibilities of various functional groups;
- a template for evaluation of eSource data collection process as per the requirements; and
- a good practices checklist for investigators.

The document can be accessed at: http://www.cdisc.org/eSDIeSDI.pdf

Integrating the Healthcare Enterprise and CDISC: Retrieve Form for Data Capture

CDISC has been working towards a demonstration of the integration of electronic healthcare record (EHR) systems into the clinical research process. Collaborating closely with pharmaceutical companies, a variety of electronic health record vendors and other leading organisations, the 20 participating companies have been driving forwards five scenarios that will demonstrate the integration profile, Retrieve Form for Data Capture (RFD). These scenarios are drug safety surveillance, biosurveillance, clinical research with an electronic data capture vendor, clinical research laboratory and imaging components and disease registry.

The RFD profile is a system-independent and standards-based method that can be used by an EHR involved in clinical trials to capture data from electronic patient records. The profile will ensure that there is a standard way of displaying external data capture forms within an EHR. With current systems, physicians are often entering the same data more than once, increasing the chances of errors occurring, making a simple task time-consuming and ultimately deterring any physician from wanting to conduct clinical trials. As the clinical research industry recognises the growing need for accurate and trustworthy data, there is a sense that making sure the physician is able to work as easily as possible with pharmaceutical companies and trial sponsors has been the driving force behind the development of the RFD profile.

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Conclusions

The initiatives described in this article are indicative of the work that CDISC and its collaborating partners are doing to further the mission to improve medical research and related areas of healthcare. They are designed to improve the workflow at the site, as well as at the sponsor location. Leveraging these standards and pilots will also improve quality, communication and efficiency in a currently tedious process, which is why they are identified as opportunities to support the Critical Path Initiative. Their success will depend on continued involvement and uptake on the part of sponsors and investigators.

About CDISC

CDISC is a global, open, multidisciplinary, non-profit organisation that has developed standards to support the acquisition, exchange, submission and archive of clinical research data and metadata. The CDISC mission is to develop and support global, platform-independent data standards that enable information system interoperability to improve medical research and related areas of healthcare. CDISC standards are vendor-neutral, platform-independent and freely available via the CDISC website (www.cdisc.org).

CDISC is made possible through the generous support of its members, sponsors and volunteer participants. These include academia, biopharmaceutical companies, technology and service providers, institutional review boards/ethics committees and anyone interested in streamlining biopharmaceutical product development and improving clinical data quality and healthcare. CDISC also collaborates with numerous organisations to achieve its goals. These include the FDA and other regulatory authorities, Health Level Seven (HL7), American Medical Informatics Association (AMIA), the Critical Path Institute and others.