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Ahead of the Curve: Leading with Industry Data Requirements

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ABSTRACT

Most programmers in the pharmaceutical industry are aware of the requirement to submit data in CDISC data format. However, the CDISC mandate is not always clear-cut as there are some nuances and ambiguities to this requirement. Also, there are many other data requirements for the pharmaceutical industry, such as data disclosure regulations, data sharing policies, and dictionary requirements. In addition, clinical trials may now include real world data or electronic health care data which follow new data standards. It can be very challenging for companies to stay "ahead of the curve" in this area. This paper discusses some of the recent developments in industry data requirements, and it also discusses the importance of an organized, cross-functional approach to managing and embedding industry data requirements within a pharmaceutical or CRO company.

This paper covers industry data standards and regulatory data requirements, so it is not specific to any programming language. This paper will be helpful to all levels of programmers in the pharmaceutical industry, including lead programmers and managers.

INTRODUCTION

In this paper, we provide a comprehensive review of the current landscape of data requirements for the pharmaceutical industry. We do not provide in-depth training on CDISC or any other data standard or requirement. Instead, we explain the breadth of data requirements facing the pharmaceutical industry with particular focus on requirements for clinical data. We also list resources for obtaining more information. We have organized this paper into three sections:

- Data Requirements for the Pharmaceutical Industry
- Organizations Developing or Supporting Data Standards
- Best Practices for Managing and Implementing Data Requirements in Your Company

DATA REQUIREMENTS FOR THE PHARMACEUTICAL INDUSTRY

In this section, we describe the different organizations that are driving data requirements for the pharmaceutical industry, and we provide information on the key data requirements governed by or required by each organization.

INTERNATIONAL COUNCIL FOR HARMONISATION (ICH) (WWW.ICH.ORG)

(formerly the International Conference on Harmonisation)

The International Conference on Harmonisation (ICH) was launched in 1990 with the goal of harmonizing pharmaceutical regulatory requirements across different countries. [1]ICH has created key foundational guidelines and standards that are widely used in the pharmaceutical industry such as:

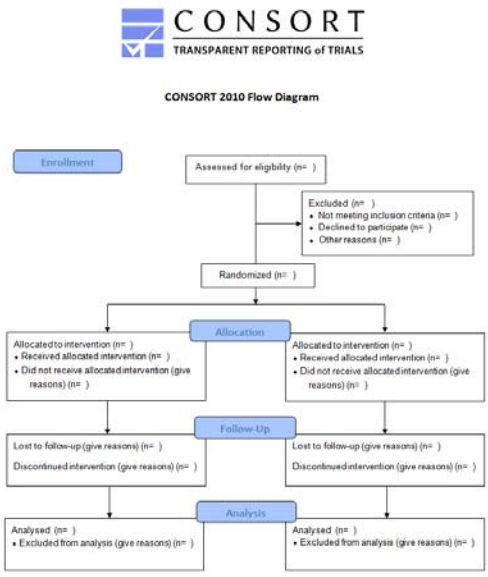
- ICH Guidelines – a set of key guidelines for the design, conduct, and reporting of clinical trials.[2]
- MedDRA (Medical Dictionary for Regulatory Activities) – a free standardized dictionary for medical terminology (e.g. Adverse Events). It is widely used by "regulatory authorities, global pharmaceutical companies, clinical research organisations and health care professionals"[3]

- Common Technical Document (CTD) – a common format for electronic submissions that "led to harmonised electronic submission that, in turn, enabled implementation of good review practices. For industries, it has eliminated the need to reformat the information for submission to the different ICH regulatory authorities."[4]

THE CONSORT GROUP (HTTP://WWW.CONSORT-STATEMENT.ORG/)

The CONSORT Group is an organization of clinical trial professionals and medical journal editors that has developed guidelines for publications about clinical trials in medical journals[5], such as:

- The CONSORT statement, a "minimum set of recommendations for reporting randomized trials" in journals. The CONSORT statement contains a checklist of key items to include in publications of clinical trials.[6]
- The CONSORT diagram, a flow diagram that "displays the progress of all participants through the trial."[7]. Figure 1 is an example CONSORT diagram.



8

Figure 1 CONSORT Diagram

Leading medical journals endorse compliance with the CONSORT statement and diagram, so pharmaceutical companies generally adhere to the CONSORT statement and also produce CONSORT diagrams when publishing articles about clinical trials in medical journals.[9]

REGULATORY AGENCIES

Of course, the pharmaceutical regulatory agencies are the main source of data requirements since these agencies define the legal requirements for regulatory submissions. The regulatory agencies have established data requirements in the following areas.

1. Data Standards
2. Dictionary Requirements
3. Requirements for Disclosure of Clinical Trial Results and Sharing of Patient Data
4. Product Labeling

Data Standards

"The nice thing about standards is that you have so many to choose from." – Andrew Tanenbaum[10]

Regulatory Data Standards Catalogs

Currently the only regulatory agencies that require the submission of clinical data with drug applications (i.e. CRT packages) are the US Food & Drug Administration (FDA) and the Japan Pharmaceuticals and Medical Devices Agency (PMDA). As noted in the quote from Andrew Tanenbaum above, there is an abundance of data standards for clinical and medical data. The FDA and PMDA specify which data standards and versions should be used in data packages submitted to them in their Data Standards Catalogs. These catalogs list the agency's supported data standards and versions along with deadline/support dates for each version. Here are links to the FDA and PMDA Data Standards Catalogs:

- Link to FDA Data Standards Catalog: http://www.fda.gov/downloads/ForIndustry/DataStandards/StudyDataStandards/UCM340684.xlsx
- Link to PMDA Data Standards Catalog: https://www.pmda.go.jp/files/000216763.zip

Regulatory Study Data Technical Conformance Guides

A quick look at the FDA and PMDA Standards Catalog shows that the FDA and PMDA differ in the specific versions they require and their deadline/support dates. They also differ in their rules about how to apply versions of standards to studies: FDA requires that study data comply with the version on the FDA standards catalog at the time of study start,[11] while the PMDA requires that the study data comply with the version on the PMDA Standard Catalog at time of submission[12]. Both agencies list these requirements (along with many other requirements) in their Study Data Technical Conformance Guides. Here are links to the FDA and PMDA Technical Conformance Guides:

- Link to FDA Study Data Technical Conformance Guide V3.3: https://www.fda.gov/downloads/ForIndustry/DataStandards/StudyDataStandards/UCM384744.pdf
- Link to PMDA Technical Conformance Guide on Electronic Study Data Submissions: https://www.pmda.go.jp/files/000215100.pdf

Study Data Standardisation Plan and Form 8 Document

Both the FDA and the PMDA require or will require a document that specifies which data standards and versions are used for every study included in a submission. The FDA calls this document the *Study Data Standardisation Plan*,[13] while the PMDA's document is called the *Form 8* document.[14]

Standards for Integrated Analyses

Another topic addressed in the FDA and PMDA Technical Conformance Guides is the harmonization of data standard versions for integrated analyses of data from multiple studies. The FDA Study Data Technical Conformance states: "Regardless of the specific versions used for individual studies, pooled analyses of coded terms across multiple studies (e.g., for an integrated summary of safety) should be conducted using a single version of a terminology. This will ensure a consistent and coherent comparison of clinical and scientific concepts across multiple studies."[15] The PMDA Technical Conformance Guide on Electronic Study Data Submissions states "Datasets of integrated analyses of multiple clinical studies should be created using the same version, even if the version used to create the dataset of each clinical study was different."[16] Thus, both agencies require that integrated data packages be harmonized to a single version of a data standard. CDISC has stated that they will address CDISC standards for integrated data from multiple studies in future releases of the ADaM Implementation Guide.[17]

Regulatory Requirements for CDISC

CDISC has become the industry standard for clinical data, primarily because the FDA now mandates the use of CDISC standards. The FDA mandate requires that all studies starting after 17-Dec-2016 must be submitted in CDISC format.[18] The PMDA does not yet require CDISC, but they have announced that they will require CDISC beginning 01-Oct-2016, with a 3.5 year transitional period.[19] In addition, the China Food and Drug Administration (CFDA) has announced their support of CDISC.[20] It is likely that more countries will support and/or require data in CDISC format. The CDISC organization maintains a very useful guide to Global Regulatory Requirements for CDISC on their website at https://www.cdisc.org/resources/impending-regulatory-requirements.

As part of its implementation of the CDISC requirement, the FDA has implemented a new Technical Rejection Process effective in December 2016. This process requires the submission of an SDTM Trial Summary (TS) dataset for every study in a submission, even for non-CDISC studies. Non-CDISC studies must include the Study Start date in their TS dataset. The FDA will check the study start date in the TS dataset to determine if the study data should be in CDISC format. If the study start date is after 17-Dec-2016, the study data should be in CDISC format and the FDA will proceed to check the study data for compliance to CDISC.[21] The FDA has also clarified that the study start date for clinical trials is the earliest date of informed consent among any enrolled subjects.[22]

So, the CDISC data standard is clearly a mandate for the pharmaceutical industry. However, this mandate is not always clear-cut and straightforward. One complication for companies who are adopting CDISC standards is that the FDA and PMDA have differences in their CDISC requirements. Companies need to carefully consider these differences when designing data packages that will be submitted to both the US and Japan. Some of these differences are:

- They have different deadlines for supporting and requiring specific versions as recorded in their standards catalogs.
- These agencies have different criteria for rejecting a CDISC data package. Pinnacle21 provided a Webinar in 2016 that includes information about differences in PMDA and FDA validation rules, available at https://www.pinnacle21.com/sites/default/files/blog/2016/01/P21-PMDA-Validation-Rules.pdf.
- The PMDA is stricter about use of System International (SI) units. The PMDA has stated that they will require that SDTM datasets contain SI units, while the FDA allows use of US conventional units.[23][24]
- PMDA prefers Analysis Results Metadata to be included in the ADaM Define.xml while the FDA does not state a preference or requirement.[25]

To complicate the situation even more – there are cases where the regulatory agencies are more stringent about specific CDISC requirements than the CDISC model. For example, the FDA Technical Conformance Guide states that the FDA wants all applicable SDTM domains to include EPOCH.[26] However, EPOCH is a permissible variable in the CDISC SDTM model for most domains.[27] Similarly, the SDTM LB.LBLOINC variable is permissible according to CDISC, but the FDA lists LOINC under Terminology Standards in its Data Standards Catalog and expects to receive it.[28]

Regulatory Guidances for Real World Data and Electronic Health Record Data

Some pharmaceutical companies now collect and use Real World Data (RWD) and Electronic Health Record (EHR) data to augment the data collected in clinical trials[29][30]. The FDA defines Real World Data as follows:

"Real-World Data (RWD) is data collected from sources outside of traditional clinical trials. These sources may include large simple trials, or pragmatic clinical trials, prospective observational or registry studies, retrospective database studies, case reports, administrative and healthcare claims, electronic health records, data obtained as part of a public health investigation or routine public health surveillance, and registries (e.g., device, procedural, or disease registries). The data is typically derived from electronic

systems used in health care delivery, data contained within medical devices, and/or in tracking patient experience during care, including in home-use settings"[31]

Regulatory agencies have not yet mandated data standards for RWD or EHR. But the Health Level 7 (HL7)® standard for clinical messaging and the SNOMED CT standard for controlled terminology are widely adopted at hospitals and healthcare facilities.[32].

Even though there are no binding regulations for RWD or EHR standards, the FDA and the European Medicines Agency (EMA) have released the following draft guidances:

- Draft FDA Guidance: Use of Real-World Evidence to Support Regulatory Decision-Making for Medical Devices

  The *Draft FDA Guidance: Use of Real-World Evidence to Support Regulatory Decision-Making for Medical Devices* explains the concerns with using RWD to support regulatory decisons – this type of data "may not have the same controls for data quality and against biased results as data collected within a clinical trial setting." This guidance lists examples of where RWD can be useful in supporting or augmenting clinical evidence. It also describes criteria that FDA proposes to use to determine if RWD can be used to support regulatory decisions, such as prospective analysis plans, use of a common data capture form, use of a common data dictionary, and data quality and assurance plans. The FDA does not list a specific data standard to be used, but the document does state that RWD should be "presented in a standardized file format and data structure, and adhere to a recognized common data model, if applicable, as data would be presented from clinical trials."[33]

- Draft FDA Guidance: Use of Electronic Health Record Data in Clinical Investigations

  This guidance describes best practices for using Electronic Health Record (EHR) data within clinical trials, such as a clear description of how the EHR data will be used and imported into the sponsor's electronic system, proper archiving practices, assurance that data modifications do not obscure previous entries, audit trails, properly collected informed consent, and safeguards on the privacy and security of the data.[34]

- EMA Paper: Update on Real World Evidence Data Collection

  In this paper, the EMA explains their perspective on RWD and EHR data. This paper lists EU initiatives to increase the utility of RWE, and it provides many examples of actual use of RWE to support regulatory decision making at the EMA.[35]

Dictionary Requirements

Regulatory agencies may also require that certain clinical data dictionaries or specific versions of dictionaries be used with clinical data. The PMDA and the EMA both mandate that the MedDRA dictionary for Adverse Events be used for electronic reporting. The FDA does not mandate MedDRA but it is the de facto standard in the US, and the FDA uses it in their database systems.[36] Unlike MedDRA, there is no single industry standard for medication coding or reporting, although WHO-DD, a dictionary for medications created by the WHO Programme for International Drug Monitoring[37], is commonly used in the industry. Recently, the PMDA has communicated that it will require use of the WHO Drug dictionary in the future.[38][39]

Clinical trials are often conducted at different times during the drug development cycle, thus the data for these studies will use different versions of dictionaries and controlled terminologies. The FDA expects that Adverse Event data included in an Integrated Summary of Safety be harmonized to use a single version of MedDRA.[40] It is also good practice to harmonize versions of medication dictionaries and other controlled terminologies to a single version in integrated data sets.[41]

Requirements for Disclosure of Clinical Trial Results and Sharing of Patient Data

Over the past 20 years, the FDA, EMA, and other organizations have expanded the requirements for public disclosure of results and data from clinical trials. Below is a brief history of the evolution of these requirements.

1997: The US passed the FDA Modernization Act (FDAMA) that required registration of clinical trials.[42]

2005: The International Committee of Medical Journal Editors (ICMJE) passed a requirement that "as a condition of consideration for publication, the prospective registration of certain clinical trials in a public trials registry. Failing to register makes the results of the trial ineligible for publication in the ICMJE member journals."[43][44]

2007: The US passed the FDA Amendments Act (FDAAA). Section 801 of the FDAAA expanded the registration requirement to require "the submission of summary results, including adverse events, for certain trials" into http://www.clinicaltrials.gov.[45]

2014: the EU passed laws with new requirements for public disclosure of results and data:

- *Clinical Trial Regulation EU No. 536/2014* requires that results from EU clinical trials be publicly available". [46] To meet this requirement, companies post clinical trial results in the European Clinical Trials Database (EudraCT) at www.clinicaltrialsregister.eu.[47] This regulation also requires that "a layperson summary should accompany the summary of CT results". This regulation will come into full effect in 2018.[48][49]
- *Policy 70: European Medicines Agency policy on publication of clinical data for medicinal products for human use*[50] was released in two phases:
    - Phase 1 requires the publication of anonymised information from clinical study reports, including patient narratives.[51] Phase 1 of Policy 70 became effective on January 1, 2015.[52]
    - Phase 2 will require the public sharing of individual patient data. The EMA has stated that Phase will be implemented at a future date[53], but they have not yet given a specific date.

  The EMA has published a guidance document for Policy 70 called *External guidance on the implementation of the European Medicines Agency policy on the publication of clinical data for medicinal products for human use for industry best practices and requirements for anonymisation of personal data*. This guidance contains recommendations on best practices and techniques for anonymisation of personal data. The guidance also recommends selecting an appropriate metric for measuring the risk of re-identification of personal data, and it advises to set the threshold of the risk metric to 0.09, meaning that the risk of re-identification should be < 0.09.[54]

2016: The US issued the Final Rule for the FDAAA act requires that additional types of clinical trials must comply with the registration requirement and requires that additional data elements be entered into the trial registry. The final rule of the FDAAA act took effect on January 18, 2017.[55]

The end result of these regulations is that pharmaceutical companies must register their clinical trials, disclose and publish results from those trials, and prepare for the upcoming requirement for public sharing of anonymised patient data. In particular, the requirement to share patient data will require careful planning in order to develop robust processes that protect the identity and privacy of patients.

Product Labeling

In 2010, the European Union passed legislation requiring compliance to Identification of Medicinal Product (IDMP) standards in pharmaceutical product labeling reports (e.g. Structured Product Labeling, Lot Distribution Reports, and Unique Device Identification) by July 2016. The EMA has since post-poned this requirement to July 2018.[56] EU is the first region to adopt the IDMP standards, but other countries are expected to require these in the future[57].

ORGANIZATIONS DEVELOPING OR SUPPORTING DATA STANDARDS

There are a number of organizations that develop or support the development of data standards for clinical and pre-clinical data. Note that these organizations do not mandate the use of their standards - only regulatory agencies can do that.

CLINICAL DATA INTERCHANGE STANDARDS CONSORTIUM (CDISC)

The Clinical Data Interchange Standards Consortium (CDISC) is very well-known in the pharmaceutical industry, and there is a wealth of information and resources available for CDISC standards. Consequently, we will only describe a few highlights of the CDISC organization.

CDISC is a volunteer, multidisciplinary organization that develops data standards for clinical research.[58] It has developed standards in the following areas:

- Foundational data standards, e.g., SDTM, CDASH, ADaM, SEND
- Data Standards for Therapeutic Areas
- Controlled Terminology
- Data Exchange Standards (e.g. Define.xml and ODM – Operational Data Model)[59]

CDISC also maintains the CDISC Shared Health and Research Electronic Library (SHARE) – an electronic metadata repository for CDISC standards.[60]

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)

ISO is an international non-governmental consortium of 164 different standards organizations.[61] ISO primarily creates requirement documents, specifications, and guidelines about standards. They describe their role as "similar to that of a conductor, while the orchestra is made up of independent technical experts."[62] Examples of ISO standards that impact the pharmaceutical industry are

- ISO 8601 standard for Date & Time format (incorporated into CDISC)
- ISO Identification of Medicinal Product (IDMP) standards for pharmaceutical products. IDMP covers medical products as well as substances, routes of administration, dosage forms, units of presentation and packaging, and units of measurement.[63] CDISC has announced that it will develop a new Clinical Trial Registry 2 (CTR2) standard in the future that will align CDISC and IDMP controlled vocabularies.[64]

HEALTH LEVEL SEVEN (HL7) GROUP

Founded in 1987, HL7 is a non-profit organization that develops data standards "for the exchange, integration, sharing, and retrieval of electronic health information."[65] HL7® standards are recognized as the most commonly used in the world for electronic health record data.[66] HL7 also provides Implementation Guides, technical specifications, and education. [67]

SNOMED INTERNATIONAL.

SNOMED International is a non-profit standards developing organization that has created SNOMED CT, a standard for healthcare terminology used in electronic health records.[68] The FDA Data Standards Catalog requires the use of SNOMED CT for indication in the SDTM TS Domain.[69]

FDA SUBSTANCE REGISTRATION SYSTEM - UNIQUE INGREDIENT IDENTIFIER (UNII)

The Substance Registration Board, a joint board of the FDA and the United States Pharmacopeia, have created unique ingredient identifiers (UNIIs) for substances in drugs, biologics, foods, and devices.[70] The FDA Data Standards Catalog requires the use of UNI identifiers in the SDTM and SEND TS domain and in CM.CMDECOD.[71]

NATIONAL DRUG FILE-REFERENCE TERMINOLOGY (NDF-RT)

The National Drug File Reference Terminology is a standard for Pharmacological Class of drugs developed by the Department of Veterans Affairs/Veterans Health Administration. [72] The FDA Data Standards Catalog requires the use of NDF-RT in the SDTM and SEND TS domain.[73]

LOINC®

The Regenstrief Institute, a health research institution[74], has developed the LOINC® standard for laboratory and clinical tests, measurements, and observations.[75] The FDA will require the use of LOINC® codes in the SDTM LB domain starting in 2018.[76]

BIOMEDICAL RESEARCH INTEGRATED DOMAIN GROUP (BRIDG) MODEL

The Biomedical Research Integrated Domain Group (BRIDG) Model is a collaboration of CDISC, HL7, ISO, the US National Cancer Institute (NCI), and the FDA.[77] This group is developing the BRIDG model that shows the relationships and logic for related groupings of granular concepts about medical research and associated regulatory artifacts.[78]

Figure 2 is an example of a Biomedical Research Concept in BRIDG Model

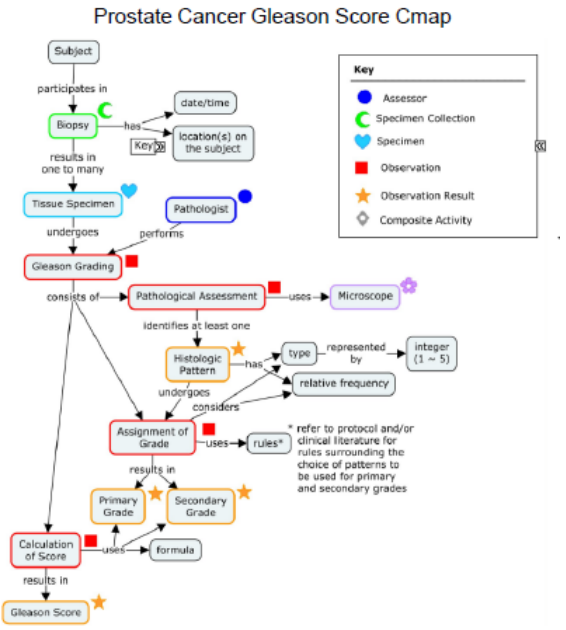
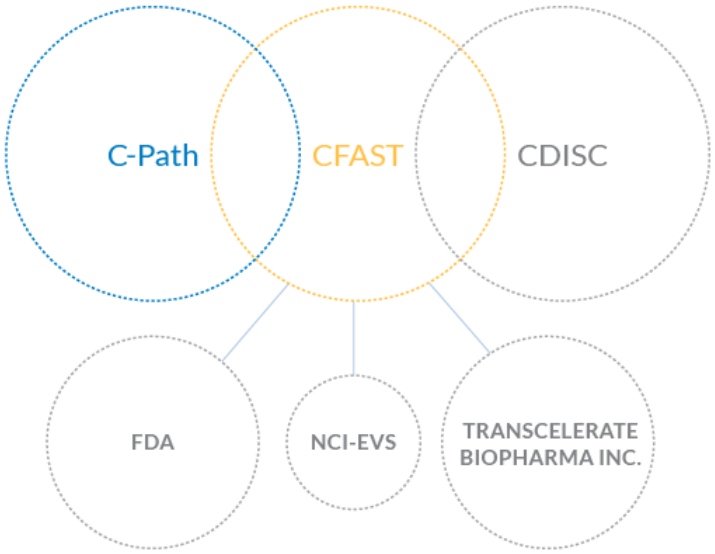


Figure 2. Biomedical Research Concept for Prostate Cancer Gleason Score

C-PATH, CFAST, AND TRANSCELERATE

The Critical Path Institute (C-PATH)[79], the Coalition of Accelerating Standards and Therapies (CFAST)[80], and TransCelerate Biopharma Inc.[81] are organizations that support the development and adoption of data standards for clinical research. In particular, these organizations drive the development data standards in priority Therapeutic Areas (TAs). Note that all TA standards coming from these organizations will be incorporated into the CDISC suite of standards.[82]

Figure 3 shows the relationship between members of the CFAST coalition.



[83]

Figure 3 CFAST Relationships

C-PATH is a "public-private consortia of industry, academia and government" founded in 2015 with a mission to "foster development of new evaluation tools and standards for drug therapy trials, which accelerates regulatory qualification and medical product approval and adoption."[84]

CFAST was formed in 2012 as a partnership between CDISC and C-PATH with a goal of "creating and maintaining data standards, tools and methods for conducting research in therapeutic areas that are important to public health."[85]

TransCelerate Biopharma Inc. is a non-profit organization of 18 biopharmaceutical companies with the goal of "simplifying and accelerating the research and development of innovative new therapies".[86] TransCelerate's work spans many aspects of clinical trials, such as Risk Based Monitoring, Patient Experience & Technology, Pediatric Trial Efficiencies, and a Protocol Template. It also has two sub-teams which focus on clinical data – the Clinical Data Standards Initiative and the Clinical Data Transparency Initiative.[87]

MANAGING AND EMBEDDING INDUSTRY DATA REQUIREMENTS

Clearly, it is a daunting task to stay up-to-date on all pharmaceutical data requirements. First, there are a multitude of requirements and data standards. Secondly, there are differences in the requirements of different regulatory agencies. Also, data requirements are constantly evolving. Thus, mastering industry data requirements is not a once and done task. Instead, it requires constant monitoring of information from the driving organizations. So, how is a company supposed to manage such a dynamic and complex environment?

In this section of the paper, we list suggestions on how companies can "stay ahead of the curve" in the area of industry data requirements.

First, we recommend creating a dedicated Data Requirements Monitoring Team with responsibility for proactively monitoring and gathering intelligence on requirements. This team should be multi-functional with representatives from Regulatory, Statistics, Programming, eCRF developers, Dictionary management, and Data Standards. The Data Requirements Monitoring Team must be allowed to devote time to researching and monitoring data requirements. If they are constantly pulled off to work on studies, then the team will not be effective. It may be helpful to divide up the monitoring responsibilities between members. For example, one person may monitor for announcements from CDISC and CFAST, while another person may specialize in PMDA requirements. Also, a person or group of people must have assigned accountability for collating the intelligence into clear and concise summaries of new or changed requirements, and this should be done on a regular basis.

Of course, the crucial step is embedding new or changed requirements into company systems and processes. This is one of the most difficult steps since it may require updates to software or changes to SOPs and guidance documents/checklists. The actual implementation and embedding of any changes will likely be the responsibility of IT or Change Management groups, but the Data Requirements Monitoring Team must be empowered to kick off the needed system or process changes.

We also recommend that companies put serious effort into improving their management of standards metadata. As a minimum, companies should actively maintain an inventory of their company-supported standards and versions. This inventory must align with regulatory requirements, of course, but it will also contain company-specific information. For example, a company may have internal standards for eCRFs or Table/Listing/Figure mockups that will be included in this inventory. Or a company may adopt a CDISC version before it is required by the FDA – the company adoption date must be recorded in this inventory. This inventory will be a useful reference for submission and study teams to help them know what standards to apply to a study or integrated analysis.

But to truly get "ahead of the curve" for data requirements, we recommend that companies take the next step of implementing a Metadata Repository (MDR) to manage their standards metadata. Until now, many companies have managed standards metadata using Excel spreadsheets. But spreadsheets have many limitations. It is difficult to version standards, map processes, and capture complex relationships between data elements with spreadsheets.[88] These limitations have led to interest in Metadata Repositories (MDRs) – database systems for storing and managing metadata. Several pharmaceutical companies, including GlaxoSmithKline (GSK), are now piloting MDRs. MDRs in the pharmaceutical industry are still in the early stages of adoption, but these systems have potential to greatly improve the governance of data standards in the pharmaceutical industry. These systems promise features such as:[89]

- Linking of different data standards (i.e. CDISC, ODM, HL7) and interface with CDISC SHARE
- Meta-data driven mapping of legacy data to CDISC or other standard
- Validation checks on dataset structure and controlled terminology
- Ability to manage standards at global, therapeutic, compound, and study levels
- Better tools for lifecycle management of standards, including impact analysis tools for evaluating potential changes to standards or versions, audit trails, and version controls
- Automatic generation of DEFINE.XML

According to d-Wise, “an efficient, well implemented MDR has the potential to improve the submission process while reducing costs, improving data quality and compliance, improve business processes, and drive automation.”[90] Time will tell whether MDRs will deliver on all of these promises, but we believe that MDRs are a crucial tool for managing and embedding data requirements.

Since many pharmaceutical companies outsource statistical programming and CRT package creation, companies should also ensure they properly manage data standards for outsourced studies. We recommend that sponsor companies be very clear with CROs on their expectations about standards for outsourced studies, such as what versions should be applied and whether CROs must follow the sponsor company’s internal standards. Sponsor also need to provide all necessary documentation about internal standards to CROs, if needed. We recommend that companies consider adding language about expectations on standards compliance to contracts with CRO in order to ensure a clear understanding.

We also recommend that companies allocate budget and time to properly train staff on data requirements. Training is sometimes short-changed due to time pressures, but we believe that training is an investment that will pay off in the long run. Staff that is knowledgeable of data standards and requirements will be better equipped to comply with data requirements.

For our final recommendation, we advocate that companies change from a reactive to a proactive stance for data requirements. Companies should become active members of organizations that influence the development of data requirements, such as TransCelerate and CDISC. Companies should also take the time to review and provide feedback during public review periods of draft regulatory guidance documents and new data standards. In this way, companies can positively and proactively influence the development of new data requirements, and thus truly stay “ahead of the curve”.

CONCLUSION

The landscape of pharmaceutical data requirements is complex and constantly changing. Keeping up with all of the rules and standards can be overwhelming. To stay ahead of the curve of pharmaceutical data requirements, companies must commit time, money, and resource. They must build a strong infrastructure of staff and computer systems so they can proactively monitor and comply with data requirements. A deliberate and proactive approach is key to avoiding crises where companies scramble at the last minute to try to comply with a new requirement. From our experience, these last-minute scrambles are resource-intensive and inefficient, and they put quality at risk, since last-minute changes to systems and processes can increase the risk of errors. We believe that following our suggested approaches will allow companies to comply with new requirements in an organized and controlled fashion, which will improve their overall efficiency and quality.

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