Data Standards Program Action Plan

Version: 4.1

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REVISION HISTORY

Version Number	Revision Date	Description of Change
1.0	February 21, 2013	Initial Document
1.1	July 29, 2013	Quarterly Update
1.2	October 23, 2013	Quarterly Update
1.3	February 5, 2014	Quarterly Update
1.4	May 30, 2014	Quarterly Update
1.5	October 2, 2014	Quarterly Update
1.6	January 21, 2015	Quarterly Update
1.7	April 8, 2015	Quarterly Update
1.8	July 8, 2015	Quarterly Update
2.0	October 14, 2015	Update to reflect Data Standards Strategy v2.0 and quarterly project update
2.1	February 3, 2016	Quarterly Update
2.2	May 25, 2016	Quarterly Update
2.3	August 31, 2016	Quarterly Update
2.4	November 18, 2016	Quarterly Update
2.5	March 15, 2017	Quarterly Update
2.6	June 29, 2017	Quarterly Update
2.7	December 26, 2017	Quarterly Update
3.0	February 28, 2018	Update to reflect Data Standards Strategy FY2018-2022 and quarterly project update
3.1	April 30, 2018	• Quarterly Update • Identification of Medicinal Product (IDMP) Project description was updated to reflect the use cases for the adoption of the IDMP standards (e.g., quality and safety of medicinal products).
3.2	July 18, 2018	Quarterly Update
3.3	October 25, 2018	Quarterly Update
3.4	January 18, 2019	Quarterly Update
3.5	April 17, 2019	Quarterly Update
3.6	July 31, 2019	Quarterly Update
3.7	November 6, 2019	Quarterly Update
4.0	February 12, 2020	• Project stages updated as applicable to each project • Appendix A: Updated to reflect internal project stages • Quarterly Update
4.1	April 22, 2020	• Quarterly Update

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1 Introduction

The purpose of the CBER-CDER Data Standards Strategy is to reinforce the ongoing commitment to the development, implementation, and maintenance of a comprehensive data standards program that will facilitate the pre- and post-market regulatory review process so that safe and effective medical products are available to patients.

This action plan aligns to the CBER-CDER Data Standards Strategy and reflects progress in CBER and CDER towards the defined goals and objectives. Projects selected for this action plan have started, and are resourced and funded, and have a scope that is primarily standards related.

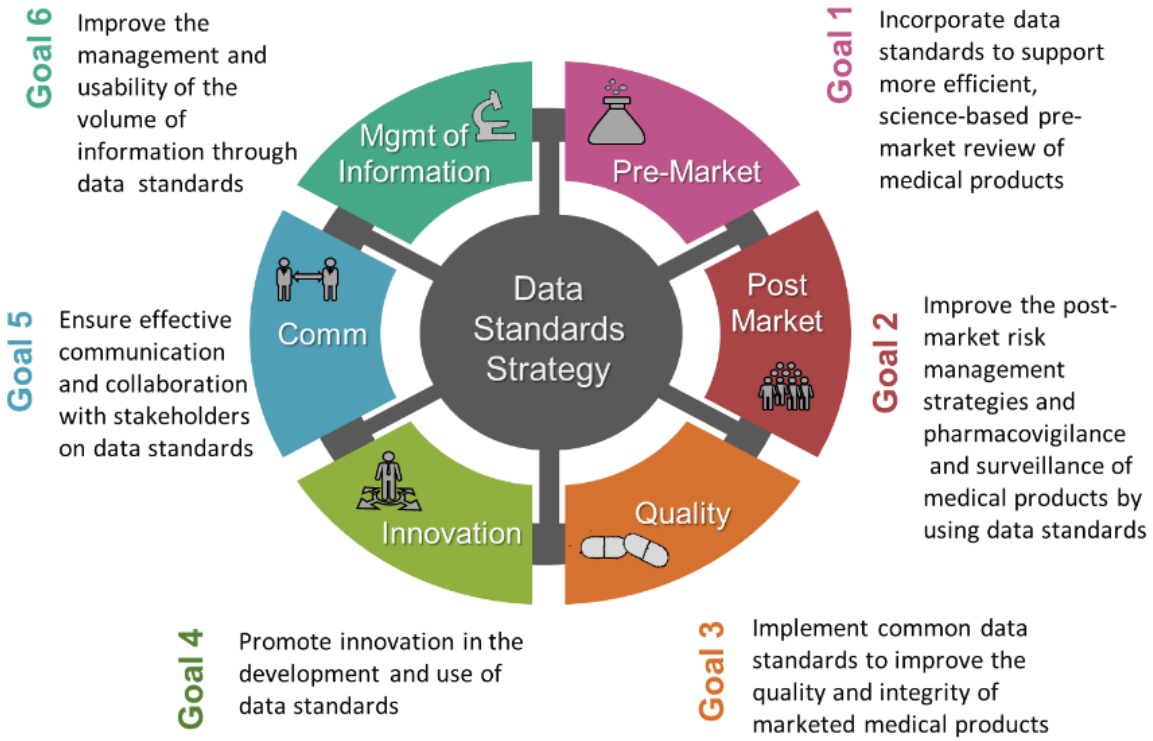
2 Purpose

This Action Plan provides a quarterly update to internal and external stakeholders, with an overview and progress update of current data standards initiatives. The plan will continue to be updated quarterly to reflect progress of current projects, as well as, initiation of new projects.

3 Program Goals and Initiatives

The program goals are derived from the major areas of regulatory business activities. A detailed description of these major areas can be found in the CBER-CDER Data Standards Strategy. Projects in this section are organized by the goals outlined in the Strategy and shown below in **Figure 1.**

Figure 1. Data Standards Strategy Goals



For each project in this section, a project title, description, update, and project stage are provided. The project update reflects work done in the previous quarter (i.e., the February 2018 report highlights work from October to December 2017). The project stage lists the typical stages a project might address during work for the project and are generally conducted in sequence from left to right. Completed or planned stages are shown in gray, stage(s) in progress are in green and have an asterisk, and stage(s) that do not apply to a project are marked with diagonal stripes. The definitions of the project stage are defined in **Appendix A**.

Goal 1: Incorporate Data Standards to Support More Efficient, Science-Based Pre-Market Review of Medical Products

Projects under Goal 1 generally address pre-market and submission standards. These include collaboration with stakeholders and Standards Development Organizations (SDO), and testing standards to be used for submission, content, and storage. Projects that highlight participation in initiatives focused on the harmonization of healthcare and clinical research data standards are highlighted here and further addressed in Goal 4.

Table 1. Pre-Market Projects

Project Title and Description	Project Status	Project Stage
Evaluation and Testing of the SEND Standard for CBER The CBER project will evaluate and test the feasibility to support and require the Standard for Exchange of Nonclinical Data (SEND) standard to improve efficiency in the review process for nonclinical toxicology studies.	Q2: CBER received four valid Proof-of-Concept (POC) studies by the end of January 2020 . CBER has started evaluation on these POC studies, and will publish the result once they are finished.	**Not Applicable**
Study Data Standards Testing This CBER-CDER project uses an established methodology to test new and version updates of study data standards to establish FDA support.	Q1: Assessed the following study data standards: • Define XML v.2.1 • SENDIG – Animal Rule Q2: No updates this quarter.	**Not Applicable**

Project Title and Description	Project Status	Project Stage
eCTD v4.0 Project This CBER-CDER project focus is the development, testing, adoption, and implementation of the next major version of the electronic Common Technical Document. (eCTD) version 4 which includes two-way communication. FDA currently uses eCTD version 3.2.2.	Q2: The FDA has published the draft eCTD v4.0 Technical Conformance Guide and FDA eCTD v4.0 Module 1 Implementation Package v1.2 for public comment. The documents and Federal Register Notice are posted on the FDA eCTD v4.0 webpage (https://www.fda.gov/drugs/electronic-regulatory-submission-and-review/electronic-common-technical-document-ectd-v40).	Req Definition | Alt Analysis | Development | Testing | **Adoption*** | Implementation | Policy
E2B IND Safety Report This CDER and CBER pilot project is testing the receipt and processing of Investigational New Drug (IND) safety reports submission using E2B standards.	Q1: IND Safety Report in International Council on Harmonisation (ICH) E2B Pilot project completed all phases of testing including end-to-end test with industry. FDA published "Providing Regulatory Submissions in Electronic Format: IND Safety Reports: Guidance for Industry" in October 2019. Q2: No updates this quarter.	Req Definition | Alt Analysis | Development | Testing | Adoption | **Implementation*** | **Policy***
Source Data Capture from EHRs: Using Standardized Clinical Research Data This CDER project is working to demonstrate an approach to collecting data for clinical trials that populates an electronic data capture (EDC) system directly from an electronic health record (EHR) system and document improvements to efficiency and accuracy compared to traditional methodologies.	Q1: Began initial planning for phase II of this effort Q2: Phase II Kickoff	**Not Applicable**

Project Title and Description	Project Status	Project Stage
Clinical Outcomes Assessment This CDER project is focused on the development and evaluation of clinical outcome assessments (COA) submitted in support of regulatory submissions.	Q2: FDA provided final review on Ten-Meter Walk, 4 Stair Ascend, 4 Stair Descend, Rise From Floor, and ADaM Geriatric Depression Scale Short Form CDISC Supplements	**Not Applicable**

Goal 2: Improve the postmarket risk management strategies and pharmacovigilance & surveillance of medical products by using data standards

Projects for Goal 2 address standards identification and use in FDA's mission to protect public health through medical product safety and postmarketing surveillance. Projects that highlight the communication of essential risk evaluation and mitigation strategies and standards for electronic transmission of individual case safety reports with external stakeholders are highlighted here.

Table 2. Postmarket Projects

Project Title and Description	Project Update	Project Stage						
		Req Definition	Alt Analysis	Development	Testing	Adoption	Implementation	Policy*
Integrating REMS Information into SPL The objective of this CDER project is to capture and submit structured information about Risk Evaluation and Mitigation Strategies (REMS) and official FDA-approved REMS Documents in Structured Product Labeling (SPL).	Q1: The project published draft guidance (FDA-2017-E-4282) under 745A(a) in FY18 to move towards requiring REMS submissions in SPL format. Activities to finalize the guidance are underway. Q2: No updates this quarter							■

Project Title and Description	Project Update	Project Stage						
		Req Definition	Alt Analysis	Development*	Testing	Adoption	Implementation	Policy
Grant Project: Investigating Support for 21 CFR 11 Compliance Using HL7 FHIR: As a use case for enabling implementation of audit trailing and provenance capabilities in Real World Data research, this grant is evaluating approaches to build out elements of the HL7 FHIR standard to support these capabilities. An initial use case is to adding audit trail support to FHIR Resources used for recording Patient Reported Outcomes (PROs).	Q1: Working with HL7 FHIR workgroups to evaluate different approaches to integrate audit trail support into PRO Resources. Early work on developing a draft implementation guide has begun. Q2: Initiated white paper and draft work on potential FHIR Implementation Guide							

Goal 3: Implement common data standards to improve the quality and integrity of marketed medical products

Projects for Goal 3 address medical product quality and identification of contamination and other production failures with common data standards. Projects that highlight the development and implementation of data standards that describe manufacturing and testing of medical products, International Standards Organization (ISO) standards implementation, and complete essential facility and manufacturing information through submission requirements are highlighted here.

Table 3. Quality Projects

Project Title and Description	Project Update	Project Stage						
		Req Definition	Alt Analysis	Development*	Testing*	Adoption	Implementation	Policy
Pharmaceutical Quality/ Chemistry, Manufacturing, and Controls Data Standardization This CDER project with participation from CBER and CVM will identify and standardize data elements, terminologies, and data structures to enable automation of key analyses of Pharmaceutical Quality (PQ)/ Chemistry, Manufacturing, and Controls (CMC) data to support more efficient and effective regulatory decision-making.	Q1: Applied revisions to FHIR profiles based on lessons learned from the PQ/CMC Proof-of-concept (PoC) testing. Q2: Continued working with HL7 Workgroups to incorporate PQ/CMC requirements into FHIR.							

Project Title and Description	Project Update	Project Stage						
		Req Definition	Alt Analysis	Development*	Testing*	Adoption	Implementation[1]	Policy

IDMP Project
This project has multiple use cases focused on the adoption of ISO Identification of Medicinal Product (IDMP) standards: 1. Medicinal Product ID (MPID) , 2. Substance ID (SubID), 3. Pharmaceutical Product ID (PhPID), 4. Route of Administration, Dosage Form, and 5. Units of Measure).
 	
These ISO standards define medicinal product information for regional and global data sharing. Generally, the use cases focus on safety (e.g., ICSRs) and can support quality (e.g., PQ / CMC).
	Q1: Established IDMP work streams and working groups for each of the five ISO standards.
	• Collaborating with European Medicines Agency to develop FHIR resource for substance and medicinal products.
	• Global Substance Registration System (GSRS) v2.3.3 is in production.
	• FDA presented issues related to ISO 11239/TS 20440 and the use of regional vs central terminologies for dose form, and provided a potential solution to harmonize regional dose forms for generating global PhPID. ISO postponed decision on TS 20440 to the April 2020 ISO meeting.
	• FDA provided comments on both ISO 11239 and TS 20440 to USTAG in December 2019.
	
	Q2: The ISO TC215 Health Informatics Work Group 6 will meet to discuss
	• Possible revisions to:
	  ○ ISO 11239:2012 and ISO TS 20440:2016
	  ○ ISO 19844:2018
	• Confirmation/approval of:
	  ○ ISO 11240:2012
	  ○ DTR 24080 - translations and synonyms for the identification of medicinal products for ISO 11615
	  ○ NWIP *Clinical Particulars-Indications Terminology Mapping*							

[1] As reported in the Action Plan v2.7, IDMP (ISO 11238) was implemented as part of the GSRS and CDER implemented the Product Master Data domain that is referenced by other CDER applications, as appropriate.

Project Title and Description	Project Update	Project Stage
Post Approval Changes Rulemaking & Submission Standards This CBER-CDER project is focused on improving submission requirements to ensure that essential facility location, production information, and an up-to-date view of the CMC process are captured completely, and in a format that is conducive to electronic receipt, storage and usage.	Q1: The project continues to assess and refine the proposed changes that are undergoing internal agency review. Q2: No updates this quarter.	**Req Definition*** / Alt Analysis / Development / Testing / Adoption / Implementation / Policy

Goal 4: Promote innovation in the development and use of data standards

Projects for Goal 4 address research and development in pursuit of innovation to keep pace with advances in medical science and regulatory review. Projects that highlight implementation of new data standards, encourage the use of electronic health records to support clinical trials, and evaluation of the feasibility of representing real world data in an electronic standardized format are highlighted here.

Table 4. Innovation Projects

Project Title and Description	Project Update	Project Stage						
		Req Definition	Alt Analysis*	Development	Testing	Adoption	Implementation	Policy
Common Data Model Harmonization Project: Phase II This CDER project is focused on leveraging nearly all aspects of the previous phase of work to expand the utility of a real-world evidence research tool which, in addition to support queries across four distinct Common Data Models (FDA's Sentinel Program, the Observational Health Data Sciences and Informatics program, the National Patient-Centered Clinical Research Network, and the Accrual of Patients to Clinical Trials network), will support querying HL7 FHIR-compliant data sets, making it useable in a wide variety of research settings. For the phase of work, FDA is coordinating its partner the National Institutes of Health National Center for Advancing Translational Sciences.	Q1: Contracts initiated, initial planning for project and architectural approach complete. Q2: Architectural design, mappings to US Core initiated.		Alt Analysis*					
Assessing Applicable Data Standards for Use in Submission of Real World Data to FDA FDA is examining the gaps between the Real World Data (RWD) needs of FDA and capability of various data standards to support submission of RWD to FDA. This assessment will help determine a roadmap for applying data standards for RWD submission to FDA.	Q1: Contracts initiated, initial planning for project, environmental scan initiated. Q2: Environmental scan completed, internal interviews underway.		Alt Analysis*					

Goal 5: Ensure effective communication and collaboration with stakeholders on data standards

Program operations for Goal 5 execute CBER and CDER's communication and collaboration with internal and external stakeholders for the successful development, implementation, and use of data standards to support regulatory review of medical products. Document updates that report progress towards meeting FDA goals are highlighted here.

Table 5. Communication Efforts

Program Operations	Updates
Webpage Updates	The following webpages were updated with conformance guide and action plan documents referenced below: • CDER Data Standards Program • Study Data Standards Resources
Federal Register Notices (FRNs)	The below FRNs are going through internal clearance: • Electronic Study Data Submission; Data Standards; Support and Requirement Begin for Study Data Tabulation Model Version 1.7 Implementation Guide 3.3 and for Define-Extensible Markup Language Version 2.1; Requirement Ends for Study Data Tabulation Model Version 1.3 Implementation Guide 3.1.3 • Prescription Drug User Fee Act of 2017; Electronic Submissions and Data Standards; Public Meeting; Request for Comments (*Meeting was scheduled for April 22nd but canceled due to the situation surrounding COVID-19 pandemic.*)
eCTD Submission Standards	No updates this quarter.
Technical Specifications and Conformance Guide Updates	Study Data Technical Conformance Guide v4.5 (March 2020)
Action Plan	The Data Standards Action Plan v4.0 was published on February 14, 2020.

Program Operations	Updates
Outreach Opportunities, Public Meetings & Educational Activities	FDA Webinars are planned to focus on various data standards topics.

Goal 6: Improve the management and usability of the volume of information through data standards

As outlined in the Data Standards Strategy document, technology is critically important and serves as an enabler for reviewers to access and use large amounts of data and information that is received and generated. Several data standards development projects are already underway, as highlighted earlier in this document, to promote access to high-quality, standardized data including the PQ/CMC Standardization and IDMP projects. CDER also continues to define and enhance ways to better capture information created internally to support continued knowledge management activities. Progress towards the Goal 6 objectives will be highlighted annually in the Data Standards Program Annual Assessment and not tracked quarterly.

Appendix A. Project Stage and Description

The Stage Name column lists the stage name as outlined in **Figure 2** and a shortened name listed in the tables above. As discussed in the next section, there is variation in all data standards projects so not all processes are needed for every project.

Table 6. Standard Development Project Stages

Stage Name	Stage Description
Define Scope and Requirement (Req Definition)	A plan is developed that can include a description of the data standard need, impact on tools, processes, and information technology infrastructure, high-level concept of operations, future state benefits, and high level requirements. For study data-related projects, FDA subject matter experts and document resources (e.g., case report forms, guidance documents) are used to develop requirements for study data standards development.
Analyze Alternatives (Alt Analysis)	If needed, FDA can conduct alternative analyses to assess options and recommendations for addressing the data standards need defined in the business case. Stakeholder input is a critical part of this effort and could include a request for public comment or input in addition to planned communications (as outlined in the Communication Plan).
Development	The FDA subject matter experts conduct an iterative process of data element identification (e.g., elements need to describe the study primary endpoint), definition, validation, and conducts a review with defined expert groups.
Test Standards (Testing)	A project may be required to test that all identified factors are assessed (e.g., scale, impact, suitability for FDA regulatory review needs, compatibility with FDA infrastructure) and that all policy, regulatory, guidance, and technical specification needs are identified. For study data, FDA may use converted or sample data sets to test the study data standard to simulate regulatory review decision making. Having the business rules and/or conformance checks available for a new or updated standard at time of SDO release will be important to FDA's testing efforts.
Determine Data Standard Adoption (Adoption)	If needed, policy, regulatory, guidance, and technical specification needs identified for a given data standards change are addressed to support implementation.

Stage Name	Stage Description
Implement Standard (Implementation)	The data standard change is being implemented into the FDA environment. This phase includes all the steps to make this part of the regulatory review process. Implementation is considered complete when data can be successfully processed, reviewed, and archived utilizing the new standard.
Policy	FDA may publish a FRN or guidance, as well as post relevant technical specifications or technical conformance guides, as needed.

Appendix B: Project to Goals/Objectives Mapping

The following table maps the projects listed in the tables above to the objectives outlined for each goal in the CBER-CDER Data Standards Strategy. Some projects may align to more than one goal and objective.

Table 7. Project Mapping

Projects	Goal 1				Goal 2		Goal 3			Goal 4			
	1.1	1.2	1.3	1.4	2.1	2.2	3.1	3.2	3.3	4.1	4.2	4.3	4.4
Evaluation and Testing of the SEND standard for CBER	x												
Study Data Standards Testing	x												
eCTD v4.0 Project	x												
Source Data Capture from EHRs: Using Standardized Clinical Research Data				x								x	
E2B IND Safety Report	x												
Clinical Outcomes Assessment	x	x									x		
Integrating REMS Information into SPL					x								
Grant Project: Investigating Support for 21 CFR 11 Compliance Using HL7 FHIR	x												
Pharmaceutical Quality (PQ)/, Chemistry, Manufacturing, and Controls (CMC) Data Standardization							x						
IDMP Project						x		x					
Post Approval Changes Rulemaking & Submission Standards									x				
Common Data Model Harmonization Project: Phase II													x
Assessing Applicable Data Standards for Use in Submission of Real World Data to FDA													x

Appendix C: Glossary of Acronyms

API	Applied Program Interfaces
BR&R	HL7 Biomedical Research and Regulation Group
BRIDG	Biomedical Research Integrated Domain Group
CBER	Center for Biologics Evaluation and Research
CDER	Center for Drug Evaluation and Research
CDISC	Clinical Data Interchange Standards Consortium
COA	Clinical Outcomes Assessment
DF	Dosage Form
eCTD	Electronic Common Technical Document
EDC	Electronic Data Capture
EDQM	European Directorate for Quality Medicines
EHR	Electronic Health Record
FHIR	Fast Healthcare Interoperability Resources
FRN	Federal Register Notices
FY	Fiscal Year
GSRS	Global Substance Registration System
HCT/P	Human Cells, Tissues and Cellular and Tissue-Based Products
HL7	Health Level Seven
ICH	International Council for Harmonisation
ICSR	Individual Case Safety Report
IDMP	Identification of Medicinal Product
IND	Investigational New Drug
ISO	International Organization for Standardization
MPID	Medicinal Product Identifier
NDC	National Drug Codes
PCORTF	Patient-Centered Outcomes Research Trust Fund
PDUFA	Prescription Drug User Fee Act
PhPID	Pharmaceutical Product Identifier
PQ/CMC	Pharmaceutical Quality/ Chemistry, Manufacturing, and Controls
REMS	Risk Evaluation and Mitigation Strategies
RoA	Route of Administration
SDO	Standards Development Organization
SEND	Standard for Exchange of Nonclinical Data
SENDIG-AR	Standard for Exchange of Nonclinical Data Implementation Guide: Animal Rule
SME	Subject Matter Expert
SPL	Structured Product Labeling
TA	Therapeutic Area
TAUG	CDISC Therapeutic Area User Guide
UNII	Unique Ingredient Identifier
UoM	Units of Measure