Supporting A Data Review and Visualization Application with SDTM

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Introduction to JReview and our Clinical Data Stream
Why leveraging CDISC SDTM was the best choice
Designing a clinical data stream that supports both review and analysis
Supporting consistent SDTM mapping with a sponsor implementation guide
Ensuring that available data content supports all consumer needs
Building a refresh and review process that makes accurate data available as needed
Examples of how the application supported efficient use and review of study data
JReview Introduction

- JReview is the tool we use to perform:
  - data visualization
  - reporting
  - exploration
- Monitor data quality and patient safety, as well as visually explore data to identify trends
- Used at MedImmune to review raw clinical study data received from EDC and external study data sources, i.e., lab, pk, etc.
- Automated daily extracts on raw data are performed, converted to SDTM and loaded to JReview
- JReview reports are generated for internal use only, primarily for data review, and will not be used for any official or regulatory purpose
Clinical Data Stream Introduction

Raw Data (CRF, External Data) -> SDTM -> ADaM

SDTM -> JReview

SDTM -> TFLs
Why Leveraging CDISC SDTM Best Choice?

- Single source of standardized data
- If raw data is used for data visualization, then the reports and visualization schema would have to be rebuilt and revalidated for each study.
- The same data will be reviewed by statistical teams and used for analysis and submission.
- This will reduce the effort from having multiple groups reviewing the same data in multiple formats.
Clinical Data Stream as Applied: SDTM + EDC System Variables for JReview
J-Review Study Setup & Maintenance

(RPT-JREV1.0) J-REVIEW STUDY SETUP & MAINTENANCE USING SDTM DATA

(RPT-JREV1.1) SDTM PROJECT PLAN & JREV TRACKING
- START
- Notify STATPRG MEDI (DMPRG MEDI)
- Prepare/Update A&R Project Plan (STATPRG)
- Review / Approve A&R Project Plan (STATPRG MEDI / DMPRG MEDI)
- Assign DMPRG to Study (DMPRG MEDI)
- Track Activities, Timelines & Milestones to JREV GO LIVE (DMPRG)
- A&R Project Plan Approved
- Obtain New/Amended Protocol (DMPL)

(RPT-JREV1.2) STUDY METADATA
- Develop CRFs / Standard + New Forms (EDC)
- Build Study (RD) / Standard + New Modules (EDC)
- Activate RAVE Study Database (EDC)
- Provide Annotated CRFs (EDC)
- Provide Architect Load Specifications – ALS (EDC)

(RPT-JREV1.3) SDTM DATA PROVISIONING
- Draft SDTM Programming Specifications (STATPRG)
- Collect Study Metadata Documents (STATPRG)
- Review / Approve SDTM Programming Specifications (STATPRG MEDI)
- Create / Update SDTM Datasets (STATPRG)
- Validate SDTM Transform Datasets (STATPRG)
- SDTM Datasets PROD Ready?
- Active Subject Data Entry in RAVE
- SDTM Datasets - PROD

DATA MANAGEMENT
STAT PROGRAMMING A&R
J-Review Study Setup & Implementation

(RPT-JREV1.4) J-REVIEW STUDY SETUP & IMPLEMENTATION

- Publish & Notify J-Review Go-Live (DMPRG)
- Assign J-Review Objects - Assign Users (DMPRG)

Obtain Initial / Updated CTR List for DMPRG (DMPL)

Upload / Refresh J-Review Object List - Default Library Snapshot (DMPRG)

J-Review Ready Datasets - PROD

Load / Refresh Subject Data - J-Review Ready Format (DMPRG)

Register Study in J-Review (DMPRG)

Perform J-Review SDTM Post-Processing (DMPRG)

YES

SDTM Datasets - PROD

STANDARDS & GOVERNANCE

- Develop & Maintain Global Library (GLIB), Standard Specifications - CRF, DTS, DES, Standard Programming - Online, Offline, J-Review Objects (EDC)
Medi SDTM IG

- To ensure consistent mapping, Medimmune has developed an SDTM Interpretation Guide.
- The Medi SDTM IG consists of all the mapping standards based on the SDTM IG and Medimmune specific implementation rules.
- The Medi SDTM IG includes standard mapping for all supported domains and includes several tabs:
  - SDTM Planning
  - Raw Dataset-Domains Chart
  - Domains tab
  - Individual domain tabs
SDTM Planning Tab

- Completed as part of the SDTM planning meeting held prior to the start of mapping.
- Contains key information about the applicable SDTM standard and Pinnacle 21 version.
- Includes an overview of the study protocol, basic timing (first subject dose, database lock, etc.) and information about SDTM the delivery schedule for each end user group (such as JReview and analysis).
### Raw Dataset-Domains Chart Tab

- Provides an overview of how raw datasets and CRF forms relate to SDTM domains.
- Highlights key mapping decisions that would benefit from discussion.
- Helps ensure that all the raw datasets and unique CRF forms are mapped to SDTM.

<table>
<thead>
<tr>
<th>CRF Form</th>
<th>CRF Pages</th>
<th>Raw DS</th>
<th>SDTM domain</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject</td>
<td>1-2</td>
<td>SUBJECT</td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td>Inform Consent</td>
<td>3-4</td>
<td>IC</td>
<td>DM, DS</td>
<td></td>
</tr>
<tr>
<td>Entry/Randomization</td>
<td>5-6</td>
<td>ENTRAND</td>
<td>DM, DS</td>
<td></td>
</tr>
<tr>
<td>Screen Failure</td>
<td>7-8</td>
<td>SF</td>
<td>DM, DS</td>
<td></td>
</tr>
<tr>
<td>Screen Failure Eligibility</td>
<td>9-11</td>
<td>SFIE</td>
<td>IE</td>
<td></td>
</tr>
<tr>
<td>Screen Failure Demographics</td>
<td>12-15</td>
<td>SFDM</td>
<td>DM, VS</td>
<td></td>
</tr>
<tr>
<td>Screen Failure Adverse Event</td>
<td>16-20</td>
<td>SFAE</td>
<td>AE</td>
<td></td>
</tr>
</tbody>
</table>
Domains Tab

- Contains the domain level information required for the define.xml.
- Includes domain names and labels (including supplemental domains) in alphabetical order.
- Key variables used to define a unique record are listed.
- Domain structure and class information is also available.

<table>
<thead>
<tr>
<th>Domain</th>
<th>Description</th>
<th>Key Variables</th>
<th>Structure</th>
<th>Purpose</th>
<th>Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>AE</td>
<td>Adverse Events</td>
<td>STUDYID, USUBJID, AEDECOD, AETERM, AESTDTC</td>
<td>One record per adverse event per subject</td>
<td>Tabulation</td>
<td>Events</td>
</tr>
<tr>
<td>AG</td>
<td>Procedure Agents</td>
<td>STUDYID, USUBJID, VISITNUM, AGSTDTC, AGTRT</td>
<td>One record per constant dosing interval per subject</td>
<td>Tabulation</td>
<td>Interventions</td>
</tr>
<tr>
<td>CE</td>
<td>Clinical Events</td>
<td>STUDYID, USUBJID, CETERM, CESTDTC</td>
<td>One record per event per subject</td>
<td>Tabulation</td>
<td>Events</td>
</tr>
<tr>
<td>CM</td>
<td>Concomitant Medications</td>
<td>STUDYID, USUBJID, CMTRT, CMSTDTC</td>
<td>One record per recorded medication occurrence or constant-dosing interval per subject</td>
<td>Tabulation</td>
<td>Interventions</td>
</tr>
<tr>
<td>DA</td>
<td>Drug Accountability</td>
<td>STUDYID, USUBJID, DATESTCD, VISITNUM</td>
<td>One record per drug accountability finding per subject</td>
<td>Tabulation</td>
<td>Findings</td>
</tr>
<tr>
<td>DD</td>
<td>Death Details</td>
<td>STUDYID, USUBJID, DDTESTCD</td>
<td>One record per finding per subject</td>
<td>Tabulation</td>
<td>Findings</td>
</tr>
<tr>
<td>DM</td>
<td>Demographics</td>
<td>STUDYID, USUBJID</td>
<td>One record per subject</td>
<td>Tabulation</td>
<td>Special Purpose Domains</td>
</tr>
</tbody>
</table>
Individual Domain Tabs

- Consist of all the variable level details required for programming and define generation.
- All the mapping instructions (based on raw data and study documents) are provided in the programming notes column.
- Medimmune specific guidelines for mapping are provided for each variable.
Data Visualization Example - Hy’s Law Dashboard
Composite Hy’s Law with Patient Data
Composite Hy’s Law with Patient Profile
Conclusion

- Our single SDTM data stream supports all consumer requirements and facilitates efficient use.
- Consistent standardization across studies allows us to consolidate data and visualize vast amounts of information.
- Using an API allows us to automate the process and review live study data in near real time.
- Data visualization tool provides a platform for clinical review teams to review data in a timely manner.
Contact

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Back-up Example