Introduction

Base URL for API Endpoints

Model & Schema

Basic Construct

Core Differences in BC API v2

Example 1

Example 2

Example 3

Example 4

Example 5

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Example 7

Example 8

Example 9

Example 10

Example 11

Example 12

Example 13

CDISC biomedical concepts and dataset specializations are currently supported standards. These include an abstract conceptual layer, aligned with NCI terminology, which is linked to a simplified implementation layer of pre-configured SDTM dataset specializations.

Information for additional specializations, such as CDASH data collections, will be added when they become available.

The biomedical concepts and dataset specializations are informative content. They will start to fill gaps such as semantics, variable relationships and value level metadata. Key objectives are to reduce variability in standards implementations, increase metadata-driven automation and reduce barriers to operational implementation.

CDISC biomedical concepts and dataset specializations will be released in incremental packages. The first package was released on October 26, 2022. Subsequent packages have been released and are now available via CDISC Library APIs (see News and Updates).

Please use CDISC Jira for comments and feedback.

The base URL for the API is:
Note that there has not been a target sunset date established yet.

The model and schema describing the CDISC biomedical concepts and SDTM dataset specializations can be found on [GitHub](https://library.cdisc.org/api/cosmos/v2).

**UPDATED**

The following table shows the basic construct of API requests to obtain biomedical concepts:

<table>
<thead>
<tr>
<th>API request template</th>
<th>API v2 Only?</th>
<th>Return Latest Version Only?</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>/mdr/bc/packages</code></td>
<td></td>
<td></td>
<td>Get Biomedical Concept Package List</td>
</tr>
<tr>
<td><code>/mdr/bc/packages/{package}/biomedicalconcepts</code></td>
<td></td>
<td></td>
<td>Get Biomedical Concept List in a Package (example)</td>
</tr>
<tr>
<td><code>/mdr/bc/biomedicalconcepts</code></td>
<td></td>
<td></td>
<td>Get Biomedical Concept in a Package (example)</td>
</tr>
<tr>
<td><code>/mdr/bc/biomedicalconcepts?biomedicalconcept</code></td>
<td></td>
<td></td>
<td>Get Biomedical Concept (example)</td>
</tr>
<tr>
<td><code>/mdr/bc/categories</code></td>
<td></td>
<td></td>
<td>Get Biomedical Concept Categories List (example)</td>
</tr>
<tr>
<td><code>/mdr/bc/biomedicalconcepts?category={category}</code></td>
<td></td>
<td></td>
<td>Get List of Biomedical Concepts for a Given Category (example)</td>
</tr>
</tbody>
</table>

The following table shows the basic construct of API requests to obtain SDTM dataset specializations:

<table>
<thead>
<tr>
<th>API request template</th>
<th>API v2 Only?</th>
<th>Return Latest Version Only?</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>/mdr/specializations/sdtm/packages</code></td>
<td></td>
<td></td>
<td>Get SDTM Dataset Specialization Package List</td>
</tr>
<tr>
<td><code>/mdr/specializations/sdtm/packages/{package}/datasetspecializations</code></td>
<td></td>
<td></td>
<td>Get SDTM Dataset Specialization List in a Package (example)</td>
</tr>
<tr>
<td><code>/mdr/specializations/sdtm/packages/{package}</code>/datasetspecializations/{datasetspecialization}`</td>
<td></td>
<td></td>
<td>Get SDTM Dataset Specialization in a Package (example)</td>
</tr>
<tr>
<td><code>/mdr/specializations/sdtm/datasetspecializations</code></td>
<td></td>
<td></td>
<td>Get SDTM Dataset Specialization List (example)</td>
</tr>
<tr>
<td><code>/mdr/specializations/sdtm/datasetspecializations?datasetspecialization</code></td>
<td></td>
<td></td>
<td>Get SDTM Dataset Specialization (example)</td>
</tr>
<tr>
<td><code>/mdr/specializations/sdtm/domains</code></td>
<td></td>
<td></td>
<td>Get SDTM Dataset Specialization Domain List (example)</td>
</tr>
<tr>
<td><code>/mdr/specializations/sdtm/datasetspecializations?domain={domain}</code></td>
<td></td>
<td></td>
<td>Get a List of SDTM Dataset Specializations for a Given Domain (example)</td>
</tr>
</tbody>
</table>

The following table shows the basic construct of API requests to obtain dataset specializations:

<table>
<thead>
<tr>
<th>API request template</th>
<th>API v2 Only?</th>
<th>Return Latest Version Only?</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>/mdr/specializations/datasetspecializations?biomedicalconcept={biomedicalconcept}</code></td>
<td></td>
<td></td>
<td>Get a List of Dataset Specializations that Specialize a Biomedical Concept (example)</td>
</tr>
</tbody>
</table>

This is a table of supported parameters:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>package</td>
<td>Package Identifier. An ISO 8601 date.</td>
</tr>
</tbody>
</table>
These are the changes in the response payload from /mdr/bc/packages/{package}/biomedicalconcepts/{biomedicalconcept}:

- Attribute name changes
  - $.category to $.categories
  - $.synonym to $.synonyms
  - $.resultScale to $.resultScales

- Data type changes
  - $.resultScales returns from a scalar to a list

- New attributes
  - $.ncitCode
  - $.dataElementConcepts.ncitCode

Some examples are slightly modified to provide a better visual and flow. The examples are reflective of v2 endpoints.

The JSON standard defines an object as “an unordered collection of zero or more name/value pairs”. As such, the specific order in which object keys appear may vary in the response payload.

Get the biomedical concept list from the package released on October 26, 2022.

/mdr/bc/packages/2022-10-26/biomedicalconcepts

```
{
  "_links": {
    "biomedicalConcepts": [
      {
        "href": "/mdr/bc/packages/2022-10-26/biomedicalconcepts/C25298",
        "title": "Systolic Blood Pressure",
        "type": "Biomedical Concept"
      },
      ...
    ],
    "self": {
      "href": "/mdr/bc/packages/2022-10-26/biomedicalconcepts"
    }
  },
  "effectiveDate": "2022-10-26",
  "label": "Biomedical Concept Package Effective 2022-10-26",
  "name": "Biomedical Concepts 2022-10-26",
  "version": "2022-10-26"
}
```

Get the one Systolic Blood Pressure biomedical concept from the package released on October 26, 2022.

/mdr/bc/packages/2022-10-26/biomedicalconcepts/C25298
Lines 2-18: A list of HATEOAS links to related resources, such as self, parent package, and parent biomedical concept. A note on parent biomedical concept: In this example, Blood Pressure is the parent to Systolic Blood Pressure. parentBiomedicalConcept will not be present for topmost biomedical concepts.

Lines 3-7: The latest version of the parent biomedical concept (Blood Pressure).

Lines 19-21: A list of categories to which this biomedical concept belongs.

Lines 22-28: A list of external code systems to which this biomedical concept relates.
<table>
<thead>
<tr>
<th>Concept ID</th>
<th>Data Type</th>
<th>Example Set</th>
<th>Short Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>C173522</td>
<td>integer</td>
<td></td>
<td>Vital Signs Result</td>
</tr>
<tr>
<td>C49669</td>
<td>string</td>
<td>[cmHg, mmHg, Pascal]</td>
<td>Unit of Pressure</td>
</tr>
</tbody>
</table>

Lines 29-50: A list of data element concepts that comprise this biomedical concept. The href value points to an NCI EVS Thesaurus resource where definition of this data element can be found via the concept code (or, commonly known as c-code).

Lines 31-35: Vital Signs Result (Line 35) is the first data element concept on the list.

Lines 38-47: Unit of Measure (Line 47) is the next data element concept on the list. An example set of values is provided in this example.

Lines 51-61: Metadata about the biomedical concept.

Get a list of all biomedical concepts across packages.

/mdr/bc/biomedicalconcepts
Get the latest version of the Systolic Blood Pressure biomedical concept.

/mdr/bc/biomedicalconcepts/C25298
Lines 2-18: A list of HATEOAS links to related resources, such as self, parent package that has the latest version of this biomedical concept, and parent biomedical concept. A note on parent biomedical concept: In this example, Blood Pressure is the parent to Systolic Blood Pressure. parentBiomedicalConcept will not be present for topmost biomedical concepts.

Lines 19-21: A list of categories to which this biomedical concept belongs.

Lines 22-28: A list of external code systems to which this biomedical concept relates.
"dataElementConcepts": [
  {
    "conceptId": "C173522",
    "dataType": "decimal",
    "href": "https://ncitthesaurus.nci.nih.gov/...&code=C173522",
    "ncitCode": "C173522",
    "shortName": "Vital Signs Result"
  },
  {
    "conceptId": "C49669",
    "dataType": "string",
    "exampleSet": [
      "cmHg",
      "mmHG",
      "Pascal"
    ],
    "href": "https://ncitthesaurus.nci.nih.gov/...&code=C49669",
    "ncitCode": "C49669",
    "shortName": "Unit of Measure"
  }
],

Lines 29-50: A list of data element concepts that comprise this biomedical concept. The href value points to an NCI EVS Thesaurus resource where definition of this data element can be found via the concept code (or, commonly known as c-code).
Lines 31-35: Vital Signs Result (Line 35) is the first data element concept on the list.
Lines 38-47: Unit of Measure (Line 47) is the next data element concept on the list. An example set of values is provided in this example.
Get a list of all the biomedical concept categories.

/mdr/bc/categories

```json
{
  "_links": {
    "self": {
      "href": "/mdr/bc/categories",
      "title": "Biomedical Concept Categories List",
      "type": "Biomedical Concept Category List"
    }
  }
}
```

Get a list of the latest version of all biomedical concepts in the Vital Signs category.

Lines 51-61: Metadata about the biomedical concept.

```json
"conceptId": "C25298",
"definition": "The maximum pressure exerted into the systemic arterial...",
"href": "https://ncitthesaurus.nci.nih.gov/...&code=C25298",
"resultScales": [
  "Quantitative"
],
"ncitCode": "C25298",
"shortName": "Systolic Blood Pressure",
"synonyms": [
  "SYSBP"
]
```

Lines 8-20: A list of HATEOS links to biomedical concept categories, excepted to show Vital Signs.

Each biomedical concept category has 3 elements: href, title, and type.

For an in-depth explanation of HATEOS refer to In-depth: HATEOAS implementation in CDISC Library API for more information about hypermedia links.
Get the SDTM dataset specialization list from the package released on October 26, 2022.

/mdr/specializations/sdtm/packages/2022-10-26/datasetspecializations

Lines 8-15: A list of SDTM dataset specializations matching the package parameter, excerpted to show Systolic Blood Pressure. Note the specialization type is set to "SDTM Dataset Specialization".

Lines 3-10: A list of HATEOS links to biomedical concepts in the Vital Signs category, excerpted to show Systolic Blood Pressure. Each biomedical concept has 3 elements: href, title, and type. For an in-depth explanation of HATEOS refer to In-depth: HATEOAS Implementation in CDISC Library API for more information about hypermedia links.

Lines 17-20: Metadata about the biomedical concept category list.
Get the one Systolic Blood Pressure SDTM dataset specialization from the package released on October 26, 2022.

/mdr/specializations/sdtm/packages/2022-10-26/datasetspecializations/SYSBP

```json
{
  "_links": {
    "parentBiomedicalConcept": {
      "href": "/mdr/bc/packages/2022-10-26/biomedicalconcepts/C25298",
      "title": "Systolic Blood Pressure",
      "type": "Biomedical Concept"
    },
    "parentPackage": {
      "href": "/mdr/specializations/sdtm/packages/2022-10-26/datasetspecializations",
      "title": "SDTM Dataset Specialization Package Effective 2022-10-26",
      "type": "SDTM Dataset Specialization Package"
    },
    "self": {
      "href": "/mdr/specializations/sdtm/packages/2022-10-26/datasetspecializations/SYSBP",
      "title": "Systolic Blood Pressure",
      "type": "SDTM Dataset Specialization"
    }
  }
}
```
Line 19: Beginning of a variable (or, data element) list that comprise this Systolic Blood Pressure SDTM dataset specialization.

Lines 20-43: VSORRESU (Line 21) is the first variable on the list. codelist (Lines 33-37) shows controlled terminology metadata for this variable. relationship (Lines 27-32) shows how this variable is related to another variable in the format of (subject, predicate, object): VSORRESU IS_UNIT_FOR VSORRES.

```
"variables": [
    {
      "name": "VSORRESU",
      "dataElementConceptId": "C49669",
      "isNonStandard": false,
      "mandatoryValue": false,
      "mandatoryVariable": true,
      "role": "Qualifier",
      "relationship": {
        "linkingPhrase": "is the unit for the value in",
        "object": "VSORRES",
        "predicateTerm": "IS_UNIT_FOR",
        "subject": "VSORRESU"
      },
      "codelist": {
        "conceptId": "C66770",
        "href": "https://ncithesaurus.nci.nih.gov/...&code=C66770",
        "submissionValue": "VSRESU"
      },
      "assignedTerm": {
        "conceptId": "C49670",
        "value": "mmHG"
      },
      "vlmTarget": true
    }
```
Lines 44-60: VSSTRESN (Line 45) is the next variable on the list. It has an integer as data type with a preconfigured length of 3. relationship (Lines 53-58) shows how this variable is related to another variable in the format of (subject, predicate, object): VSSTRESN IS_RESULT_OF VSTESTCD.

Lines 63-67: Metadata about the SDTM dataset specialization.

Get a list of all SDTM dataset specializations across packages.

/mdr/specializations/sdtm/datasetspecializations
Get the latest version of the Systolic Blood Pressure SDTM Dataset Specialization.

/mdr/specializations/sdtm/datasetspecializations/SYSBP
Lines 2-18: A list of HATEOAS links to related resources, such as self, parent package, and parent biomedical concept. A note on parent biomedical concept: In this example, Systolic Blood Pressure is the parent biomedical concept to this SDTM dataset specialization. parentBiomedicalConcept will not be present if no parent is available at the time of publication.
"variables": [
    ...
    {
        "name": "VSORRESU",
        "dateElementConceptId": "C49669",
        "isNonStandard": false,
        "codelist": {
            "conceptId": "C66770",
            "submissionValue": "VSRESU",
            "href": "https://ncitthesaurus.nci.nih.gov/...&code=C66770"
        },
        "assignedTerm": {
            "conceptId": "C49670",
            "value": "mmHg"
        },
        "role": "Qualifier",
        "relationship": {
            "subject": "VSORRESU",
            "linkingPhrase": "is the unit for the value in",
            "predicateTerm": "IS_UNIT_FOR",
            "object": "VSORRES"
        },
        "mandatoryVariable": true,
        "mandatoryValue": false,
        "vlmTarget": true
    },
    ...
]}
Lines 45-61: VSSTRESN (Line 45) is the next variable on the list. It has an integer as datatype with a preconfigured length of 3. relationship (Lines 53-58) shows how this variable is related to another variable in the format of (subject, predicate, object): VSSTRESN IS_RESULT_OF VSTESTCD.

Lines 64-70: Metadata about the SDTM dataset specialization.
Get a list of the latest version of all SDTM dataset specializations in the VS domain.

/mdr/specializations/sdtm/datasetspecializations?domain=VS

For an in-depth explanation of HATEOS refer to In-depth: HATEOAS Implementation in CDISC Library API for more information about hypermedia links.
Get a list of the latest version of all dataset specializations that specialize the Glucose Measurement biomedical concept.

/mdr/specializations/datasetspecializations?biomedicalconcept=C105585
Lines 4-25: A list of SDTM dataset specializations that specialize the Glucose Measurement biomedical concept (C105585).