

National Institutes of Health: Intramural Research Program

The Intramural Research Program is the internal research program of the National Institutes of Health. With 1,200 Principal Investigators and more than 4,000 Postdoctoral Fellows conducting basic, translational, and clinical research, the IRP is the largest biomedical research institution on earth.¹

For more information please visit: <https://www.nih.gov/>.


Overview

The [National Institutes of Health](#) (NIH) is a federally sponsored biomedical research program in the United States. The NIH is made up of 27 separate institutes and centers.² The [Intramural Research Program's](#) (IRP) programs are embedded in 24 of the NIH Institutes.³ One of those institutes, the [National Library of Medicine](#) (NLM) is the world's largest biomedical library and the SNOMED CT National Release Center for the United States. The NLM curates an extensive collection of medical knowledge in various formats which is used by millions of people around the world. Across the IRP, some of their Principal Investigators (PIs) use SNOMED CT in their research. A selection of the Intramural Research Program's initiatives which relate to SNOMED CT and CDS, are briefly described below.

Value Set Authority Center

⁴ The [Value Set Authority Center](#) (VSAC), managed by the NLM, is a service designed to maintain and distribute the value sets defined in [electronic Clinical Quality Measures](#) (eCQMs). Each VSAC value set consists of codes and terms from clinical vocabularies such as SNOMED CT, RxNorm, LOINC and ICD-10-CM. Value sets derived from SNOMED CT are used to support the calculation of data quality measures which in turn provide feedback to clinicians about the quality of care. Note that VSAC is a project administered by NLM, but the actual data quality computations are done at individual healthcare sites.

<https://vsac.nlm.nih.gov>

 **Value Set Authority Center**
U.S. National Library of Medicine

Welcome

WelcomeSearch Value SetsDownload

Apply FiltersClear Filters

Narrow search results by selecting from pull-down menus below:

CMS eMeasure (NQF Number)
Select

Quality Data Model Category
Select

Steward
Select

Search the NLM Value Set Repository

Query: Enter value set id, codes, words... Search

Search ResultsValue Set Details

Export

Matched Value Sets

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	Name	Type	Code System	Steward	OID
<input type="checkbox"/>	AAN - Encounter CPT Codes	Extensional	CPT	AAN	2.16.840.1.113883.3.2288
<input type="checkbox"/>	AAN - Encounter Codes Grouping	Grouping	CPT SNOMEDCT	AAN	2.16.840.1.113883.3.2286

Figure 1: VSAC NLM Value Set Repository

Medline Plus Connect

[Medline Plus Connect](#) is an [Infobutton](#) resource which accepts requests for information on diagnoses (problem codes), medications, and lab tests, and returns related information from [MedlinePlus](#). The API is available as a web [application](#) or as a web [service](#), which can be integrated with an EHR. MedlinePlus accepts SNOMED CT problem codes as input and provides CDS in the form of *targeted information prescription*. The example below shows how the Medline Plus Connect request and response are structured. Note that the response includes the title and link of the matched topic and may include synonyms, attribution acknowledgements, and related links.

Example: A patient diagnosed with 13645005 | Chronic obstructive lung disease (disorder) | :

HTTP Request:

https://apps.nlm.nih.gov/medlineplus/services/mpconnect_service.cfm?mainSearchCriteria.v.cs=2.16.840.1.113883.6.96&mainSearchCriteria.v.c=13645005

(Note: 2.16.840.1.113883.6.96 is the [OID](#) for SNOMED CT.)

Response:

```
<feed xmlns="http://www.w3.org/2005/Atom" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xml:base="https://apps.nlm.nih.gov/medlineplus/services/" xml:lang="en">
  <title type="text"> MedlinePlus Connect </title>
  <subtitle type="text"> MedlinePlus Connect results for SNOMED CT 13645005 </subtitle>
  <author>
    <name> U.S. National Library of Medicine </name>
    <uri> https://www.nlm.nih.gov </uri>
  </author>
  <updated> 2017-03-31T06:03:00Z </updated>
  <category scheme="mainSearchCriteria.v.c" term="13645005"/>
  <category scheme="mainSearchCriteria.v.cs" term="SNOMEDCT"/>
  <category scheme="mainSearchCriteria.v.dn" term="/">
  <category scheme="informationRecipient" term="PAT"/>
  <id/>
  <entry>
    <title> COPD </title>
    <link href="https://medlineplus.gov/copd.html" rel="alternate"/>
    <id>
      tag: https:, 2017-31-03:https://medlineplus.gov/copd.html
    </id>
    <updated> 2017-03-31T06:03:00Z </updated>
    <summary type="html">
      <p>COPD (chronic obstructive pulmonary disease) makes it hard for you to breathe. The two main types are <a href="https://medlineplus.gov/chronicbronchitis.html">chronic bronchitis</a> and <a href="https://medlineplus.gov/emphysema.html">emphysema</a>. The main cause of COPD is long-term exposure to substances that irritate and damage the lungs. This is usually cigarette smoke. Air pollution, chemical fumes, or dust can also cause it.</p>
      <p>At first, COPD may cause no symptoms or only mild symptoms. As the disease gets worse, symptoms usually become more severe. They include</p>
      <ul>
        <li>A cough that produces a lot of mucus</li>
        <li>Shortness of breath, especially with physical activity</li>
        <li>Wheezing</li>
        <li>Chest tightness</li>
      </ul>
      <p>Doctors use lung function tests, imaging tests, and blood tests to diagnose COPD. There is no cure. Treatments may relieve symptoms. They include medicines, oxygen therapy, surgery, or a lung transplant. <a href="https://medlineplus.gov/quittingsmoking.html">Quitting smoking</a> is the most important step you can take to treat COPD. </p>
      <p class="NLMAtribution"> NIH: National Heart, Lung, and Blood Institute</p>
      <p class="NLMrelatedLinks">
        <ul>
          <li><a href="https://medlineplus.gov/ency/article/003855.htm">Blood gases</a> (Medical Encyclopedia)</li>
          <li><a href="https://www.nlm.nih.gov/health/educational/copd/campaign-materials/pub/copd-patient.pdf">Breathing Better with a COPD Diagnosis</a> - NIH (National Heart, Lung, and Blood Institute) - PDF</li>
          <li><a href="https://medlineplus.gov/ency/article/000091.htm">Chronic obstructive pulmonary disease - adults - discharge</a> (Medical Encyclopedia)</li>
          <li><a href="https://medlineplus.gov/ency/patientinstructions/000025.htm">Chronic obstructive pulmonary disease - control drugs</a> (Medical Encyclopedia)</li>
          <li><a href="https://medlineplus.gov/ency/patientinstructions/000026.htm">Chronic obstructive pulmonary disease - quick-relief drugs</a> (Medical Encyclopedia)</li>
          <li><a href="https://medlineplus.gov/ency/patientinstructions/000699.htm">COPD -- how to use a nebulizer</a> (Medical Encyclopedia)</li>
          <li><a href="https://medlineplus.gov/ency/patientinstructions/000700.htm">COPD -- managing stress and your mood</a> (Medical Encyclopedia)</li>
          <li><a href="https://medlineplus.gov/ency/patientinstructions/000701.htm">COPD and other health problems</a> (Medical Encyclopedia)</li>
          <li><a href="https://medlineplus.gov/ency/patientinstructions/000698.htm">COPD flare-ups</a> (Medical Encyclopedia)</li>
          <li><a href="https://www.nlm.nih.gov/health/educational/copd/campaign-materials/pub/copd-atrisk.pdf">COPD: Are You at Risk?</a> - NIH (National Heart, Lung, and Blood Institute) - PDF</li>
          <li><a href="https://medlineplus.gov/ency/patientinstructions/000697.htm">Day to day with COPD</a> (Medical Encyclopedia)</li>
          <li><a href="https://medlineplus.gov/ency/patientinstructions/000053.htm">How to breathe when you are short of breath</a> (Medical Encyclopedia)</li>
          <li><a href="https://medlineplus.gov/ency/article/003853.htm">Pulmonary function tests</a> (Medical Encyclopedia)</li>
          <li><a href="https://medlineplus.gov/ency/patientinstructions/000696.htm">Smoking and COPD</a> (Medical Encyclopedia)</li>
          <li><a href="https://medlineplus.gov/ency/patientinstructions/000048.htm">Using oxygen at home</a> (Medical Encyclopedia)</li>
        </ul>
      </p>
    </summary>
  </entry>
</feed>
```

Figure 2: MedlinePlus Infobutton Manager: request and response

The requests conform to the [HL7 Context-Aware Knowledge Retrieval \(Infobutton\) Knowledge Request URL-Based Implementation Guide](#). A screen shot of the application's response to a request for information on [Asthma](#) is provided below:



Figure 3: MedlinePlus Connect web application response to request for information on problem code 195967001 | Asthma (disorder) |

Observational Health Data Sciences and Informatics (OHDSI)

Some NLM researchers also participate in external projects which utilize SNOMED CT. One such project is [OHDSI](#). This collaborative uses SNOMED CT to integrate diagnostic data. This semantic data integration is then used by research studies which in some cases serves as input into the authoring of CDS knowledge artifacts.

One of the programs related to OHDSI is [Innovation in Medical Evidence Development and Surveillance](#) (IMEDS), which includes a number of projects led by NIH researchers, such as:

- [NIH Investigators](#)
- [Ferdinand Dhombres \(NIH\)](#)

Footnotes

RefNotes

- 1 <https://irp.nih.gov/about-us/what-is-the-irp>
- 2 https://en.wikipedia.org/wiki/National_Institutes_of_Health
- 3 <https://www.irp.nih.gov/about-us/our-programs>
- 4 Based on content from <https://vsac.nlm.nih.gov/>