

Summary of the Process to Create

SAMHSA Sensitive Data Value Sets and Recommendations

for their Publication and Maintenance in the Value Set Authority Center (VSAC)



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SAMHSA Health IT

Health Information Technology

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# Introduction

This is a summary of the project deliverables detailed in the statement of work (SOW) prepared under FEi Subcontract # S16V-01, Task order number HHSS270201400001W, Prime contract number HHSN316201200139W.

This project focused on identifying health care data from various code systems that may be considered ‘sensitive’ and therefore should not be disclosed under various privacy policy conditions.

The purpose for creating and publishing these value sets in the Value Set Authority Center (VSAC) is to advance the use of automated patient privacy and consent management systems in conjunction with EHR-Systems capable of filtering (redacting) sensitive data from a patient or client’s electronic health record. By providing the health care information systems community with this set of open-source data (lists of standards-based codes already mandated by Meaningful Use whenever health information is exchanged between entities) made available for use in the VSAC, systems will be able to use these value sets to filter through and tag sensitive patient data for redaction, based on patient’s privacy preferences and accepted privacy policies of custodian organizations (information sender) for that health data whenever information is disclosed between entities.

The entire set of deliverables include a number of mapping spreadsheets organized by categories of sensitive information, e.g., sensitive mental health disorders, alcohol use disorders, nicotine use disorders, etc.).

These mapping spreadsheets were used as source data to create a tetrad of value sets – one value set per coding system (ICD-9-CM, ICD-10-CM and SNOMED CT), and a Grouping value set[[1]](#footnote-1) containing codes from all three code systems. A total of forty four (44) value sets mapped into eleven sensitive data disorder categories will be loaded in the VSAC once their content has been reviewed and approved.

The purpose for this report (Deliverable #5) is to:

1. Summarize and document the approach used to create the maps between code systems and VSAC sensitive mental health & substance use disorder value sets (mapping approach spreadsheet and VSAC load prototypes)
2. Document the requirements for the value sets to be published in VSAC. These requirements are reflected in the [VSAC value set definition](#_VSAC_Value_Set) criteria (including code system version; clinical focus purpose; data element scope purpose; and Inclusion and Exclusion criteria). This information currently in the clinical focus purpose is in draft format. Data element scope and purpose has yet to be defined. Inclusion and exclusion criteria have been entered when deemed relevant (i.e., based on SNOMED CT (SCT) hierarchies included in the SCT value sets). Suggestions for the ongoing maintenance of these value sets are noted in the [Recommendations](#_Develop_a_process) section of this document
3. Provide mapping files used to create each value set to be published in VSAC
4. Provide recommendations for future analysis and work

# Project Scope

Originally, the project scope was intended to be limited to developing a SNOMED CT map between ICD-10-CM codes found in DSM-5 (SNOMED CT maps for mental health and substance use disorders only). The ask was to develop two (2) value sets and publish them in VSAC, one value set representing ICD-10-CM sensitive concepts (derived from DSM-5 presumably), and the other, a SNOMED CT value set created by mapping from the ICD-10-CM value set.

My understanding of the requirements was based on email threads projecting the scope of work, along with the data originally provided to me for the analysis: an eBook version of DSM-5 and a spreadsheet called Sensitive Data Value Sets, containing numerous worksheets slicing data into various categories and encoded by a number of coding systems. Those data include: diagnostic tests (LOINC codes), medications (RxNorm codes), procedures (ICD-9-CM, ICD-10-PCS, CPT, SNOMED CT), health care services/encounters/appointments (CPT, HCPCS, LOINC?), etc.), items that could be reimbursed under payment policies.

After delving into the project, it didn’t make sense to develop a value set representing the DSM-5 manual, especially when compared to the codes found in the Sensitive Data Value Sets spreadsheet Ioana provided.

Following further discussion with Ken, I was asked perform a high level review of the FEL baseline data noting issues when found (this task became (morphed) Deliverable #4) after downloading two datasets from a link to the FEi FTP site (FEi baseline and the Prince George’s County (PCG) data)[[2]](#footnote-2). The project shifted into analysis of FEi’s baseline sensitive data with the intent to publish sensitive mental health and substance use disorder concepts in VSAC as ICD-10-CM and SNOMED CT codes. This expanded the scope of effort, as the FEi data included codes that were outside the scope of the DSM-5 manual and ICD-10-CM.

After a couple of meetings with the FEi project team it appeared there was an expectation that the format of (at least) some of the artifacts should include mapping files representing one row per concept in each of the (three) code systems – ICD-9-CM, ICD-10-CM and SNOMED CT[[3]](#footnote-3). As the result, the following deliverables were included in the Statement of Work (SOW) signed on February 10, 2016, and will be sent to SAMHSA and FEi within the scope of the timeframe for this contract.

# Caveats

1. I used very manual methods and tools to create these maps and value sets. Therefore the spreadsheets are subject to errors due to copying & pasting from websites and other spreadsheets source files; inserting and deleting rows and cells in spreadsheets as I normalized code system codes; converting pdf files found on the web into Excel spreadsheets; and using SnagIt to facilitate viewing the DSM-5 eBook manual side by side with the spreadsheet to validate the corresponding codes. (The eBook was the only valid source of DSM-5 I had at my disposal, but it did not allow copy and paste due to digital rights management.)
2. The [2015 09 01 SNOMED CT 🡪ICD-10-CM](http://download.nlm.nih.gov/mlb/utsauth/ICD10CM/der2_Refset_ICD10CM_US_20150901.zip) mapping file was used to derived the SNOMED CT codes found in these value sets. The latest SNOMED CT to ICD-10-CM was to be released on 31 January 2016, but to date, has not yet been released on the NLM website.
3. The resulting maps and prototype VSAC draft value sets likely contain codes that should be removed because they are not truly sensitive. This is because the mapping tables were not developed for the purpose of revealing only sensitive health data. Many codes may only be sensitive within a particular context of the patient/client record and therefore, these tables should be reviewed by a variety of subject matter experts including outside the behavioral health and privacy advocates community prior to loading these value sets into VSAC, announcing their existence to the community for use with data segmentation for privacy. The [Recommendations](#_Review_mapped_value) section below elaborates this issue.

# Project Deliverables

## Deliverable 1 – Create Sensitive Mental Health Disorders Map (FEi Tasks 1a-c)

Deliverable #1 (Sensitive Mental Health Disorders map.xlsx)

This deliverable represents the original task – to map the ICD-10-CM codes found in DSM-5 to SNOMED CT. The scope for this deliverable (Sensitive Mental Health Disorders map.xlsx spreadsheet) expanded into a superset of diagnoses codes to provide better privacy protection since the entire hierarchy of ICD codes that matched codes in the FEi data were not included in the baseline.[[4]](#footnote-4) That way, I started with a more complete set of ICD-10-CM codes with which to begin mapping to SNOMED CT to derive the SNOMED CT value sets. The method for including all codes deemed to be sensitive from the relevant code system hierarchies was extended to Deliverable #2 and is recommended for the development of all future sensitive health data value sets.

See the Approach section [(Deliverable #1)](#_Mapping_Spreadsheets) for details on how the mapping spreadsheets were created.

The Sensitive Mental Health Disorders map.xlsx spreadsheet is used as the source to create the four VSAC sensitive Mental Health Disorders value sets ([deliverable #3](#_Creation_of_Sensitive)).

## Deliverable 2 – Create Sensitive Substance Use Maps (FEi Tasks 2a-c)

Deliverable #2 (Sensitive Substance Use Information maps.xlsx)

The Sensitive Substance Use Information maps spreadsheet contains eleven (11) individual maps, each worksheet representing a Cartesian product / map of ICD-9-CM, ICD-10-CM and SNOMED CT codes that fall into each Substance Use disorder category defined in sections F10 – F19 of version 2016 ICD-10-CM. These maps will be used to create the VSAC sensitive substance use disorders value sets:

1. F10 Alcohol related disorders
2. [F11](http://www.icd10data.com/ICD10CM/Codes/F01-F99/F10-F19/F11-) Opioid related disorders
3. [F12](http://www.icd10data.com/ICD10CM/Codes/F01-F99/F10-F19/F12-) Cannabis related disorders
4. [F13](http://www.icd10data.com/ICD10CM/Codes/F01-F99/F10-F19/F13-) Sedative, hypnotic, or anxiolytic related disorders
5. [F14](http://www.icd10data.com/ICD10CM/Codes/F01-F99/F10-F19/F14-) Cocaine related disorders
6. [F15](http://www.icd10data.com/ICD10CM/Codes/F01-F99/F10-F19/F15-) Other stimulant related disorders
7. [F16](http://www.icd10data.com/ICD10CM/Codes/F01-F99/F10-F19/F16-) Hallucinogen related disorders
8. [F17](http://www.icd10data.com/ICD10CM/Codes/F01-F99/F10-F19/F17-) Nicotine dependence[[5]](#footnote-5)
9. [F18](http://www.icd10data.com/ICD10CM/Codes/F01-F99/F10-F19/F18-) Inhalant related disorders
10. [F19](http://www.icd10data.com/ICD10CM/Codes/F01-F99/F10-F19/F19-) Other psychoactive substance related disorders
11. F10 – F19 All Substance use disorder categories

See the Approach section ([Deliverable #2](#_Mapping_Spreadsheets)) for details on how the mapping spreadsheets were created.

## Deliverable 3 – Add Value Sets to VSAC (FEi Task 3)

The purpose behind adding sensitive health data value sets to VSAC for public access is provide codes that allow EHR-Systems to “tag” protected health data at the time of disclosure when there are situations (privacy policies) that mandate redaction at the time of exchange (or when a CDA document is submitted to a Health Information Exchange (HIE)).

My recommendation is that the task of actually loading these proposed value sets into VSAC be postponed to a future project following review of my recommendations.

Deliverable 3 therefore is comprised of a set of template spreadsheets representing codes contained in the mapping spreadsheets included in Deliverables 1 & 2 and contain the content of value sets that would be published in VSAC once approved. The forty-eight (48) value set have been developed *for this deliverable* to propose the metadata that is required by VSAC in the value set definition then the value sets are authored. These artifacts can be included in the future (proposed) project to ballot these value sets within HL7 (see Recommendations section).

Each value set template represents similar concepts from different code systems in an excel spreadsheet format that the VSAC application uses when the value sets are downloaded from the VSAC application (as excel).

Three value sets represent concepts for Sensitive Mental Health Disorders in three code systems (ICD-9-CM, ICD-10-CM and SCT); thirty (30) additional prototype value set spreadsheets were created, one for each category of Substance Use disorder (e.g., Alcohol Use, Cocaine Use, etc.), also by code system. For each category, including Mental Health Disorders, eleven (11) additional Grouping value sets were created containing codes from all three code systems for each concept category set. A final set of four value sets contain the entire group of substance use disorder categories, one in each coding system, and one Grouping Substance Use Disorders value set.

### Create Sensitive Mental Health Disorders Value Set Templates

The four value sets representing sensitive mental health disorders were extracted from the Mental Health Disorders.xlsx map to create the prototype spreadsheets for use during the VSAC load:

1. ICD-9-CM Sensitive Mental Health Disorders
2. ICD-10-CM Sensitive Mental Health Disorders
3. SNOMED CT Sensitive Mental Health Disorders
4. Grouping Value Set for Sensitive Mental Health Disorders

### Create Sensitive Substance Use Disorders Value Set Templates

The forty four (44) value sets representing sensitive substance use disorders were extracted from the Sensitive Substance Use Information map.xlsx map. For each group of value sets, an ICD-9-CM, ICD-10-CM, SNOMED CT and Grouping value set prototype spreadsheet was created for use during the VSAC load process.

## Deliverable 4 – Review FEi Baseline data and provide feedback (FEi Task 4)

This task, introduced to the SOW by FEi (Process additional value sets identified by Consent2Share team, e.g., domestic abuse) was not in the original project request. I discussed this with Ken early on but only after signing the contract (during a meeting when Ken asked me to review the FEi baseline data in lieu of this task. We agreed that additional value set development was off the table and I agreed to take on a high-level review of the data and make recommendations.

Deliverable #4 therefore evolved into a separate report containing the summary of my findings along with an amended spreadsheet of data I was asked to review (downloaded from the FEi FTP site and included in the with the zip file of all deliverables, *valueset\_conceptCodes\_AmendedSV.xlsx*).

While reviewing the file, I highlighted and entered comments in various cells reflected issues and suggestions that FEi may want to follow up on depending on how FEi ultimately decides to deal with sensitive data.

The amended spreadsheet included with Deliverable #4 report is named *valueset\_conceptCodes\_AmendedSV.xlsx.*

While this was not an exhaustive review of the FEi sensitive data[[6]](#footnote-6) , I noticed a few minor issues such the misspelling of the SNOMED CT code system (a typo since corrected in the database). More importantly, I found invalid codes throughout the file (perhaps a result of typos or format issues created in excel after downloading data from the FEi site).

I also felt given the presence of many codes in the FEi data, many codes are missing given the fact the entire hierarchy of the given code system was not include and may possibly appear in patients’ EHR-System data.

Deliverable 4 report includes recommendations for developing a new strategy to determine which sensitive codes belong in the SAMHSA-recommended value sets (either in the FEi database or by implementing the VSAC value sets internally within FEi systems), along with a recommendation to load data from code system sources using the code system formatting rules so as to retain the correct code format within FEi’s internal database.[[7]](#footnote-7)

### Sensitive Mental Health disorders value sets

A total offorty-eight (48) value set templates; forty-four of which represent sensitive Substance Use diagnoses, and another four embody Sensitive Mental Health Disorders (diagnoses).

### Sensitive Substance Use disorders value sets

The Sensitive Substance Use Disorder value set templates fall into ten categories. There is one value set template per category for each code system – ICD-9-CM, ICD-10-CM and SNOMED CT.

A VSAC prototype template spreadsheet (the format the VSAC produces when a value set is downloaded from [the site](https://vsac.nlm.nih.gov/) on the internet) is used to depict each value set that would be generated from each worksheet contained in the Sensitive Substance Use Disorders.xlsx spreadsheet. See categories below.

1. F10 Alcohol related disorders
2. [F11](http://www.icd10data.com/ICD10CM/Codes/F01-F99/F10-F19/F11-) Opioid related disorders
3. [F12](http://www.icd10data.com/ICD10CM/Codes/F01-F99/F10-F19/F12-) Cannabis related disorders
4. [F13](http://www.icd10data.com/ICD10CM/Codes/F01-F99/F10-F19/F13-) Sedative, hypnotic, or anxiolytic related disorders
5. [F14](http://www.icd10data.com/ICD10CM/Codes/F01-F99/F10-F19/F14-) Cocaine related disorders
6. [F15](http://www.icd10data.com/ICD10CM/Codes/F01-F99/F10-F19/F15-) Other stimulant related disorders
7. [F16](http://www.icd10data.com/ICD10CM/Codes/F01-F99/F10-F19/F16-) Hallucinogen related disorders
8. [F17](http://www.icd10data.com/ICD10CM/Codes/F01-F99/F10-F19/F17-) Nicotine dependence
9. [F18](http://www.icd10data.com/ICD10CM/Codes/F01-F99/F10-F19/F18-) Inhalant related disorders
10. [F19](http://www.icd10data.com/ICD10CM/Codes/F01-F99/F10-F19/F19-) Other psychoactive substance related disorders

The last ten value sets (#31-40) are called GROUPING value sets. A Grouping value set is defined as a specialized type of value set containing a list of value sets sharing a common purpose and containing similar clinical concepts. The ten Grouping value sets include the list of all codes in each category (e.g., combined ICD-9-CM, ICD-10-CM and SNOMED CT value sets).

## Deliverable 5 – Summary (FEi Task 5)

Deliverable #5 is the content of this report.

# Approach

## Developing the Mapping Spreadsheets

The mapping files and tools used to create these worksheets produced a number of codes do not appear to be sensitive as the original mapping tools were not designed to map to sensitive information only, and there are one-to-many, mappings between code systems to define particular concepts.. Each mapping worksheets should be reviewed (by subject matter experts) to reduce or eliminate false negatives (codes that should not be considered sensitive) and remove those concept codes prior to publication in VSAC. (See [Recommendations](#_Ballot_Sensitive_Data) section).

### Creating Deliverable #1 - Sensitive Mental Health Disorders map

The sensitive mental health disorders map includes more sensitive codes than the ICD codes found in the DSM-5 manual. The map also includes FEi baseline codes extracted from the baseline spreadsheet filtering on the value set named ‘Mental health sensitivity information’ as well as additional ICD-10-CM codes that fall into sensitive mental health categories gleaned from the [list of 2016 ICD-10-CM](file:///C:\Users\Serafina\Dropbox\Projects\SAMHSA%20Value%20Set%20Authority%20Mapping\Final%20Documents\Summary\Substance%20Use%20Information%20Sensitivity.xlsx) codes found on the CMS website.

The DSM-5 is a diagnostic manual is used as a primary source by clinicians to derive behavioral health diagnoses. It is not a code system per se. The DSM-5 manual includes the recommended ICD-9-CM and ICD-10-CM codes for each condition (as ICD codes are required for reporting and claim submissions). ICD-9-CM is included in the DSM-5 because the new version was published in 2013 prior to the implementation of ICD-10-CM in the U.S.[[8]](#footnote-8)

To create this map, I first generated the complete list of ICD-10-CM codes representing sensitive mental health concepts (this may not be an exhaustive list), from there, I used the SNOMED CT to ICD-10-CM Map in reverse to derive corresponding SCT codes.

The MH Disorders ICD 9 10 SCT worksheet is a Cartesian product / map of ICD-9-CM, ICD-10-CM and SNOMED CT codes for sensitive mental health disorders.

Some ICD-10-CM codes have more than one DSM-5 description per ICD-10-CM code. The Value Sets containing codes from ICD-10-CM code system display the ICD-10-CM long description not the description(s) that DSM-5 sometime assigns to that ICD-10-CM code. Therefore there will be a single instance of that ICD-10-CM code in the value sets, and providers should not expect to see DSM-5 descriptions in the value sets. I do not believe this will be a problem, as the value sets containing disorder concepts found in the DSM-5 will not explicitly be associated with the DSM-5 manual. DSM-5 ultimately was only used to ensure that the (appropriate) DSM-5 disorder concepts would appear in the sensitive mental health disorders value sets.

The DSM-5 (eBook, June 2013)[[9]](#footnote-9) was used to derive the ICD-10-CM codes and DSM-5 categories that are included in the mapping spreadsheets (where relevant). Since the DSM-5 eBook does not all cut & pasting, I was only able to use it as a visual check, and instead found another source[[10]](#footnote-10) on the internet

### Creating Deliverable #2 – Sensitive Substance Use Disorders maps

This deliverable comprises a map of the set of codes contained in the FEi baseline value set category name: Substance use information sensitivity. In addition, all of the ICD-10-CM codes found in the following ten sections of the 2016 ICD-10-CM version were added to the baseline set of codes to ensure more complete coverage.

1. F10 Alcohol related disorders
2. [F11](http://www.icd10data.com/ICD10CM/Codes/F01-F99/F10-F19/F11-) Opioid related disorders
3. [F12](http://www.icd10data.com/ICD10CM/Codes/F01-F99/F10-F19/F12-) Cannabis related disorders
4. [F13](http://www.icd10data.com/ICD10CM/Codes/F01-F99/F10-F19/F13-) Sedative, hypnotic, or anxiolytic related disorders
5. [F14](http://www.icd10data.com/ICD10CM/Codes/F01-F99/F10-F19/F14-) Cocaine related disorders
6. [F15](http://www.icd10data.com/ICD10CM/Codes/F01-F99/F10-F19/F15-) Other stimulant related disorders
7. [F16](http://www.icd10data.com/ICD10CM/Codes/F01-F99/F10-F19/F16-) Hallucinogen related disorders
8. [F17](http://www.icd10data.com/ICD10CM/Codes/F01-F99/F10-F19/F17-) Nicotine dependence
9. [F18](http://www.icd10data.com/ICD10CM/Codes/F01-F99/F10-F19/F18-) Inhalant related disorders
10. [F19](http://www.icd10data.com/ICD10CM/Codes/F01-F99/F10-F19/F19-) Other psychoactive substance related disorders
11. All Substance Use Disorder categories value set (F10 – F19 combined)

For each ICD-10-CM code, I established a full complement of ICD-10-CM codes using the [2016 ICD-10-CM code list](https://www.cms.gov/Medicare/Coding/ICD10/2016-ICD-10-CM-and-GEMs.html) downloaded from the CMS site. I then mapped ICD-10-CM to ICD-9-CM using the [2016 ICD-10-CM GEM files](https://www.cms.gov/Medicare/Coding/ICD10/2016-ICD-10-CM-and-GEMs.html) having already supplementing the ICD-9-CM list with additional codes from the 2015 ICD-9-CM file to ensure coverage). *(This last part related to ensuring all ICD-9-CM coverage might not be complete)*

After completing the IC9-ICD10 map, I used the [SNOMED CT to ICD-10-CM Map](https://www.nlm.nih.gov/research/umls/mapping_projects/snomedct_to_icd10cm.html) in reverse (see section 5.1.3 Reverse Mapping Approach) to derive the SCT values corresponding to each sensitive ICD-10-CM code.

### Reverse mapping approach

To approach the task of mapping the ICD-10-CM codes within the DSM-5 manual (the initial request), I decided to leverage a map that was already developed for the NLM to map SNOMED CT to ICD-10-CM. Because the map is from SNOMED CT to ICD-10-CM, and because the task was starting from ICD-10-CM, I investigated the possibility of using the map in reverse.

To support my approach (using the map in reverse to derive SNOMED CT codes that correspond to ICD-10-CM) I first consulted another terminologist involved in the creation of the SNOMED CT 🡪 ICD-10-CM map, and also as performed a google search to see whether others had tried a similar mapping approach. I found a relevant paper and discovered that the results of that study indicate a high percentage of accurate mapping results for the Mental and Behavioral Health Disorders chapters in ICD-10-CA based on using a SNOMED CT to ICD-10-CA map in reverse (Canadian version of ICD-10).[[11]](#footnote-11)

Whenever there was a many-to-one mapping between code systems (ICD-10-CM and SNOMED CT or from using the GEM files to map between ICD-10-CM and ICD-9-CM), I reviewed codes and removed codes that were obviously NOT sensitive and shouldn’t be filtered from exchange (rarely done) and otherwise highlighted those codes that should be reviewed for potential removal.

Figures 1 through 3 describe details about mapping algorithms and normalization steps used by the authors of the Canadian paper demonstrating the reverse mapping technique.

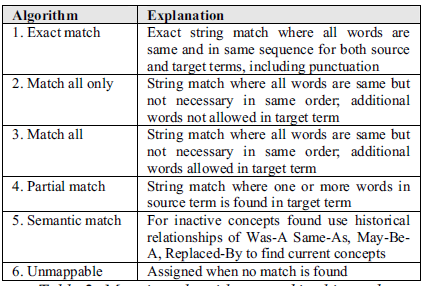
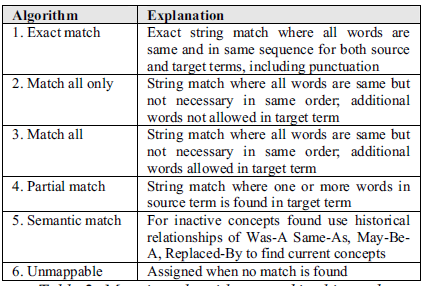


Figure 1 Mapping algorithms used in the study



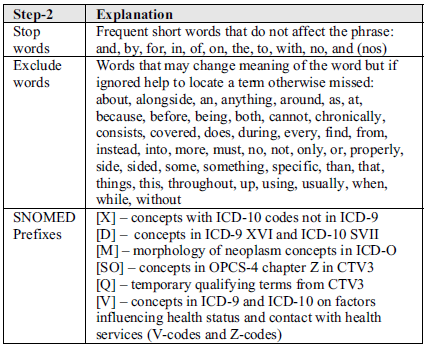


Figure 2 Expanded UMLS normalization

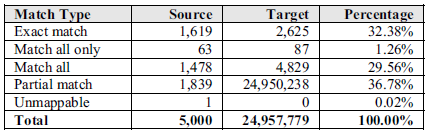


Figure 3 Summary of Mapping Output

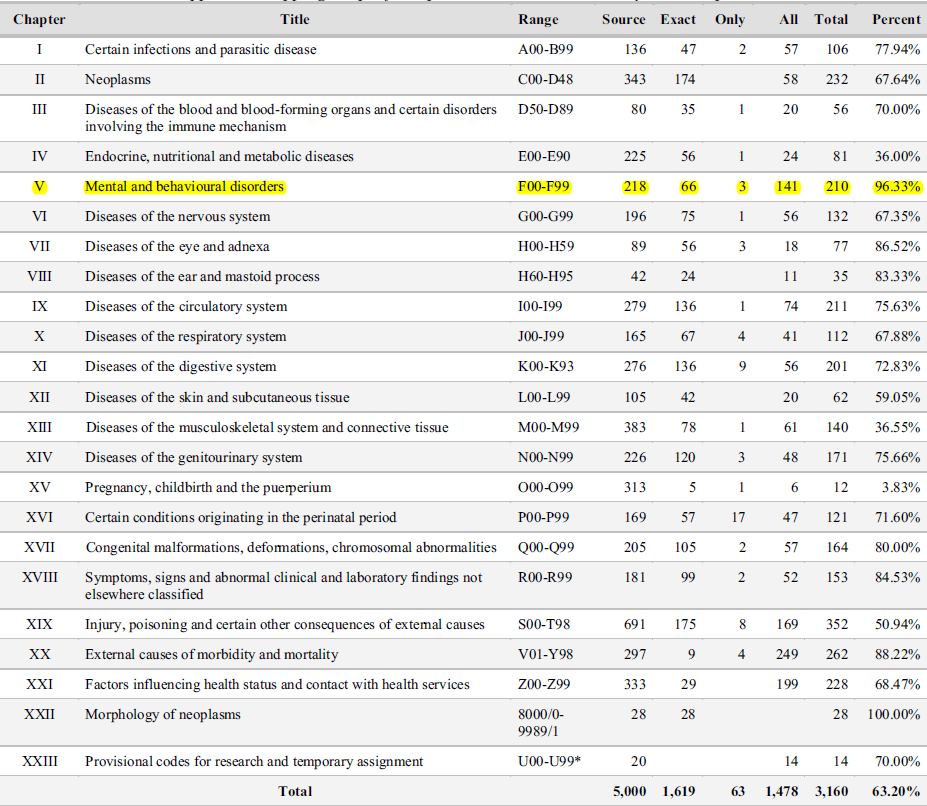


Figure 4 Mapping Output for top 5,000 ICD-10-CA codes by ICD Chapter

Figure 4 highlights that the study’s reverse mapping technique was highly successful (96.33%) for the Mental and Behavioral Health disorders chapters in ICD-10-CA.[[12]](#footnote-12)

I’ve also included other references to academic papers investigating the accuracy of mapping DSM-5 disorders to ICD-10-CM

# Recommendations

## Review Proposed value sets with Subject Matter Experts prior to publication in VSAC

### Ballot Sensitive Data Value sets within HL7 as normative

Many diagnoses in the DSM-5 manual may not be considered truly be sensitive in all contexts. The ICD-9-CM, ICD-10-CM and SNOMED CT sensitive value sets should be reviewed and revised prior to SAMHSA approving these sensitive data value sets and scheduling them for publication in VSAC.

SAMHSA could sponsor a project and ballot these value sets in the Community Based Care Collaboration (CBCC) Work Group as a Standard for Trial Use (STU – the new HL7 term replacing DSTU) with the intent to go Normative[[13]](#footnote-13). Here are the benefits of such a ballot.

1. The project would help propel these value sets into standard use through the creation of open-source-value sets that can be referenced by future regulation or used simply for the sake of interoperability!).
2. An HL7 ballot review will improve the content of the value sets by reducing the incidence of false negatives (missing sensitive codes) as well to help avoid false positives (including codes that are not sensitive, thereby at risk for erroneous redaction).

Review will also improve the quality of the VSAC publication criteria for these value sets (purpose, data element scope, inclusion and exclusion rules) that I drafted based on my understanding of the requirements as well as the (current) content of the (proposed) values. Unfortunately all too often, these metadata are missing from value sets already published in VSAC by other VSAC stewards, but for the purposes of this important group of value sets (Sensitive Health Data – all ultimately), it is critical that the descriptions for these metadata be as accurate and complete as possible.

1. Ballot review will increase awareness of the existence of sensitive health data value sets among stakeholders and could spur the (development and) use of privacy consent management applications and incorporation into EHR-systems that exchange data between systems.

An invitation to review the value sets can be extended to patient advocacy groups, as well as behavioral health providers and the wider health care community outside the HL7. organization Their feedback could be incorporated into SAMHSA’s ballot comments (or mine, as I already have comments regarding codes that are both missing as well as codes that could be removed).

1. SMEs could review the methodology used to create the maps and to develop the value sets in addition to the source mapping documents to further validate the proposed sensitive health data value sets, thus gaining wider acceptance. The project could leverage various sections of this report in the informative section of the ballot to guide interested stakeholders/parties during ballot review.

## Develop a Process for Stewarding Sensitive Health Data Value Sets (changes, corrections, additions, etc.)

Leverage information found in the [VSAC section](#_Value_Set_Authority) of the Appendix in this report.

### Develop process for curating and maintaining VSAC sensitive values value sets

See the [VSAC Value Set Update Process](#_Value_Set_Update) section for details that can provide input into the development of this process with stakeholders.

### Define stakeholders (for communication platform and value set curation)

* Identify stakeholders
* Define communication platform – how will the community be informed about the existence and use for these value sets?
* Monitor use of the value sets and feedback from the user community

### Incorporate user community feedback into value set enumerations

As SAMHSA sensitive value sets get use, suggestions for revision to the enumerations can be collected and reviewed (‘deletions’ or additions) based on feedback from community-user experience. These revisions, once approved, can be fed back into the [VSAC Value Set Lifecycle process](#_VSAC_Value_Set_2) and contribute to improving the coverage and sensitivity (no pun intended) of these value sets. See [section 6.2.4](#_Improve_coverage_(adequate).

### Improve coverage within SAMHSA VSAC sensitive data value sets

Within VSAC are a number of published value sets whose names are similar/related to SAMHSA sensitive data value sets. Those value sets are stewarded by various organizations (NCQA, Joint Commission, Center for Quality Assessment and Improvement in Mental Health, etc.) and fall into sensitive data categories. While those value sets are used for different purposes (e.g., quality measures for the most part), an assumption could be made that the presence of codes missing from a similar SAMHSA sensitive VS indicates those codes may be (used) in EHR-Systems that create and exchange health care data. By missing from the SAMHSA sensitive VSs, information could be disclosed that would otherwise have been protected had it been included in the Sensitive value set.

A GAP analysis covering similarly-named value sets is one of the recommended next steps (below) and provides an opportunity to ensure more complete coverage for SAMHSA sensitive value sets by surfacing additional codes found in alternative steward’s value sets through GAP analysis/Harmonization. Additional codes deemed relevant (sensitive) can be included in the related SAMHSA VSAC Sensitive Data value sets through curation and the [VSAC VS Lifecycle](#_VSAC_Value_Set_2) process.

## Recommended Next Steps

The scope for this project only included the creation of two value sets: one a list of ICD-10-CM sensitive disorders found in the DSM-5 manual; the second value set represents the similar concepts as SNOMED CT codes. This involved identifying the DSM-5 ICD-10-CM codes (using the DSM-5 eBook and other online sources) and mapping to SCT (using the SNOMED CT to ICD-10-CM map in reverse).

Out of scope were all codes other than Substance Use and Mental Health disorders found in the FEi sensitive baseline data. (All medications (RxNorm), diagnostic laboratory tests and services identified by LOINC, encounters and procedures identified by CPT/HCSPS and ICD-10-PCS/ICD-9-CM.

However, before publishing sensitive data value sets in VSAC, a full complement of data that identify sensitive condition must be include in these value sets to assure patients, clients, and the general health care community that could distinguish a sensitive and protected condition. These data include the encounters for services, medications, diagnostic laboratory tests, procedures and other observations that could be related to a condition that is deemed to be a sensitive and protected condition under various state and federal privacy policy.

### Develop maps for remaining FEi baseline data

Another intent for this report is knowledge-transfer in order to (1) validated my approach and if found accurate and useful, (2) leverage the information contained within so that others can pick up and develop the maps for the remaining sensitive data contained in FEi baseline.

These data include sensitive Procedures, Services, other clinical observations and disorders / conditions / events that were not included in Deliverables 1 & 2 – HIV, Trauma, Military-related service, etc.

Maps between code systems should *only* be developed when it makes sense to map between SNOMED CT and those other sensitive code systems concepts. Not all sensitive data needs to be mapped to SNOMED CT. For instance, it does not make sense to map RxNorm to SCT when RxNorm is updated weekly.

There are maps between CPT and SNOMED CT (available for purchase from the American Medical Association (AMA), owner of CPT) as well as a map currently under development between LOINC and SNOMED ([available for download](https://loinc.org/downloads/files/loinc-snomed-ct-expression-associations-technology-preview/gotoCopyrightedFile) for free and for use after logging into Regenstrief (LOINC) and on the joint LOINC IHTSDO’s licensure agreement) that can be used during the development of these maps in future projects.

### Perform GAP Analysis / Harmonization – VSAC Similarly-named Value Sets

See section [Improve coverage within SAMHSA VSAC sensitive data value sets](#_Improve_coverage_(adequate) above.

### Prepare additional value sets to be loaded into VSAC

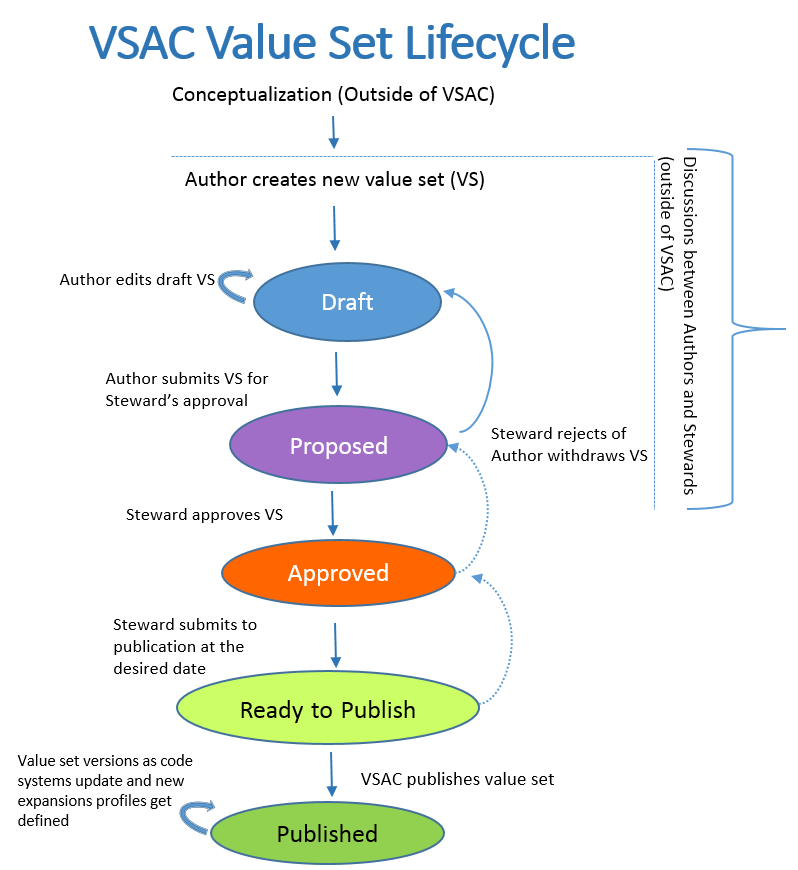
After developing maps (when appropriate) between code system concepts for each additional category of sensitive health data, use the maps to create individual and grouping value sets by category, copying and pasting each code system list into a separate VSAC template. The VSAC templates (excel spreadsheets) will be used to load VSAC by copying & pasting the codes (only, not their descriptions) from the spreadsheet template into the VSAC application.

# Appendix A

## Value Set Authority Center (VSAC)[[14]](#footnote-14)

The Value Set Authority Center (VSAC) is considered the source of truth for high-quality value sets for use across various programs, such as Meaningful Use. When new versions code system versions are published, VSAC consumes them and creates new code membership lists (expansions) of the value sets using these updated code system versions based on the latest rules (definitions) that an Author used to define the value set.

### VSAC Value Set Lifecycle



A value set will move through several statuses: Draft, Proposed, Approved, Ready to Publish, and Published.

First, an author creates a value set in VSAC. This value set remains in Draft status until the author submits it to a steward for their review and the status of the VS changes to Proposed. If the author withdraws the submission or if the steward rejects the value set pending changes or corrections by the author, the status of the VS is reset to Draft.

Once a steward approves the author's Proposed value set, the value set becomes Approved. The steward can then decide the date to publish the value set, and once determined, the value set status changes to Ready to Publish. Finally, the VSAC application expands the value set on the steward-designated publication date and moves the value set to the public VSAC repository, at which point the value set is in the Published status.

As new versions of code systems are incorporated into the VSAC, new versions of value set expansion profiles get defined, and updated versions of the value set are republished in VSAC.

### VSAC Value Set Authoring Process

#### Requesting Access to VSAC and Steward and Authoring Permissions

In addition to UMLS License credentials, you must also obtain VSAC authoring/stewarding permissions by contacting the VSAC staff.

1. Go to the [VSAC Author Registration page](https://www.nlm.nih.gov/vsac/support/usingvsac/author_registration.html). As stated above, users must first have/request a UMLS license to access VSAC (either for Authoring purposes or simply to browse and use the VSAC value sets.)
2. Follow the instructions in the **Request VSAC Author or Steward Permissions** section and complete the [NLM Customer Service e-mail form](https://apps2.nlm.nih.gov/mainweb/siebel/nlm/index.cfm)
3. After privileges/credentials have been granted, you’re ready to add value sets to VSAC in draft form.

#### VSAC Authoring Permissions

A value set must be assigned to an Author and Steward group in order for an Author or Steward to have access to the value set for the purpose of editing, updating and publishing.

New value sets created by Authors in the VSAC are automatically associated to the Author who created it.

### VSAC Author and Steward Roles and Functions Definitions

#### Roles

**Roles** represent a set of allowed functions that VSAC users request from NLM VSAC Administrators. VSAC Administrators arrange VSAC users into Steward groups and Author groups. A group can contain one or more members and users can belong to more than one group, of either type. VSAC Administrators create these groups based on the requests of Stewards. Currently, VSAC has the following two role types:

1. **Authors** have permissions to create, edit and delete their own draft value sets, as well as to submit value sets to their assigned Stewards for approval, and withdraw value sets from approval. New VSAC Authors need to request these Authoring permissions from VSAC Administrators for assignment to Author group(s), based on working relationships with stewarding organizations. Please click the Author Registration link at the top of the VSAC Web page for the instructions on how to request such permissions from VSAC Administrators.
2. **Stewards** have permissions to approve, reject, and publish value sets that their assigned Author groups create and submit. Stewards provide overall coordination and management of the value sets created by Authors under a specific program or for a specific purpose. Stewards should adhere to the goals of their stewarding organization with regard to the content and maintenance of the value set.

#### Functions

**Authors** may create, and edit value sets, and they may submit value set for review by a Steward group. Authors may also withdraw a value set from the Steward approval process if the Author feels more work needs to be completed prior to approval. When creating a value set, the user will need to pick the appropriate Author group as well as the appropriate Steward group for the new value set. Any user within an Author group can make changes to all value sets within that Author group. When an Author submits a value set for Steward approval the value set status changes to Proposed.

**Stewards** are responsible for approving, rejecting, publishing and maintaining value set content. A Steward can select to "approve" a Proposed value set which will change the status to Approved. A Steward can "reject" the Proposed value set which will change the status back to Draft, making the value set available for editing by the Author group members. After the Steward approves the value set, the Steward can "publish" the value set by selecting the [Publish] button and selecting a publication date for the value set. Once the Steward selects the publication date for the value set, the value set status changes to Ready to Publish, and the VSAC system will automatically publish the value set on the date set by the Steward, changing the value set status to Published.

Authors and Stewards need to communicate outside the VSAC environment to support their workflow.

### VSAC Value Set Definition

VSAC Authors define the rules of the value set membership. VSAC refers to this as the **value** **set** **definition**. For extensional value sets, the definition identifies codes or concepts from a given code system.

#### VSAC Publication Criteria

Before publishing value sets in VSAC, each value should be designated by the following metadata describing the scope and purpose for the value set:

* Value Set Name
* Value Set Purpose
* Clinical Focus
* Data Element Scope
* Inclusion Criteria
* Exclusion Criteria

See the [VSAC Authoring Best Practices section](#_VSAC_Authoring_Best) in the Appendix for details.

These criteria are in draft format are are included in the VSAC template spreadsheets for proposed value sets included in Deliverables 1 & 2. This information should be part of the proposed SME value set review prior to publishing sensitive data value sets in VSAC.

## Expansion Code Lists

VSAC refers to the list of codes or concepts that belong to a value set as the **Expanded Code List** of the value set, or **expansion**.

An **expansion** refers to the calculation of a value set's list of codes according to a defined rule or set of rules, such as specific code system versions (e.g., ICD-10-CM 2016 covering dates of service[[15]](#footnote-15) 9/1/2015-10/1/2016).

The term 'expansion' refers to the process of applying a **value set's definition** against a specific code system version. Based on the value set's definition, the resulting expanded code list may change as the underlying code system updates its codes. For example, a new drug that results in a new RxNorm code being included in the expansion or, an existing drug could go off the market, and its corresponding code will become inactive in the next version of RxNorm, and thus excluded from the value set in the subsequent automatic update by VSAC.

An **expansion profile** is a set of rules defined by a particular program, such as the CMS Clinical Quality Measures Value Sets Annual Update. For example, the CQM 2014 Annual Update expansion profile applied a set of allowable code system versions, defined by CMS, as well as a set of desired legacy codes, approved by CMS. The Expansion Profile for the CQM 2014 Annual Update validated value set code lists against the code system versions and legacy codes defined by CMS and ONC.

Codes that become inactive or retired due to a code system update may map one or more codes, as determined by the source terminology. Sometimes retired, inactive codes may have no corresponding remapped codes offered by the source terminology. Such events lead to code membership change in the value set, and result in a new value set expansion. For grouping value sets, a new expansion version reflects changes in member value sets due to code membership or definition updates.

## Value Set Update Process

VSAC consumes new code system versions as they become available through their corresponding sources. For example, RxNorm is inserted monthly; ICD-10-CM, yearly. When VSAC receives a new code system version from its source, new expansions of the value sets are generated. These expansions are referred to as 'Automatic updates by VSAC', and are recalculations of the value set code membership list based on its current definition.

Automatic VSAC expansions may differ from the expansions intended for consumption by a specific program or measure, e.g., Meaningful Use. Therefore, such updates are intended mainly as a snapshot of the dynamic code member changes in a value set and are not endorsed by the respective value set Stewards for use within a certain program. Depending on the rules that govern a given program, Authors and Stewards should periodically update value sets to bring them in line with changes that may have occurred in the underlying code systems.

As a result of this revision process, Authors and Stewards create new value set definition versions they approve for specific program use.

In the VSAC Authoring Tool, when Authors create or update a value set, a new definition version of the value set is created. The first time the value set is authored/defined, a unique Object Identified (OID)[[16]](#footnote-16) used to name and identify the value set is assigned. The hierarchical namespace of the OID with which the SAMHSA Stewarded value sets is TBD (whether or not they be sensitive data related), but upon creation, each unique value set will be assigned a sequential number appended to the namespace node.[[17]](#footnote-17)

Once the value set has been published, any time authors update a value set, a new definition version of the value set is created. *This new definition version retains the value set OID, but assumes Draft status*. While the value set is in Draft status, Authors should regularly check if a new code system version becomes available through the provided VSAC Authoring Tool interface. Authors should select the most recent available code system version to re-expand the value set code list to capture the most recent values in the code system.

VSAC creates a new definition version and a new expansion version for value sets only after Stewards approve and publish the Authors' revised and submitted value sets.

## VSAC Authoring Best Practices

### Value Set Quality Criteria

Standardization of value sets is imperative, as it enables value set comparison across data sets. Adherence to these quality criteria facilitates reuse of well-defined value sets to advance clinical research studies and interoperability of health informatics analysis systems. Value set authors should clearly understand major principles that define high quality value sets:

* **Clinical Validity:** Value set authors should assure that all included codes correspond to the intent and purpose from a clinical perspective. For example, a code defining breast malignancies might be considered clinically irrelevant in a value set that defines eye disease. However, there might be more subtle nuances in clinical meaning one may need to consider.
* **Metadata Completeness:** Authors must provide correct and complete metadata and add any missing metadata as defined by the data model they use or program under which the authors work. Value sets defined by different clinical data models will have specific sets of metadata. The VSAC Authoring Tool indicates which metadata elements are mandatory. Authors should not populate free-text fields with meaningless information, as this will hinder the collaborative process of eliminating value set redundancy and harmonization efforts of the value set user community.
* **Non-redundancy:** Ideally, a given data element should be presented by one and only one value set for a given code system. Multiple value sets with the same codes should be eliminated to facilitate maintenance and prevent inconsistency over time. For example, duplicate value sets should be avoided, and value sets that share a majority of codes should be considered for merging or revision to assure the value sets are as complete as possible.
* **All Value Set Codes Are Valid in the Code System:** The authors should consider only currently valid codes for inclusion into a value set. This assures proper maintenance of the value sets. In some specific cases the author will need to specify a specific version of the code system and would thus create a static snapshot of the code system. Such cases should generally be an exception of the rule, limited whenever possible, and properly described in the Purpose statements.
* **Descriptors Match Code System Descriptors:** Authors should make sure any descriptors they add manually to value sets match the descriptors in the code system to which the codes belong. The VSAC Authoring Tool provides a descriptor match check as a built in function. The VSAC Authoring Tool performs this validation during batch import of codes into a value set, and during manual insertions of codes and descriptors.
* **Code List Completeness:** A value set should contain all the relevant codes for a particular data element. The coverage of codes should be correct. Authors should make sure the lists are lean and they should scrutinize large value sets. You should devise working rules and quality assessment tests to determine whether or not a concept or code is a proper member of a value set. Authors should describe such rules and tests in the required value set Purpose statement.
* **Logical Correctness:** A value set should contain only the relevant codes for a particular data element and the codes contained in the value set should strictly align with the described Purpose.
* **Proper Terminological Hierarchies (terminological correctness):** Only root codes and their descendants should be present in the value set. Presence of codes rooted at a different concept normally indicates incorrect choice of codes. In complex cases, value set authors should consult terminology experts.
* **Concept Property Similarity:** Value set member concepts should not vary in respect to their properties and attributes, such as semantic type, term type, etc. For example, a value set intended for prescribable drugs should contain only drugs with the property, "Prescribable." This is applicable for concepts that have such properties. The properties should be more similar than dissimilar. For complex cases, value set authors should seek guidance on the matter from terminology experts.
* **Code System Alignment to Standards:** Value set authors should base their value set on the code system recommended by the standards depending on the purpose of their value set and the data model (such as the National Quality Forum Quality Data Model) to which the value set authors may be adhering. Please refer to the Quality Data Model Categories with ONC HIT Standards Committee Recommended Vocabularies, in the most recent version of the [CMS Measures Management System Blueprint](https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/MMS/MeasuresManagementSystemBlueprint.html).

### Value Set Name

The name of a value set is a crucially important and descriptive metadata element. Value set authors should adhere to specific naming guidelines to assure value sets can be found manually and through automated processing, to encourage reuse of the value sets and to discourage their redundancy. The following suggested guidelines create concise, descriptive value set names that capture the purpose of each value set.

**Do:**

* Name the value set exactly for what it is, not what you wanted it to be. Avoid including descriptions of the content that was intended but not achieved. Correct the name accordingly if during the course of the work you discovered you were not able to align the value set content with the initial name given to the value set. For example, if you initially named the value set "Oral Anticoagulants" when the intent was to capture only oral anticoagulants for chronic atrial fibrillation, change the name to "Oral Anticoagulants For Chronic Atrial Fibrillation" to align it with the intended purpose.
* Write the value set name to convey the specific distinguishing characteristics of the member concepts. See the name in the previous bullet for a good example.
* Use the word "Selected" to indicate that not all concepts consistent with the described name are appropriate. When used, "selected" should be the first word in the name.
* Use sufficiently descriptive names. The name "Acne" or "Anticoagulants" is not sufficiently descriptive, because it does not describe the scope of the value set.
* Separate multi-word terms by spaces and not by any other characters, with rare exceptions.
* Capitalize first letters of all words, as in a title.
* Make unique value set names. Due to the uniqueness of the value set purpose and content, name redundancy ought to be a very rare occurrence.
* Limit the value set name to no more than 128 characters.

**Don't:**

* Avoid using the following characters: + \* ? : - | ! "
* Avoid abbreviations, unless they are widely accepted in the medical literature.
* Avoid including the name of the steward responsible for the value set. The steward name is separate metadata captured in the VSAC database.
* Avoid including the name of the data element to which the value set will be linked.
* Do not include the name of the Program that sponsors the system the value set is used in, unless it describes a primary distinguishing characteristic of the value set.
* Do not include the name of the code system used to obtain the concepts, unless it describes a primary distinguishing characteristic of the value set. For example, extensional value sets that belong to a grouping value set might be an appropriate case in which you would include the code system name.
* Do not include the concept category that characterizes the context of use, unless it describes a primary distinguishing characteristic of the value set requirements. Example: only include the word "Procedure" when the context of the main focus is ambiguous.
* Avoid using the word "Other" as an alternative to another value set. Each value set name must be understandable independent of any other value set.
* Do not include "CamelCase" or other composite and delimited words or phrases.
* Avoid using code descriptors within the value set name.
* Do not use names of measure types for which the value set is intended. For example, do not include "hospital measure," "patient measure," etc. Include this information in the value set Purpose statements.

### Value Set Purpose

The Purpose Statement is a multi-part free-text mandatory entry. It is designed to provide a clear and comprehensive description of the membership of the value set. This important metadata element must take into account how the members will be used in a clinical measure or in any other intended application. The Purpose Statement cannot be validated automatically, so authors should spend time to make this text as informative as possible for human readers to understand the intent of the value set, and how the value set is put together. To avoid redundancy, there should be only one value set for a given purpose. The Purpose Statement includes four separate fields that the value set author needs to complete:

1. **Clinical Focus -** a free text statement describing the general focus of the value set as it relates to the intended semantic space. This can be the information about clinical relevancy, or the statement about the general focus of the value set, such as a description of types of messages, payment options, geographic locations, etc.).

**Example:** This set of values contains medications that are commonly used in the outpatient setting for chronic oral anticoagulation by patients with chronic atrial fibrillation. These medications include antithrombotics and anticoagulants that are either specifically mentioned in clinical practice guidelines or are reasonable therapeutic equivalents. The 2012 clinical practice guidelines are dose specific.

1. **Data Element Scope -** a free text statement describing how the Data Element in the intended information model defines the concepts to be selected for inclusion in the value set.

**Example:** The intent of this data element is to identify patients who are on active medication therapy. Using the Quality Data Model, this particular element would map to the "Medication, Active" element.

1. **Inclusion Criteria -** Defines what concepts or codes should be included and why.

**Example:** Drugs that have single ingredients should be included. Drug forms that are consistent with oral administration should be included: tablets or capsules. Because the guidelines are dose-specific, only specific drug doses are included. Thus, for a common drug ingredient such as aspirin, the value set contains those aspirin concepts with drug strengths that can reasonably be used to achieve doses between 75 mg and 325 mg.

1. **Exclusion Criteria -** Defines what concepts or codes should be excluded and why.

**Example:** For medications that have multiple ingredients, drugs that contain additional ingredients that are not specifically used for patients with atrial fibrillation should not be included. The drug concepts should be limited to those which are appropriate for human use and available to be prescribed in the United States. In this specific case, drugs that have the form "powder" should not be included. Drug forms that are not consistent with oral administration should not be included. Drugs that take on injectable, syringe or suppository forms should not be included.

Authors should add Purpose Statements to value sets (whether created or inherited) if they are not present.

## References, Supporting Material & Tools

### Source Files

1. [Downloading the US Edition of SNOMED CT](https://www.nlm.nih.gov/healthit/snomedct/us_edition.html)
2. <https://www.nlm.nih.gov/healthit/snomedct/us_edition.html>
3. DSM-5 eBook
4. [Dr. Bob DSM-5 Alphabetical Listing](http://www.dr-bob.org/tips/dsm5a.html)
5. APA’s GUIDE TO USING DSM-5 IN THE TRANSITION TO ICD-10-CM

<http://www.psychiatry.org/File%20Library/Psychiatrists/Practice/DSM/DSM5-transition-to-ICD10.pdf>

1. <https://commerce.ama-assn.org/store/content/snomed>

### Mapping resources & journal articles

1. IHTSDO “[Mapping SNOMED CT to ICD-10 Technical Specifications](http://ihtsdo.org/fileadmin/user_upload/doc/download/doc_Icd10MapTechnicalGuide_Current-en-US_INT_20150131.pdf?ok)”
2. <http://ihtsdo.org/fileadmin/user_upload/doc/download/doc_Icd10MapTechnicalGuide_Current-en-US_INT_20150131.pdf?ok>
3. [SNOMED CT to ICD-10-CM mapping file](http://www.nlm.nih.gov/research/umls/mapping_projects/snomedct_to_icd10cm.html)
4. [Journal Article](https://www.researchgate.net/publication/221426469_Exploratory_reverse_mapping_of_ICD-10-CA_to_SNOMED_CT) describing reverse mapping approach ICD-10-CA (Canadian) to SNOMED CT <https://www.researchgate.net/publication/221426469_Exploratory_reverse_mapping_of_ICD-10-CA_to_SNOMED_CT>
5. How well do the DSM-5 alcohol use disorder designations map to the ICD-10 disorders? *Alcohol Clin Exp Res. 2015 Apr;39(4):697-701. doi: 10.1111/acer.12685. Epub 2015 Mar 17.*

<http://www.ncbi.nlm.nih.gov/pubmed/25778707>

1. Diagnostic Concordance between DSM-5 and ICD-10 Cannabis Use Disorders*. Addict Behav. 2016 Jul;58:117-22. doi: 10.1016/j.addbeh.2016.02.034. Epub 2016 Feb 20.*

<http://www.ncbi.nlm.nih.gov/pubmed/26922159>

1. [SNOMED CT® to CPT® Rules-Based Cross Maps](https://commerce.ama-assn.org/store/content/snomed) *(not yet obtained or used)*

### Tools

1. [Find-A-Code](https://www.findacode.com/)
2. [CMS HCPCS Codes (CPT Level II)](https://www.cms.gov/Medicare/Coding/MedHCPCSGenInfo/HCPCSCODINGPROCESS.html)
3. [ICD-9-CM Online Browser](http://www.icd9data.com/)
4. <http://www.icd9data.com/>
5. [ICD-10-CM Browser](http://www.icd10data.com/)
6. <http://www.icd10data.com/>
7. [IHTSDO SNOMED CT Browser](http://browser.ihtsdotools.org/)
8. <http://browser.ihtsdotools.org/>

### Additional resources

1. <http://www.thenationalcouncil.org/topics/coding-behavioral-health-services/>
2. The following Q & A from the above National Council site URL and may fall into consideration under the Harmonization section above.

**Does the current statutory definition of Emotional Disturbance and Mental Illness identify an ICD code range?**

No. 2012 legislation authorized deletion of the ICD-9 code ranges from the Adult Mental Health Act definition of mental illness and the Children’s Mental Health Act definition of emotional disturbance. Amendments to the [Adult](https://www.revisor.mn.gov/statutes/?id=245.461.6) and [Children’s](https://www.revisor.mn.gov/statutes/?id=245.487.7) Mental Health Acts *require the Commissioner of Human Services to develop and publish a list of diagnostic codes that define emotional disturbance and mental illness for the statewide mental health system if there are any changes*. The Department of Human Services (DHS) has been using and will continue to use valid ICD-9-CM codes for billing. *(Italics are my emphasis, and included in recommendations for follow up activities if a gap analysis of value sets is undertaken.)*

1. A Grouping value set is a specialized type of value set containing a list of value sets sharing a common purpose and containing similar clinical concepts. In this case, the VSAC Grouping value sets contain a list of the OIDS associated with the value sets whose concepts codes appear in the Grouping value set (the union of ICD-9-CM, ICD-10-CM, and SNOMED CT). [↑](#footnote-ref-1)
2. Prince George’s County data have not been reviewed due to time constraints. [↑](#footnote-ref-2)
3. I threw in ICD-9-CM because I9 codes were included in the original historical FEi baseline data. Going forward I question whether it Is necessary to include ICD-9-CM codes in these value sets, as it will add an additional level of effort to maintain those maps. [↑](#footnote-ref-3)
4. Including additional codes found in the ICD-10-CM hierarchy (including the hierarchical/category ‘un-billable’ level codes) was based on new ‘requirements’ that surfaced following the first project status review early in March and that I agreed to add to the maps. [↑](#footnote-ref-4)
5. Omitted in first pass of Sensitive Substance Use disorder maps because there are no incidents of F17-related disorders found in either FEi baseline or DSM-5. [↑](#footnote-ref-5)
6. Time did not permit review of the Prince George’s County data, but that review should likely take place after FEi determines what actions to take following this analysis, review of Deliverables 1 & 2, and the contents of the Deliverable 4 Report (FEi Baseline Sensitive Data Value Sets Review). [↑](#footnote-ref-6)
7. Various code systems define their format and allowable characters. For example, ICD-9-CM file is generally stored internally as left justified, knowing that the format for that code is XXX.X, etc. [↑](#footnote-ref-7)
8. CMS and other payers began supporting using the DSM-5 as of January 1, 2014 and the DSM-5 manual was published June 2013. Because payers were mandated to use ICD-10-CM for billing as of October 1, 2015, behavioral health providers were encouraged to start using (and getting use to using) the DSM-5 manual prior to the ICD-10-CM implementation date (October 1, 2015). DSM-5 supports both ICD-9-CM code and ICD-10-CM derivation while the DSM-IV manual only contains ICD-9-CM codes. Note that when the American Psychiatric. [↑](#footnote-ref-8)
9. When the American Psychiatric Association (APA) moved to the new version of the DSM, they stopped using Roman numerals and now use Arabic numerals for versioning [↑](#footnote-ref-9)
10. A PDF file ([Dr. Bob DSM-5 Alphabetical Listing](http://www.dr-bob.org/tips/dsm5a.html)) was converted into an excel spreadsheet noted in the [Resources / Tools section](#_Source_Files) of this document [↑](#footnote-ref-10)
11. See [Journal Article](https://www.researchgate.net/publication/221426469_Exploratory_reverse_mapping_of_ICD-10-CA_to_SNOMED_CT) (Exploratory\_reverse\_mapping\_of\_ICD-10-CA\_to\_SNOMED\_CT) describing reverse mapping approach ICD-10-CA (Canadian) to SNOMED CT

    <https://www.researchgate.net/publication/221426469_Exploratory_reverse_mapping_of_ICD-10-CA_to_SNOMED_CT> [↑](#footnote-ref-11)
12. Once again, this study was undertaken using ICD-10-CA, not the US version of ICD-10 (ICD-10-CM). [↑](#footnote-ref-12)
13. There are other HL7 work groups currently proposing balloting value sets for other purposes of use within HL7, so this wouldn’t necessarily set a precedent. We’ve also asked for similar feedback on behavioral health concept level value sets in past HL7 DAM ballots, but this effort would reach out to a wide audience of potential reviewers for feedback, thus accomplishing community-wide education for the VS’ purpose and their upcoming availability in VSAC. [↑](#footnote-ref-13)
14. This information was taken from the [VSAC website](https://www.nlm.nih.gov/vsac/support/index.html). [↑](#footnote-ref-14)
15. The ICD code system is used for reimbursement. Each year (around midyear) in the US, CMS releases a new version of the ICD code system is released for an Oct. 1 implementation date. The version identifier is the implementation year +1, so the 2016 ICD-10-CM code system became effective on Oct 1 2015 and is effective through Sept 30 2016. Health care organizations apply codes ICD-10-CM /ICD-10-PCS code systems to diagnoses and procedures (respectively) when those items are documented during the provision of care on dates that fall between October 1st of each year through September 30th of the following year. [↑](#footnote-ref-15)
16. OIDs are paths in a tree structure, with the left-most number representing the root and the right-most number representing a leaf. [↑](#footnote-ref-16)
17. All new SAMHSA sensitive health data value sets will be assigned unique OIDs once loaded into VSAC. [↑](#footnote-ref-17)