



Mississippi Department of Mental Health (DMH)

Provider Submission Guide – Introduction

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Version Control

| Date | Version | Author(s) | Brief Description of Change |
|-----------|---------|----------------|---|
| 1/13/2020 | 1.0 | Savi Sahni | Initial Draft |
| 4/21/2020 | 1.1 | Shelby Maloney | Added Version Control |
| 1/15/2021 | 1.2 | Kim Wood | Updated Method and Frequency of Data Submission |
| 5/12/2021 | 1.3 | Kim Wood | Added 8.7 Switching Electronic Health Records section |

1 Introduction

1.1 Terms and Acronyms

The following table provides a list of business and technical acronyms/terms used in this document.

| Acronym/Term | Definition |
|--------------|---|
| FAQs | Frequently Asked Questions |
| DMH | Mississippi Department of Mental Health |
| MS DWH | Mississippi Data Warehouse |
| NOM | National Outcome Measures |
| MH | Mental Health |
| SUD | Substance Use Disorder |
| TEDS | Treatment Episode Data Set |
| XML | Extensible Markup Language (XML) is a markup language that defines a set of rules for encoding documents in a format that is both human-readable and machine-readable. |
| XSD | XML Schema Definition is a World Wide Web Consortium (W3C) recommendation that specifies how to formally describe the elements in an Extensible Markup Language (XML) document. |

1.2 Purpose

This submission guide specifies the data files and file layout requirements for collecting and reporting data on persons served in licensed substance use and mental health disorder treatment provider agencies. This data is needed to meet state and federal reporting requirements. At the federal level, these data are

collected as part of the Block Grant requirements for Treatment Episode Data Sets (TEDS), which includes the National Outcome Measures (NOM) data. At the state level, these data are used for meeting various state reporting requirements.

1.3 Scope

This submission guide provides technical guidance for a submitting entity to understand how to create file submissions to MS DWH, how to send those files, and to see the business rule validations that DHM will be performing before accepting the data.

Providers that are licensed by DMH are required to submit data directly to DMH.

1.4 References

The following table provides a list of useful references.

| Description | Link/Location |
|--------------|---|
| XML Tutorial | https://www.w3schools.com/xml/default.asp |
| DHM website | http://www.dmh.ms.gov/ |

2 Access Management

To submit data to MS DWH, DMH must create a user account for an individual who will submit the data, and the individual must verify their account and setup their credentials by following the process described in the setup email. Account credentials must meet DMH department standards.

For a user account to be able to login to MS DWH, DMH must also create a Submitting Entity to represent the provider, or group of providers, under which that user account will submit data, and associate that user account to that Submitting Entity.

Data set submissions are always performed within the context of a Submitting Entity. A Submitting Entity can represent a single provider, or a group of providers, as determined with DMH. Once authenticated to submit data, the user will automatically be placed within the context of their associated Submitting Entity. If a user has been given access to multiple Submitting Entities, such as a vendor performing submission duties from multiple systems, or for multiple providers, the user will be given the ability to select their Submitting Entity context before submitting their data.

Data set submissions from a Submitting Entity can contain data for a single provider, or for multiple providers if necessary, as determined by DMH. DMH will provide the identifiers necessary to properly connect client information to provider information. Submitters will need to configure this information within their systems for each provider and provider site that DMH recognizes, so that they can populate it in various places in the data sets.

3 Required Data Sets

The table below provides a brief description and data collection frequency for each required data set in MS DWH.

| Data Set Name | Brief Description | Data Collection Frequencies at Local Levels |
|-------------------|---|---|
| Provider | Provider data include organization-level data related to contact persons, as well as identification numbers, names, addresses, and sites of the Provider agencies that are state-contracted or state-operated. | (1) Initially, when there is a new Provider site that needs to submit the required data, or (2) Subsequently when existing data need to be updated. |
| Client | Client data includes Protected Health Information (PHI) (e.g., names, date of birth, race, gender, and ethnicity) and other demographic information on each person whose services are funded in part or in whole by DMH. | (1) Initially, at the time of the individual's first service in the Provider, or (2) Subsequently when existing data needs to be updated. |
| Treatment Episode | Treatment Episode data include individual-level data of each person who meets criteria for enrollment in any mental health or substance abuse whose services are funded in whole or in part by DMH. It includes various outcomes and diagnosis information. | (1) At time of new admission into a MH or SA Program, and (2) After the initial admission when there is a transfer from one treatment setting to another within the Provider |
| Service Event | Service Event data includes individual-level encounter data on types, counts and dates of covered service events provided to each person served in SA or MH programs funded in whole or in part by DMH. | For each covered service event and intervention |

4 Data Set Dependencies

This section describes the dependencies between the data sets in the MS DWH data system. Data sets are represented as XML files that are uploaded to MS DWH. For records to be successfully processed, data set files must be processed in such a way that parent data sets are processed before child data sets, so that MS DWH can honor the relationships between the elements in the data sets, providing referential integrity in reporting. If a record in a child data set is submitted and processed before the corresponding record in the parent data set, then the system will reject that child record with a linkage validation error. If a user submits files for multiple data set types at the same time, the system will automatically process the files in the correct order, which will avoid those types of errors. However, if a user submits files for one data set at a time, the user must follow the required hierarchy to avoid receiving dependency related linkage validation errors.

The data set dependencies within MS DWH are:

- The **Provider** data set must be processed and accepted by the system before any of the other data sets can be processed or accepted. DMH is responsible for setting up and maintaining the Provider data set.
- The **Client** data set is dependent upon data within the Provider data set.
- The **Treatment Episode** data set is dependent upon data within the Client and Provider data sets.
- The **Service Event** data set is dependent upon data within the Treatment Episode and Provider data sets.

5 Method and Frequency of Data Submission

Submitting Entity users must submit the required data sets electronically by logging into the MS DWH portal and uploading their files using standard user-interface upload controls. As described above, users will be required to select their submitting entity context upon doing so.

Data submitted are generally processed within minutes after submission depending on file size, the number of other transactions being performed by the system, as well as the day and time of these transactions. Authorized MS DWH users can view records rejected by the system by logging into the MS DWH application.

Submitting Entities are required to submit their monthly data by the 15th following the end of the reporting month or as specified in their contract, except for the Client record as specified below. For example, data for April are due May 15th and data for May are due June 15th, and so on. However, in order to avoid the transaction bottleneck that normally occurs around the 15th of each month, submitting entities are highly encouraged to submit their data daily or weekly rather than once every month.

6 XML File Naming and File Size

Although submitters have some flexibility in how files are to be named, all filenames submitted to MS DWH must adhere to the below 3 requirements:

1. The name of the data set must be the first word in the file, followed by an underscore.
2. The filename must be unique in the submitters set of currently uploaded and unprocessed files.
3. The file must end with “.xml”.

The required data set name for each data set are listed below:

- ClientDataSet
- TreatmentEpisodeDataSet
- ServiceEventDataSet

In order to easily satisfy requirement #2 above, it is suggested to append the date and time to each file after the underscore, using the YYYYMMDDHHMMSS format.

Some example acceptable filenames would be:

- ClientDataSet_20180215083045.xml
- TreatmentEpisodeDataSet_20180215083045.xml
- ServiceEventDataSet_20180222091530.xml

Any filename that does not meet this requirement will not be processed into MS DWH.

MS DWH will accept any data file that is 50 megabytes (mb) or less in size.

7 XML Schema Validation

When submitting files to MS DWH, submitters are encouraged to first validate their XML file(s) against the published XML schema definition file (i.e. XSD) for each given data set. Submitting validated XML files will eliminate the chance of files being rejected when processed by MS DWH.

Please note that passing schema validation does not guarantee acceptance of each record into MS DWH; it only guarantees that the file will be processed, and each record evaluated individually. MS DWH relies on schema validation to enforce the general structure of a data set file, but most of the validation rules occur after schema validation as described below.

8 General Guidance

This section documents several general principles that submitters to MS DWH should be aware of.

8.1 Document Structure

Each data set has its own document. Each data set document can be expanded to see the sections. The sections include a business description of each data set, as well as a diagram of the entities within the data set, and a sub-section for each entity within the data set. The entities in the data set correspond to the XML Schema Definition (XSD) for that data set. There is a hierarchy to the entities within each data set, and that hierarchy is reflected in the menu structure of this document. Therefore, a submitter can determine how to populate the required XML files by following the specific data set documents

8.2 Validation Rules & Errors

Throughout the data set entities that are defined, there are validation rules defined that will allow DMH to ensure that the submitted data meet their desired needs in terms of data quality and integrity. There are multiple types of validation rules. Rules may appear within the document at various levels with respect to the entities and fields the rules are designed to inspect, which is explained further below. The associated message a user may receive is also documented for each rule, which will enable a submitter to cross-reference any error messages back to the data set document. Submitters are responsible for monitoring their errors, correcting the data within the source system if necessary, and resubmitting their files in a timely fashion. DMH does have the ability to dynamically configure and disable certain rules if necessary. Submitters will see examples of configurable rules within their data set documents. These rules could be updated by DMH without re-deploying their software or re-publishing the documents.

8.2.1 Schema Validation Rules

As described above, submitters are encouraged to validate their XML file against the provided XML Schema Definition (XSD) file before submitting their files. This process can be automated by the submitter or can be done manually. If a submitter chooses not to validate their XML file against the respective XSD file before submitting, the MS DWH system will do this as an initial step to processing the file, and an appropriate error message will be provided. If a file fails schema validation, the associated job will be reflected and an error reported, and no records from the file will have been accepted.

8.2.2 Field Level Rules

Many rules are simple field level rules and will generally appear within the list of fields for the particular entity. For example, if a field is required, there will be a rule to require that field documented next to that field. That rule may have a condition aspect to it, which will be clearly documented. Requiring a field within an entity does not mean that the entity is required. It means that if that entity is submitted, that it must abide by the field level rules. Sometimes a rule may involve two fields. That rule will not be duplicated in the document just because it applies to multiple fields. A rule has the same impact no matter where it is in

the document, however care was taken to attempt to logically locate rules with the field(s) to which the rule applies. Please read all field level rules as well as the 'Additional Business Rules', which are further explained in the data set documents.

8.2.3 Additional Business Rules

There are some rules defined under the 'Additional Business Rules' section for some entities. These are designed to require the submission of sub-entities. These rules also may have conditions. For example, there may be an additional business rule defined at the client entity level that requires that at least one physical address sub-entity be provided. Without this rule, a physical address entity would not be required within the client entity. Another example would be to require substance information for SUD clients, but not for MH clients.

8.2.4 Linkage Validation Rules

MS DWH is designed to capture data in separate data sets, to balance complexity and performance. XML would have allowed requiring submitters to create a single data set file for all MS DWH required information, however that would have been highly complex for submitters to create and could also increase general file size and processing time. So, MS DWH supports separate data sets. As described in the [Data Set Dependencies](#) section, those data sets must be submitted with respect to each other, and there are certain fields that will link the submitted data together across those data sets. These types of fields are specifically documented in the data set documents and labeled as 'Linkage Validation' rules. These rules cannot be configured by DMH and submitters must properly reference data from the required data sets. For example, when submitting a treatment episode, there must be a valid reference to the respective client's key field(s).

8.2.5 Errors, Warnings, and Guidance

Throughout the document, there are field and additional business rules documented as described above. Those rules are classified as either errors or warnings. Additionally, sometimes there are additional guidance statements.

8.2.5.1 Errors

Errors are enforced. MS DWH will not accept a record that violates at least one error rule. Examples of errors would be missing a required entity or field or providing an unsupported code value. As explained in the [Tracking Changes & Submission Actions](#) section, MS DWH relies on submitters to uniquely identify each record with one or more key fields. When errors are triggered, MS DWH keeps track of the key fields of the record(s) that produced the error in a staging area. This information is used to inform submission performance reports, including a summary of 'Failed Records'. If a submitter corrects a mistake that had triggered an error and resubmits the data set via a new submission but including the same key fields for the same records, then MS DWH will automatically mark the originally captured error record as resolved, which will be reflected on the Failed Records report.

8.2.5.2 Warnings

Warnings are important but are not enforced in the same fashion as errors. Warnings do provide useful messages and state DMH's intention for data collection and reporting, however records that trigger warning messages will be accepted by MS DWH. In some cases, DMH may provide additional feedback to help reduce certain warnings.

8.2.5.3 Guidance

Guidance statements are not enforced by MS DWH rules but are important to clarify the intended usage of a particular entity or field.

8.3 Vocabulary

MS DW uses a vocabulary system to control the allowed values for each field that requires a specific code value. Vocabulary related fields typically end with the word 'Code' in the field name. Note that a zip or postal code would be an exception to this general rule. Otherwise, for each vocabulary related field, the documentation will clearly list which vocabulary code system is used to define the set of allowed values, as well as the name of the set of allowed values. The name of the set of allowed values is referred to as a 'Value Set'. Submitters are responsible for submitting an allowed vocabulary code for the specified code system and value set provided. This may require submitters to be able to map their existing internal codes to the MS DWH required codes.

DMH will provide submitters with a listing of the allowed vocabulary codes for each value set in separate documentation posted on the DMH SUD and MH Website. The documentation will include the value set name listed in the documentation, as well as all the allowed codes within each value set. The fully qualified code for each value set include a prefix, known as the 'Type Code', and a suffix. Together, the prefix and suffix form the full code, known as the 'Concept Code'. An example within the Client data set, for Race would be '6800.1', where 6800 is the Type Code, and 1 is the unique portion. Together 6800.1 is the unique vocabulary Concept Code and is unique within the entire code system. Submitters would submit 6800.1 in the Race Code field of the Client data set to indicate the client is White, for example.

Please note that MS DWH can support multiple code systems, but the rules above still apply to each code system. For diagnosis, MS DWH supports the ICD-10 code system, and submitters are required to submit valid codes from the ICD-10 code system directly.

8.4 XML Schemas and Examples

DMH will provide submitters with XML Schema Definition (XSD) files for each data set, posted on the DMH SUD and MH Website. As described in the [XML Schema Validation](#) section, the XSD files can be used to pre-validate the structure of a data set file before submitting. XSD files can also be used by programming staff to get a jump start on creating the programming objects their extract programs must create. See the concepts of XML serialization and deserialization.

In addition to the XSD files, DMH will also provide submitters with several example XML files for each data set, also posted on the DMH SUD and PG Website. These XML file examples will allow submitters to visualize and understand the intent and structure of the XSD files and the data sets defined in this document.

8.5 Appendices

To illustrate certain concepts and requirements, this document uses Appendices in some cases. Please make a note that these Appendices exist. For example, there is an appendix section to define how MS DWH globally handles date values in a flexible manner.

8.6 FAQs

DMH will provide submitters with a list of Frequently Asked Questions (FAQs), also posted on the DMH Website.

8.7 Switching Electronic Health Records

The MS DWH identifies records using key fields which include unique source record identifiers. It is the responsibility of the provider to ensure that the new electronic health record maintains the integrity of the key fields for records that were sent from the previous electronic health record.

9 Tracking Changes & Submission Actions

9.1 Tracking Changes

Submitting entities can track changes in their system and can submit only changed records when data needs to be updated. Nevertheless, MS DWH can automatically determine whether each portion of a data set needs to be added or updated. By using unique source record identifiers and key fields, an entire record can be submitted and MS DWH will determine how to handle the record. If the key fields are not found in the database, then a new record is created. If the key fields are found in the database, then the information on those records will be updated with the newly submitted information. Only the information that has changed will be updated.

In each data set entity section, you will find the key fields listed which determine uniqueness and are used to determine whether a record must be created or updated.

9.2 Deleting Data

Data can be deleted from MS DWH. However, there are two important facts regarding when and how data is deleted.

- MS DWH uses logical instead of physical deletions. This means that the data are not physically deleted from the database, but only marked as deleted. Data that have been marked as deleted become unusable and are automatically excluded from any reports or processes. This also allows for the data to be re-instated using the XML action attribute of “undo-delete”.
- Data will only be marked for deletion when the XML file contains the XML action attribute of “delete”. As an example, if a portion of a Client record is submitted because that portion needs to be updated, the portions not included in the XML file will remain in the database. Lack of sending the information does not lead to those data being deleted.

9.3 Submission Actions

In XML, an action is specified by setting an attribute on the XML element. An example is shown below.

```
<Entity action="delete">  
  <KeyField>12345</KeyField>  
  <OtherKeyField>XYZ</OtherKeyField>  
</Entity>
```

There are only two action attributes (described below) that can be used with MS DWH. If the action attribute is not specified, then MS DWH assumes the user is either adding or updating data.

9.3.1 Delete

As explained above, MS DWH does not delete any data unless the submitting entity explicitly tells it to by setting the XML action attribute to “delete” at the appropriate entity level. When deleting data, the key fields are used to identify which specific records to delete.

With hierarchical XML, deleting can be specified at multiple levels for elements. An entire entity could be deleted, or, one or more sub-entities could be deleted without deleting the main parent entity. Here are some examples of how the delete attribute can be used:

- A Client entity and all Client sub-entities within the Client data set can be deleted by using the delete attribute at the Provider Client level.
- Identifiers can be deleted for a Client without deleting the Client by using the delete attribute at the Provider Client Identifier level.

If the delete attribute is used to delete an entire parent entity, then all child elements in the same data set will automatically be set to delete as well. Only the parent entity must be submitted with the delete attribute; the child elements do not need to be submitted. Note that this refers only to the child elements in that domain. For example, deleting a parent Client record does not delete all MS DWH records for that Client. It only deletes the associated records in the Client domain (i.e. addresses, identifiers, etc.). In order to delete all MS DWH records in the other data sets that depend on the Client data set, delete records for those other data sets should be submitted first, starting from the lowest level and working up.

In the example below both Entity 12345 and Child Entity 3456 will be marked as deleted. Note that even if Child Entity was not included in the XML, since it is a child entity in MS DWH, it will still get marked as deleted in the MS DWH database.

```
<Entity action="delete">
  <KeyField>12345</KeyField>
  <OtherKeyField>XYZ</OtherKeyField>
  <ChildEntity>
    <KeyField>3456</KeyField>
  </ChildEntity>
</Entity>
```

If you are only deleting a child entity but you include additional information about the parent entity, then that information will be treated as an update to the parent. In the example below, the Child Entity 3456 will be deleted but the “Value” property of the parent “Entity” will get updated to 12.

```
<Entity>
  <KeyField>12345</KeyField>
  <OtherKeyField>XYZ</OtherKeyField>
  <Value>12</Value>
  <ChildEntity action="delete">
    <KeyField>3456</KeyField>
  </ChildEntity>
</Entity>
```

9.3.2 UnDo-Delete

If data is mistakenly deleted, it can be re-instated by using the action attribute of “undo-delete”. This action will remove the “delete” status from the data, and will cause the data to become usable again.

If a parent record is specified to be re-instated, all child records for that parent will be re-instated as well. Conversely, a child record cannot be re-instated if the

parent record is marked as deleted.

A generic example of an undo-delete action is shown below.

```
<Entity action="undo-delete">  
  <KeyField>12345</KeyField>  
  <OtherKeyField>XYZ</OtherKeyField>  
</Entity>
```