Data Standard Revision Guide

Updated July 2021

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Purpose of Revision

The National Emergency Medical Services (EMS) Information System (NEMSIS) data standard is established as the universal standard for the collection, sharing and assessment of pre-hospital patient encounter documentation throughout the United States and Territories. Regular revisions, updates and critical patches are necessary to reflect the evolving needs of the broader EMS industry and developing standards for health information exchange.

Objectives

When State EMS leaders, in conjunction with the Office of EMS (OEMS) within the National Highway Traffic Safety Administration (NHTSA) and NEMSIS Technical Assistance Center (TAC), determine that a revision is necessary, strict consideration is given to the following objectives:

1. The need for revision must be significant enough to warrant the effort, resources and cost to States, Territories, and individual EMS agencies required to produce, educate, and implement a revision to the standard.
2. Implementation of the new standard should reduce the burden of data collection placed on EMS clinicians.
3. Collaboration with key stakeholders is essential. (See the sections titled Collaboration and Stakeholder Engagement).
4. The revision reflects current trends and needs of an ever-evolving pre-hospital medical care landscape.
5. The revision is responsive to the complexities of healthcare information exchange.
6. The revision is responsive to new initiatives and key areas of focus for communities, States, Territories, and national partners.
7. The revision will improve data quality, collection and utilization of data.

Decision to Revise

The decision to revise is initiated by the need to update the data standard to accurately reflect changes in EMS service and care. Abundant consideration is given to the consequences a revision has on clinicians, EMS agencies, States, Territories, and EMS Software Vendors.

The NEMSIS TAC and the NHTSA's Office of EMS fully acknowledge that revisions and updates to the National Data Standard have a significant impact on stakeholders, particularly EMS clinicians. The decision to change the standard is carefully investigated and the benefit must be determined to out-weigh the additional work of implementation.

Timelines

Revision Development Cycle

This image reflects the conceptual model of the NEMSIS Development Cycle associated with a revision to the data standard.

NEMSIS Development Cycle
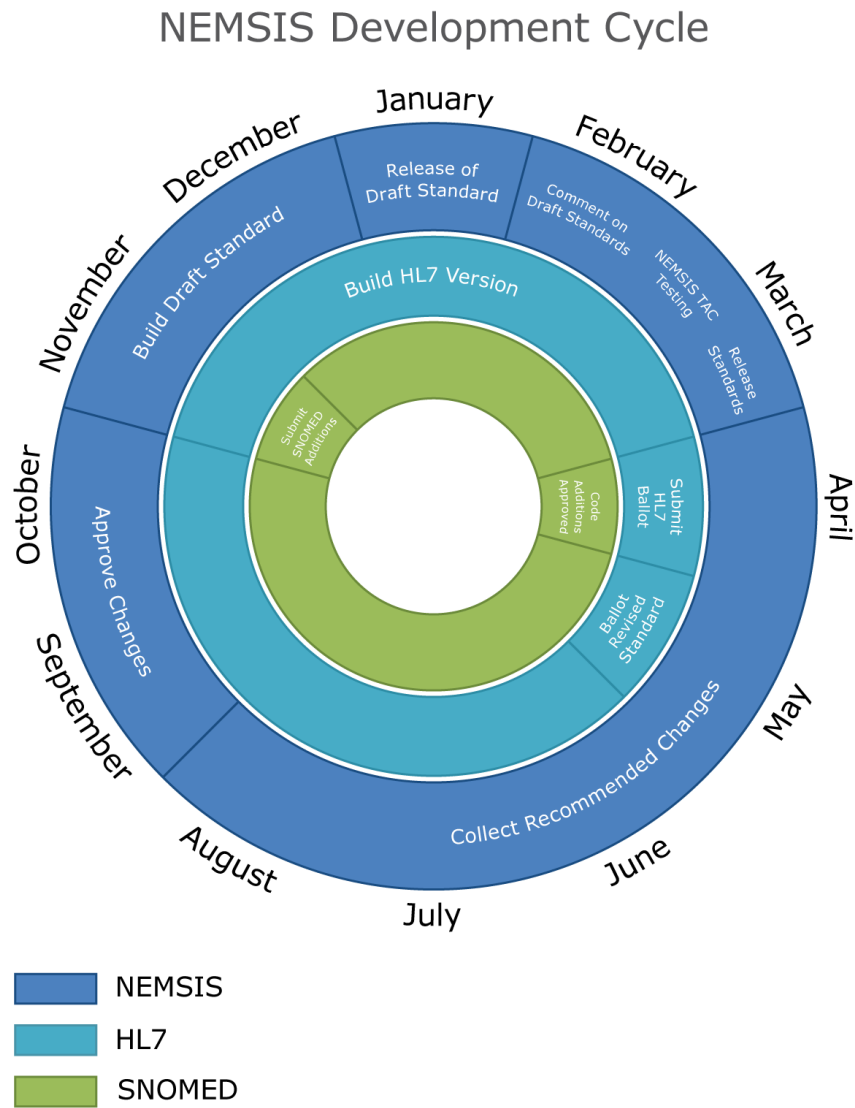
NEMSIS Process	HL7 Process	SNOMED Process
Release of Draft Standard	Build HL7 Version	Submit SNOMED Additions
Comment on Draft Standard	Submit HL7 Ballot	Code Additions Approved
NEMSIS TAC Testing	Ballot Revised Standard	
Release Standard		
Collect Recommended Changes		
Approve Changes		
Build Draft Standard		

Versioning Schedule and Lifespan

The Versioning Schedule represents the chronological order of implementing a new data standard version and sunsetting previous versions as they become outdated. This versioning schedule outlines the development and implementation of NEMSIS Version 3.5.0 and the sunsetting of two previous versions.
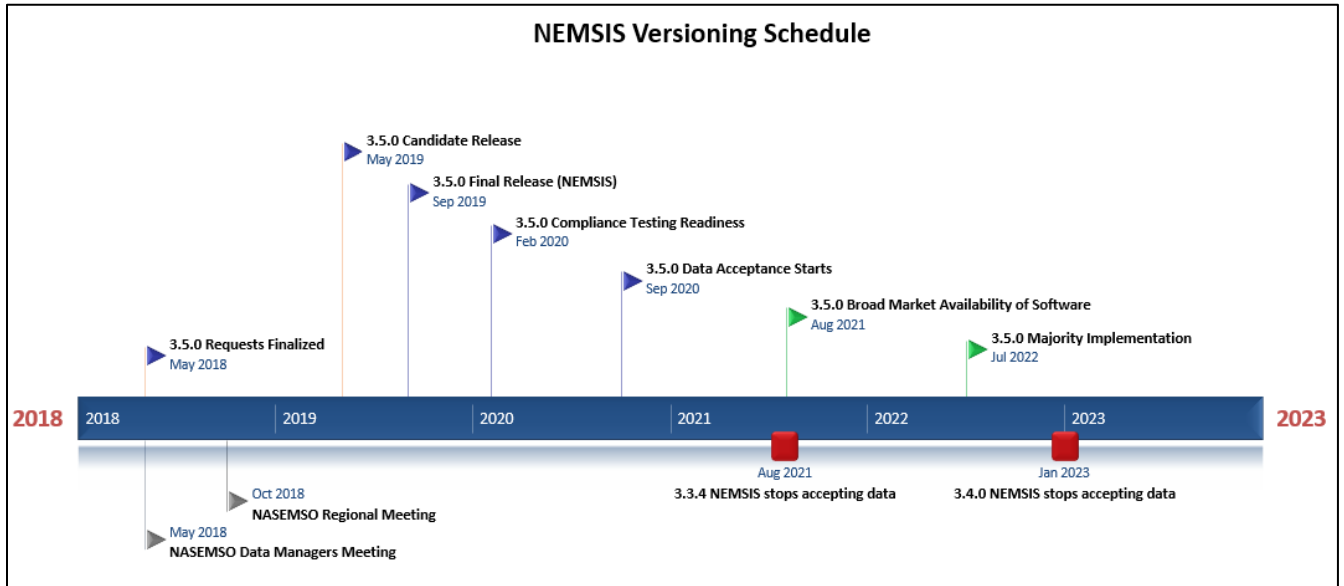
On average, a seven year Version Lifespan is maintained for versions of the NEMSIS standard.
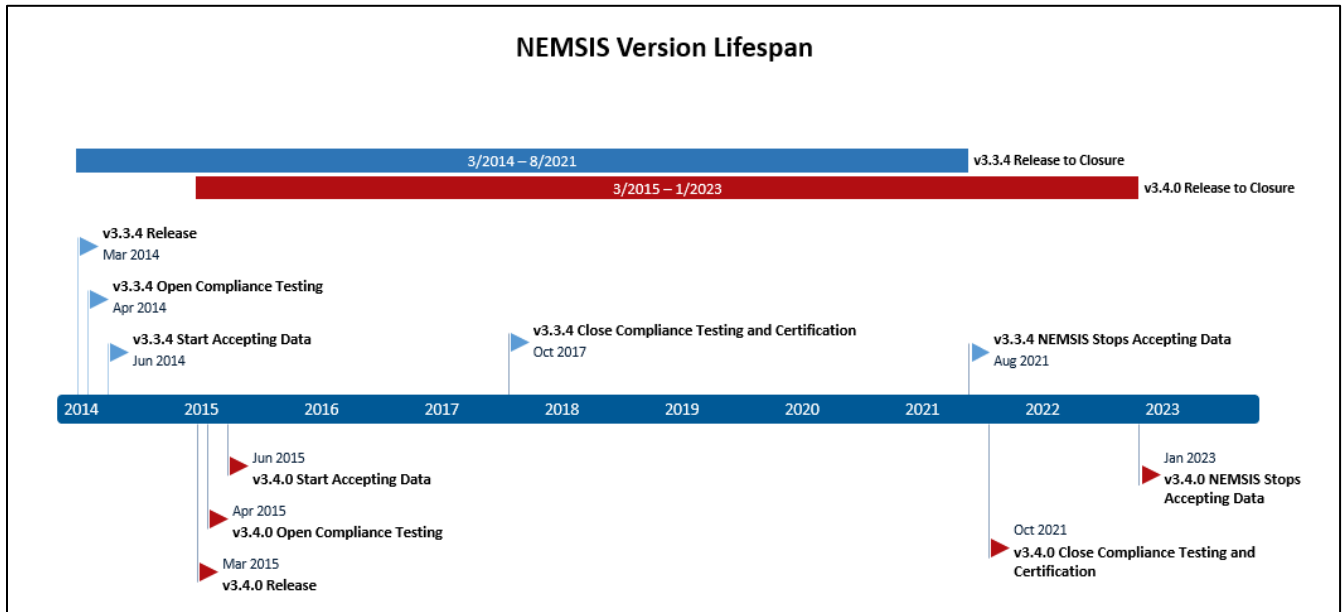
Collaboration

Significant collaboration among many different stakeholder groups is required to warrant the need for a NEMSIS revision, and then to ensure the practicality and usefulness of the proposed changes. This image demonstrates the on average, four-year process of collaboration and balloting a revised NEMSIS data standard including proposal collection, review, posting, and implementation of a new data standard.

Four Year Development Cycle	
Collection	Collection of Proposed Revisions
Review	Review of Proposed Revisions
Proposed	Posting of Proposed Revisions
Final	Posting of Final Revisions
Implement	Revision Implementation Deadline

FIRST REVISION

- March – July, Year 1 — Collection of Proposed Revisions
- August – November, Year 1 — Review of Proposed Revisions
- January, Year 2 — Posting of Proposed Revisions
- March, Year 2 — Posting of Final Revisions
- March, Year 3 — Revision Implementation Deadline

SECOND REVISION

- March – July, Year 2 — Collection of Proposed Revisions
- August – November, Year 2 — Review of Proposed Revisions
- January, Year 3 — Posting of Draft Revisions
- March, Year 3 — Posting of Final Revisions
- January, Year 4 — Revision Implementation Deadline

Stakeholder Engagement

The process of revising the data standard relies heavily upon engagement from stakeholders. State Data Managers, EMS clinicians, EMS/Fire Software Vendors, and Federal partners are involved from initial discussions through finalization of the standard. Work groups of subject matter experts are convened to investigate, discuss and recommend changes to the standard that best represent the evolving needs of the EMS industry.

Recommendations from the subject matter expert work groups are presented to stakeholders multiple times through presentations, conference calls, annual in-person meetings, and email distribution lists. All stakeholders are invited to contribute feedback on the suggested edits, additions, clarifications, and deprecations of data elements and values that make up the standard.

Once the recommendations are put forward and input from stakeholders is provided, approval for the data standard revision is sought through balloting during conference calls and annual in-person meetings.

Composition of the NEMSIS Standard

The development of a NEMSIS standard version includes the revision of a set of tools and documentation that support the information system associated with the NEMSIS standard. These products can be found in the NEMSIS Public GIT Repository. The repository is an accessible library that contains versioned information and historical iterations. The repository contains the following sections to accommodate the associated development tools and documentation:

- Compliance
- Database Scripts
- Data Dictionary
- Sample Data
- Schematron
- Suggested Lists
- Translation
- Usage Guides
- WSDL
- XSDs

Compliance

The Compliance section includes all the documentation, test cases and other items related to the NEMSIS compliance certification process in place for EMS software vendors. It includes documentation describing the compliance process, the purpose of compliance, and a Pre-Testing package of test cases and test Schematron files. The compliance resources are version specific.

Database Scripts

This section contains Structured Query Language (SQL) scripts that are used to create sample database tables for holding the elements in the NEMSIS data standard. There are scripts for EMSDataSet, DEMDataSet and StateDataSet.

Data Dictionary

This section contains the data dictionary for the relevant NEMSIS version. It is provided in two formats, HTML (or web based) and PDF. Also included in this folder are the ancillary documents, as text files, describing the elements included in the standard and the change log associated with the standard.

Sample Data

This section contains a variety of sample data for different datasets contained in the NEMSIS standard including custom element and Schematron (i.e., business rule) examples. There are several sample files for the EMS, DEM, and State Data Sets that will pass XML schema (XSD) validation, and Schematron schema validation. They may produce Schematron warning messages, but will not produce Errors or Fatal Errors. The Schematron sample data are a series of EMS, DEM or State Data Set files used as a test suite for the national Schematron files. Instructions included in this section are provided as text documents that describe the expected results from testing.

Schematron

This section contains all the necessary assets to start using the national Schematron schemas. The national schemas are included has both .sch and .xml formats. There is also a set of documentation on the use of Schematron schemas, a change log for the national rules, and a development kit to aid in Schematron use and implementation.

Suggested Lists

This section includes the suggested lists for American National Standards Institute (ANSI) approved codes utilized by the NEMSIS standard. These standards include the International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM); RxNORM; Systematized Nomenclature of Medicine -- Clinical Terms (SNOMED-CT) and Logical Observation Identifiers Names and Codes (LOINC). There is generally both an excel document of the list codes for each element, as well as a PDF document describing the list.

Translation

The Translation section contains the relevant XSLTs to translate the given version of the NEMSIS standard back and forth from the previous version. Also included are PDF instructions for the XSLTs and necessary information for the broader v2 to v3 translation.

Usage Guides

This section contains the guides necessary to assist in the technical implementation of the NEMSIS standard in a software system. Included specialty topics are use of NOT values, implementation of Universally Unique Identifiers (UUID), and Custom Elements. The guides are updated with revisions to the standard and describe the implementation under the specified version of NEMSIS.

WSDL

This section contains the Web Service Defined Language (WSDL) for a NEMSIS standard web service in the given version of the standard, NEMSIS_V3_core.wsdl. This file is used in the development of a NEMSIS-compliance web service. Also included in this folder is a PDF web services guide that provides instruction on the development of a NEMSIS-compliant web service.

XSDs

The XSD section contains the XML schema files (XSDs) that describe the NEMSIS standard for the given version. They are organized by data set type (EMS, DEM, State) into folders, with an XSD file for each section of a given data set (e.g. eDisposition.xsd), and an XSD file that describes the sections within the data set (e.g., EMSDataSet.xsd).

Naming Convention to Reflect Changes in the Standard

The naming convention for a NEMSIS Standard Release is as follows:

Version.Major.Minor.BuildDateCP#		
	Description	**Detail**
Version	Version of the NEMSIS Data Standard	The current data standard is Version 3 (e.g.: v3.3.4 or v3.4.0)
Major	Significant improvements or changes in functionality	Addition or deprecation of data elements
	Not backwards compatible	Translation mapping would be necessary between major editions for data submission
Minor	Minor feature changes	Addition of values to existing data elements
	Significant fixes	
BuildDate	Informational changes to comments/dictionary	
CP#	Incremental reference to the critical patch version	
Example	NEMSIS v3.4.0.160713CP2	

The [NEMSIS Archive web page](#) and the [GIT Repository](#) contain past releases of XSD, dictionaries, translation documents, change logs, and more.

Support

Software Compliance Testing

All vendors that submit data to the national repository are required to be certified as NEMSIS compliant for the version and software type (agency/state) in use. The NEMSIS TAC offers free-of-charge compliance

testing for two versions of the standard. The testing is described in full on the NEMSIS website and can be completed by most EMS software vendors within 90 days.

Whitepapers

The NEMSIS TAC offers various whitepapers or fact-sheets describing different aspects of the standard. They are updated regularly with NEMSIS versions and can be found throughout the NEMSIS website on the pages for the relevant subject matter.

State Support

State EMS Data Managers are offered personal one-on-one training and assistance in developing and supporting EMS data collection and inclusion in the National EMS Data Repository through participation in NEMSIS. Data Mangers are provided with, and guided through a 10 Point Process:

1. Become familiar with the newest version of the NEMSIS Data Dictionary.
2. Identify the State Required Data Elements or Data Points to be collected.
3. Create a transition Project Plan and timeline.
4. Identify and complete resources for StateDataSet with software vendor or TAC staff:
   a. Custom Elements
   b. State Certification/Licensure Levels
   c. Procedures Permitted by the State
   d. Medications Permitted by the State
   e. Protocols Permitted by the State
   f. EMS Agencies
   g. Facilities
5. Communicate relevant changes on official letterhead to all state EMS stakeholders.
6. Encourage local participation in the transition process via user trials and feedback.
7. Attend scheduled education/information webinars offered by NEMSIS TAC: V3 Implementation Calls, Public Trainings, or schedule personalized trainings with the NEMSIS TAC staff.
8. Work with software vendors to make any necessary changes to state Schematron validation rules.
9. Work with software vendor or contractors to understand the requirements of NEMSIS compliance process.
10. Work with TAC staff on any expired Data Use Agreements or IRB Renewals.

Questions and Comments

The NEMSIS TAC actively pursues input from all stakeholder groups. Contact the NEMSIS TAC with any questions, comments, or suggestions via email at nemsis@hsc.utah.edu or 801-587-7361. For more targeted support, contact specific team members at the TAC from the NEMSIS.org Support Page: https://nemsis.org/support/.