



## BEST PRACTICES BULLETIN

To: NEMESIS Stakeholders

Re: Best Practices for State & Territory Resources Updates

Date: May 18, 2021

The NEMESIS TAC is dedicated to assisting state/territory data managers and EMS software developers with keeping their information current on the NEMESIS website. To that end, we are providing guidance on when and how to update the state resources (Schematron, State Data Set, etc.).

Information about state agencies, facilities, Schematron rules, and other ePCR documentation resources may change periodically. Some state EMS data managers have implemented processes to update state resources on regular schedule such as monthly or bi-monthly. Each data manager determines the frequency of resource updates. The TAC requests that the updates are sent as XML or Schematron documents to [nemesis@hsc.utah.edu](mailto:nemesis@hsc.utah.edu).

### Change Documentation

A list of recent changes to state/territory and national repositories is posted weekly (currently on Mondays) to the NEMESIS Google Group public forum. This group is open to all NEMESIS Stakeholders and can be joined here: <https://nemesis.org/join-our-google-group/>. Changes are also listed on the NEMESIS website here: <https://nemesis.org/state-data-managers/state-map-v3/>.

When states/territories send updated resources to the TAC we request the following information to be including in the repository change log:

1. Date by which local developers should deploy changes
2. Which files were changed
3. Within each changed file, specify what was added, removed or modified

Stakeholders can review the change log for an overview of changes. This change log, also known as a commit message, is an opportunity to summarize the changes from an “impact” perspective. Change logs are located here:

- On each state/territory page under “Implementation Tool Update History.” Open <https://nemesis.org/state-data-managers/state-map-v3/> and click on the desired state.
- A line-by-line comparison of each file is available in the NEMESIS TAC GIT Repository for States: <https://stash.utahdcc.org/stash/projects/NES>.

When a new version of the national or state Schematron is published, each data manager, software developers, and the local EMS agency should implement the file into their software product with consideration to the state requested deploy date.

## Recommendations

Based on feedback from data managers and EMS software developers, the NEMESIS TAC recommends the following:

- Data managers may release updates to state/territory rule files at any time and submit the file to the TAC to be published on the state page of the NEMESIS website.
- When possible, the state/territory should provide 90 days advance notice to EMS software developers and local EMS agencies to implement necessary changes when those changes reflect a more restrictive Schematron. Examples of this might be adding validation requirements/business logic.
- EMS software developers and local EMS agencies should consider implementing and distributing new files at their earliest convenience when Schematron changes result in a less restrictive Schematron. Examples of this might be the addition/alteration of allowed facility codes or names, or alterations to reduce validation requirements/business logic.

Care should be taken concerning the order of implementation of changes. If a state system implements new, more restrictive Schematron rules before a local system does, then a record that was found valid by a local system may be found invalid by the state system at the time of submission. The local system must communicate the error(s) to the person who completed the record for resolution.

The TAC encourages data managers to test the Schematron files with their software developer or other EMS stakeholder to ensure changes have the intended impact before submitting the documents to the TAC and implementing the changes state-wide.

## Schematron Development

For best results, data managers should use the NEMESIS Schematron Development Kit to utilize the test-driven design framework for developing Schematron rules. (See <https://nemsis.org/technical-resources/version-3/version-3-schematron/> for additional resources.)

Download the Schematron Development Kit (ZIP file):

[https://nemsis.org/media/nemsis\\_v3/release-3.4.0/Schematron/DevelopmentKit/Schematron.zip](https://nemsis.org/media/nemsis_v3/release-3.4.0/Schematron/DevelopmentKit/Schematron.zip)

v3.4.0 Schematron Guide:

[https://nemsis.org/media/nemsis\\_v3/release-3.4.0/Schematron/Documentation/NEMESIS\\_V3\\_Schematron\\_Guide.pdf](https://nemsis.org/media/nemsis_v3/release-3.4.0/Schematron/Documentation/NEMESIS_V3_Schematron_Guide.pdf)

v3.5.0 Schematron Guide:

[https://nemsis.org/media/nemsis\\_v3/release-3.5.0/Schematron/Documentation/NEMESIS\\_V3\\_Schematron\\_Guide.pdf](https://nemsis.org/media/nemsis_v3/release-3.5.0/Schematron/Documentation/NEMESIS_V3_Schematron_Guide.pdf)

The Development Kit allows the user to create a “base” test suite NEMESIS XML document (for example, an EMSDataSet document for patient care report data). The user can mark-up that document with additional tags to identify modifications to the document that represent specific test cases. The utilities in the kit will generate the test case documents, validate them against the Schematron schema, and provide validation results.



## Schematron Validator

Stakeholders are encouraged to use the NEMESIS Schematron Validator (<https://ws.nemesis.org/NemesisUtilities/>) to verify their Schematron files.

The Schematron Validator checks for the following:

1. Schematron is a well-formed XML document
2. Schematron passes RelaxNG validation
3. Schematron passes ISO Schematron validation
4. Schematron passes NEMESIS-specific Schematron validation
5. Potentially redundant or conflicting rules with national XSD and Schematron constraints

The validator does **not** verify that the state rules enforce the business logic intended for implementation.

## State Data Set Updates

v3.4.0: To update a v3.4.0 StateDataSet, guidance and resources are located here: <https://nemesis.org/view-reports/state-reports/state-dataset-builder/>.

v3.5.0: For v3.5.0 StateDataSets, data managers will need to utilize the solution provided by their state software developer.

## Additional Support

For additional assistance or if you have questions about updating state resources, please contact email [nemesis@hsc.utah.edu](mailto:nemesis@hsc.utah.edu).