

# NCHS NVSS FHIR API Fetal Death Test Plan Jurisdiction <-> NCHS

## <Date-of-Test-Event>

This test plan includes updated URLs that were introduced in v1.7.0 of the NVSS FHIR API

The goals for testing the NCHS NVSS FHIR API for Fetal Death include creating a FHIR Fetal Death Record and validating the content in Canary. These tests will focus on the most recent version published BFDR FHIR IG STU 2.0.0 (<https://build.fhir.org/ig/HL7/fhir-bfdr/> for the format of the fetal death record itself and the [FHIR messaging IG 2.0.0](#) for supporting the business processes of submitting the record and retrieving responses. For the FHIR record producing test case, jurisdictions will create a FHIR Fetal Death Record on their local system with predefined values. Jurisdictions will validate the record using Canary.

## NVSS API Instructions

Before using the NVSS API, the following steps should be completed (please allow a few weeks to complete these steps). If you already have access to the NVSS API for mortality, you do not need to request access again.:

1. Jurisdiction representative requests an account on the SAMS production server at <https://sams.cdc.gov/>. An existing account may be used, however keep in mind that the username and password for the account will likely need to be made available to jurisdiction testers, so a new account may be preferred. Account requests should be sent to [nvssmodernization@cdc.gov](mailto:nvssmodernization@cdc.gov).
2. NCHS approves account and associates account with the SAMS API Gateway, providing connectivity to the API.
3. NCHS provides jurisdiction with appropriate OAuth Client ID and Client Secret
4. Jurisdiction activates the System Account associated with their SAMS account:
  - a. Log into SAMS account at <https://sams.cdc.gov/>
  - b. On the left-hand menu click "My Profile"
  - c. On the new left-hand menu click "Manage My System Account"
  - d. Make note of "User Name", which will start with "SYS-"; that's the username to use for OAuth
  - e. Set a new System Account password by filling in the "New Password" and "Confirm New Password" fields and clicking "Submit"; this is the password to use for OAuth
5. NCHS provides jurisdiction with the OAuth token URL and the API Gateway URL for making connections; the URLs will have the following format:

OAuth token URL: <https://apigw.cdc.gov/auth/oauth/v2/token>

API Gateway URL: <https://apigw.cdc.gov/OSELS/NCHS/NVSSFHIRAPI/<JurisdictionID>>

(where <JurisdictionID> is the appropriate two letter jurisdiction code, e.g., UT for Utah)

6. Once the jurisdiction has set up the System Account it can be tested by requesting an OAuth token, which will be used for interacting with the NVSS FHIR API. Using a tool that supports sending https requests, like curl (a command line tool, see <https://curl.se/>) or postman (a small application, see <https://learning.postman.com/docs/getting-started/introduction/>) send the following request:

```
curl --request POST
  --url https://apigw.cdc.gov/auth/oauth/v2/token
  --header "Content-Type: application/x-www-form-urlencoded"
  --data grant_type=password
  --data client_id=<OAuth-client-id>
  --data client_secret=<OAuth-client-secret>
  --data scope="openid profile email"
  --data username=<SAMS-system-account-username>
  --data password=<SAMS-system-account-password>
```

A response containing an OAuth token should be received that looks as follows:

```
{
  "access_token": "<access-token>",
  "token_type": "Bearer",
  "expires_in": 3600,
  "refresh_token": "<refresh-token>",
  "scope": "profile email"
}
```

7. Once an OAuth token is retrieved it can be tested by sending a GET request to the FHIR API endpoint:

```
curl --request GET
  --header 'Authorization: Bearer <access-token>'
  --url https://apigw.cdc.gov/OSELS/NCHS/NVSSFHIRAPI/MA/Bundles
```

Assuming there are no return messages yet, a response should be seen that looks as follows:

```
{
  "resourceType": "Bundle",
  "type": "searchset",
  "timestamp": "2022-06-24T17:48:54.486992-04:00" }
```

Complete documentation on the API can be found on GitHub:

<https://github.com/nightingaleproject/Reference-NCHS-API#readme>

## STEVE API Onboarding Steps

The STEVE API is not currently part of the Fetal Death Test Plan.

## BFDR .NET Library Target Versions

[BFDR v1.0.0-preview.12](#)

[BFDR.Messaging v1.0.0-preview.12](#)

## BFDR IG Target Version

[BFDR STU 2.0.0](#)

## VRFM Target Version

[Vital Records FHIR Messaging IG](#)

## Tests

Testing is broken up into tiers, and during a testing event each participating jurisdiction can participate in one or more tiers as time allows and as appropriate for their testing goals. For this testing event, the Fetal Death Test Plan only contains Tier 0. Tier 0 focuses on creating a valid FHIR Fetal Death Record.

## Tier 0: Creating a valid FHIR Fetal Death Record

### Test 1: Creating a Fetal Death Record and validating with Canary

The jurisdiction will test individual FHIR messages, each containing a fetal death record, using the Canary testing tool. One record submission message will be tested:

1. Anwar test case

To test a fetal death record and submission message in Canary use the following steps:

- Use the hosted [Canary Testing Tool with BFDR Support](#) or run the Canary testing tool; instructions can be found in the [Canary README](#) document.
- Navigate to the Canary BFDR “Fetal Death Record Testing” “Connectathon FHIR BFDR Fetal Death Records (Producing)” test.
- Select the correct test case for the record you’ll be testing.
- Complete “Step 1” in Canary: Set the certificate number and jurisdiction of the record you’ll be testing.
- Complete “Step 2” in Canary: Enter the Connectathon test data displayed by Canary into your system to generate a FHIR Fetal Death Record using the BFDR library.

- Complete “Step 3” in Canary: Paste the FHIR Record into the input box at the bottom of the page, submit it, and click “Calculate”. Canary will then display successes/errors for how each field of your FHIR Record matches the test record’s fields.
- Navigate to the Canary BFDR “Message Testing” “Connectathon FHIR BFDR Fetal Death Messages (Producing)” test and choose a test record.
- Complete “Step 4” in Canary: Wrap your FHIR record in a Submission Message using your code that uses the BFDR Messaging library.
- Complete “Step 5”: Select “Submission Message” in Canary and input your generated record Submission Message into Canary (either via copy & paste, uploading from a file, or POST the record to Canary). Click “Calculate” and, again, Canary will display all successes and failures of matching by-field. This time, it will also validate message-related fields.
- Review the results and address any issues identified; note that some categories of issues may not be possible to address for your jurisdiction.

For each record submission message, the following criteria will indicate success:

- Message loaded into Canary and Canary reports no incorrect properties (to the extent possible for your jurisdiction)

## Tier 1: Happy path testing directly with NCHS backup API endpoint

This tier focuses on “happy path” testing of basic functionality: submitting a FHIR Fetal Death Record Submission Message directly to NCHS and handling the expected subsequent message exchange. Note that during this testing records are not being tested by NCHS to ensure that they contain the correct content. This testing should be performed separately by the jurisdiction using the [Canary](#) Connectathon test in Tier 0.

### Test 1: Submission of individual FHIR messages

The jurisdiction will send individual FHIR messages, each containing a fetal death record, directly to NCHS via the NCHS NVSS FHIR API. NCHS will reply with an acknowledgement message for each submission. One record will be submitted:

1. Anwar test case

To test the Fetal Death Record Submission:

- Use your SAMS credentials to request an authentication token to the NVSS FHIR API, see SAMS instructions above
- Create your request in either Postman or on the command line using the following criteria
  - o Request Type: POST

- o Endpoint: ex. [https://apigw.cdc.gov/OSELS/NCHS/NVSSFHIRAPI/MA/Bundle/BFDR-FETALDEATH/BFDR\\_STU2\\_0](https://apigw.cdc.gov/OSELS/NCHS/NVSSFHIRAPI/MA/Bundle/BFDR-FETALDEATH/BFDR_STU2_0)
  - o Body: the .json Fetal Death Record Submission Messages you created in Tier 0
  - o Authentication: The token requested in the previous step
- Submit your request to the test endpoint
- After you receive a 204 “No Content” http response from the NVSS FHIR API, create your GET request in Postman or on the command line using the following criteria
  - o Request Type: GET
  - o Endpoint: ex. [https://apigw.cdc.gov/OSELS/NCHS/NVSSFHIRAPI/MA/Bundle/BFDR-FETALDEATH/BFDR\\_STU2\\_0](https://apigw.cdc.gov/OSELS/NCHS/NVSSFHIRAPI/MA/Bundle/BFDR-FETALDEATH/BFDR_STU2_0)
  - o Authentication: The same auth token used in the previous step
- Submit your request to the test endpoint
- Confirm you received an Acknowledgement with a reference to the submitted Fetal Death Message Id

For each test record, the following criteria will indicate success:

- The Fetal Death Record Submission Message is received by the NVSS API and a 204 “No Content” http status response is sent back to the jurisdiction.
- An Ack is returned to jurisdiction and references the original message. Note that this is a predefined ACK message to simulate the message exchange. NCHS will not process the Fetal Death Record at this time.