

Inferno Tech Talk – April 2024

Yunwei Wang

MITRE Inferno Team

April 10, 2024

MITRE | SOLVING PROBLEMS
FOR A SAFER WORLD™

Inferno Tech Talk Introduction

- Purpose: to provide regularly scheduled updates on the Inferno tool and its implementation of the (g)(10) test procedure
- Typical agenda to include:
 - Announcements about upcoming releases
 - Training on new features
 - Highlight outstanding issues or known problems
 - Open discussion
- Monthly recurrence: 2nd Wednesday at 1PM ET
- This call is being recorded and will be posted on <https://inferno.healthit.gov/events/>

Content reflects Inferno's implementation of applicable Test Procedure and does not necessarily reflect ONC policy.

Today's Agenda

- (g)(10) Standardized API Test Kit v5.3.0
- (g)(10) Open Issues
- US Core Test Kit v0.6.5
- Inferno Core v0.4.34
- Discussions / Questions









ONC (g)(10) Standardized API Test Kit v5.3.0

- Test Update:
 - Changes that may result in new failure: 1
 - Changes that do not result in new failure: 1

(g)(10): Validator Update

- Replace Inferno's custom-built validator service with the FHIR® Validator Wrapper
- Increase the FHIR resource validator version from 6.2.8 to 6.3.0

(g)(10): Coverage.identifier.membershipid.type Must Support

 Coverage	C	0..*	Coverage	Insurance or medical plan or a payment agreement us-core-15: Member Id in Coverage.identifier or Coverage.subscriberId SHALL be present <i>(USCDI) Member ID and other identifiers</i>
 Slices for identifier	S	0..*	Identifier	<i>Slice: Unordered, Open by pattern:type</i>
 identifier:memberid	S C	0..1	Identifier	(USCDI) Member ID
 type	S	1..1	CodeableConcept	(USCDI) Member Number identifier type Required Pattern: At least the following
 coding		1..*	Coding	Code defined by a terminology system Fixed Value: (complex)
 system		1..1	uri	Identity of the terminology system Fixed Value: http://terminology.hl7.org/CodeSystem/v2-0203
 code		1..1	code	Symbol in syntax defined by the system Fixed Value: MB
 status	S	1..1	code	(USCDI) active cancelled draft entered in error







Sample Input:

```
identifier: [  
  {  
    system: 'local-id',  
    value: '123'  
  },  
  {  
    system: 'http://terminology.hl7.org/CodeSystem/v2-0203',  
    code: 'MB',  
    display: 'Member Number'  
  }  
],  
value: 'member-id'  
]
```

(g)(10) Open Issues:

- Screening Assessment Category MustSupport test
- Primitive extension support in Muti-Patient API test
- Practitioner Search test

Issue #508: Screening Assessment Category MustSupport

 Slices for category	S	1..*	CodeableConcept	(USCDI) Classification of type of observation Slice: Unordered, Open by pattern:\$this
 category:survey	S	1..1	CodeableConcept	(USCDI) Classification of type of observation Required Pattern: At least the following
 coding		1..*	Coding	Code defined by a terminology system Fixed Value: (complex)
 system		1..1	uri	Identity of the terminology system Fixed Value: http://terminology.hl7.org/CodeSystem/observation-category
 code		1..1	code	Symbol in syntax defined by the system Fixed Value: survey
 category:screening-assessment	S	0..*	CodeableConcept	(USCDI) Classification of type of observation Binding: US Core Screening Assessment Observation Category (required) : Note that other codes are permitted, see Required Bindings When Slicing by Value Sets

Issue: Screening Assessment Category Must Support

Code	System	Display
sdoh	http://hl7.org/fhir/us/core/CodeSystem/us-core-category	SDOH
functional-status	http://hl7.org/fhir/us/core/CodeSystem/us-core-category	Functional Status
disability-status	http://hl7.org/fhir/us/core/CodeSystem/us-core-category	Disability Status
cognitive-status	http://hl7.org/fhir/us/core/CodeSystem/us-core-category	Cognitive Status

Assessment and Plan of Treatment

Health professional's conclusions and working assumptions that will guide treatment of the patient.

[Assessment and Plan of Treatment](#)
[SDOH Assessment](#)

Care Team Members

Information on a person who participates or is expected to participate in the care of a patient.

[Care Team Member Name](#)
[Care Team Member Identifier](#)

Health Status Assessments

Assessments of a health-related matter of interest, importance, or worry to a patient, patient's family, or patient's healthcare provider that could identify a need, problem, or condition.

[Health Concerns](#)
[Functional Status](#)
[Disability Status](#)
[Mental/Cognitive Status](#)
[Pregnancy Status](#)
[Smoking Status](#)

Issue: Screening Assessment Category MustSupport

- Current Approach:
 - Server Implementation Must Support at least one of 4 codes
- Proposed Approach:
 - Server Implementation Must Support all 4 codes.
- Question:
 - Will this change affect your system?
 - How does your system present/support these 4 USCDI data element?
- GitHub Issue: <https://github.com/onc-healthit/onc-certification-g10-test-kit/issues/508>

Issue #411: Bulk Data primitive extension

- GitHub Issue: <https://github.com/onc-healthit/onc-certification-g10-test-kit/issues/411>
- Root Cause:
 - FHIR's special handling of primitive extension in JSON format.
- Status:
 - Will patch Bulk Data test.

Issue: Should Practitioner Have Search Test

(g)(10): US Core 4.0.0




- 5.31.01 Server returns correct Practitioner resource from Practitioner read interaction
- 5.31.02 Practitioner resources returned during previous tests conform to the US Core Practitioner Profile
- 5.31.03 All must support elements are provided in the Practitioner resources returned

(g)(10): US Core 6.1.0


- 10.41.01 Server returns correct Practitioner resource from Practitioner read interaction
- 10.41.04 Server returns valid results for Practitioner search by name
- 10.41.05 Server returns valid results for Practitioner search by identifier
- 10.41.02 Practitioner resources returned during previous tests conform to the US Core Practitioner Profile
- 10.41.03 All must support elements are provided in the Practitioner resources returned

- Status: Under Investigation

USCore: Error for L/min unit on Pulse Oximetry

 2.29.08 Observation resources returned during previous tests conform to the US Core Pulse Oximetry Profile
Resource does not conform to the profile <http://hl7.org/fhir/us/core/StructureDefinition/us-core-pulse-oximetry|7.0.0-ballot>  

MESSAGES REQUESTS INPUTS OUTPUTS ABOUT

TYPE	MESSAGE
 error	Observation/2f533274-880e-4226-83af-5589c986fd07: Observation.component[0].value.ofType(Quantity): The code provided (http://unitsofmeasure.org#L/min) was not found in the value set 'Vital Signs Units' (http://hl7.org/fhir/ValueSet/ucum-vitals-common 4.0.1), and a code from this value set is required: The provided code ' http://unitsofmeasure.org#L/min ' was not found in the value set ' http://hl7.org/fhir/ValueSet/ucum-vitals-common 4.0.1 '

STU Note

This profile is technically non-conformant with the base FHIR ver 4.0.1 vitals profile which defines a *required* binding that excludes the concept for **L/min** for `Observation.component.value(x)`. This is a known issue in and it means validation errors may occur when validating against this version of the US Core Pulse Oximetry Profile. A change request to correct this has been applied to the base FHIR ver 4.3.0 ("Release 4B").

Inferno Core: New


no Test Kit

```
yunwei@MM285658-PC inferno-core % inferno
Usage:
  inferno new TEST_KIT_NAME

Options:
  -a, [--author=AUTHOR]
```

```
test-us-core
├── config
├── lib
├── test_us_core
├── igs
│   ├── package.tgz
│   └── put_ig_package_dot_tgz_here
└── patient_group.rb
```

may use '-a' multiple times

 **Test Us Core Test Suite** NEW SESSION

- Test Us Core Test Suite
- 1 Capability Statement
- 2 Patient Tests
- Report

2 Patient Tests RUN ALL TESTS

Verify that the server makes Patient resources available

- 2.01 Server returns requested Patient resource from the Patient read interaction ▶ ▼
- 2.02 Patient resource is valid ▶ ▼

```
`inferno new test-my-ig -a "My Name" -
=> generates Inferno test kit with a

`inferno new test_my_igs -a "My Name"
=> generates Inferno test kit with n
```

```
① README.md
$ run.sh
$ setup.sh
test_us_core.gemspec
worker.rb
```

```
-i hl7.fhir.us.core@6.1.0`
```

Inferno Core: GitHub

- Release Notes:
- <https://github.com/inferno-framework/inferno-core/releases>

Open Discussion / Feedback

Resources and Contact Information

- <https://inferno.healthit.gov/>
 - General materials & live demonstration server
- <https://github.com/onc-healthit/onc-certification-g10-test-kit/>
 - ONC Certification tests repository, downloads, issues
 - “Watch” repository to receive alerts (new releases, etc)
 - Note: this repository is specific to ONC Certification testing
- <https://groups.google.com/forum/#!forum/inferno-testing>
 - Announcements & community discussion
- inferno@groups.mitre.org (or rscanlon@mitre.org)
- Also, FHIR Zulip Chat: <https://chat.fhir.org/#narrow/stream/179309-inferno>

Upcoming Meetings

- Next Inferno Tech Talk: **Wednesday May 8** at 1 PM ET
- Please reach out with questions & issues