



**Canada Health Infoway**

# **Pan-Canadian Projectathon 2023**

Projectathon Testing Supplement:

Expected Errors & Warnings

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# FHIR Validator – Process

- The Canada Health Infoway FHIR Validator leverages the FHIR Validation engine to check a supplied resource or example against the expectations of a selected profile or implementation guide
  - Uses loaded FHIR Packages (.tgz files) to look up the rules in selected profiles that a supplied resource or example needs to be validated against
  - Invokes external services (i.e. tx.fhir.org terminology server) to evaluate whether a supplied concept matches against a bound value set or code system
  - Provides the user with a set of information messages, warnings, and/or errors that describe the process and outcome of the validation

# FHIR Validator – Errors & Warnings

- Errors are typically raised when the supplied file does not meet a SHALL rule (e.g., minimum cardinality not met, supplied concept does not belong to required value set)
- Warnings are raised when SHOULD rules are not met (e.g., supplied concept does not belong to a preferred or extensible value set)
- Some errors and warnings result from the validator not being able to properly complete the evaluation against a particular rule – these are referred to in the following slides as Expected Errors/Warnings
- **Regardless of severity – Expected Errors / Warnings described on these slides are not considered test failures**

# Expected Errors/Warnings –Non-Resolvable Value Sets

- Validator cannot evaluate if a concept meets Value Set binding expectations on concepts not hosted in tx.fhir.org. See list of non-resolvable value sets in Appendix.
- The severity of this flagged issue (error vs warning) varies based on the profiled binding strength of value set.
  - **PS-CA Warning Example – PractitionerSpecialty Binding Preferred:**  
*"Bundle.entry[0].resource.entry[2].resource.ofType(PractitionerRole).specialty[0]: ValueSet https://fhir.infoway-inforoute.ca/ValueSet/practitionerspecialty not found by validator"*
  - **PS-ON Warning Example- PractitionerSpecialty Binding Extensible:**  
*"Bundle.entry[1].resource.entry[3].resource.ofType(PractitionerRole).identifier[0].type: None of the codings provided are in the value set 'IdentifierType' (http://hl7.org/fhir/ValueSet/identifier-type), and a coding should come from this value set unless it has no suitable code (note that the validator cannot judge what is suitable) (codes = http://terminology.hl7.org/CodeSystem/v2-0203#RRI)"*
  - **PS-ON Error Example – CCDD Binding Required:** *"Bundle.entry[12].resource.medication.ofType(CodeableConcept): None of the codings provided are in the value set 'PrescribeIT Prescription Medicinal Product' (https://fhir.infoway-inforoute.ca/ValueSet/prescriptionmedicinalproduct), and a coding from this value set is required) (codes = https://fhir.infoway-inforoute.ca/CodeSystem/canadianclinicaldrugdataset#9000152)"*

# Expected Errors/Warnings – Extensible Value Sets

- Extensible binding strengths allow for concepts to be provided outside of the bound value set if there is no suitable code in the value set for expressing the concept
- The “appropriateness” of this provided code can’t be mechanically determined so two warnings are always issued by the validator – Warning on the Bundle.entry[1] (Composition) and a warning on Bundle.entry[x] (the resource itself)
  - PS-CA Warning Example – Absent or Unknown Binding on Binding on MedicationStatement.medication[x]:medicationCodeableConcept: “Bundle.entry[10].resource.medication.ofType(CodeableConcept): None of the codings provided are in the value set 'Absent or Unknown Medication - IPS' (<http://hl7.org/fhir/uv/ips/ValueSet/absent-or-unknown-medications-uv-ips>), and a coding should come from this value set unless it has no suitable code (note that the validator cannot judge what is suitable) (codes = <https://fhir.infoway-inforoute.ca/CodeSystem/canadianclinicaldrugdataset#02150328>)”
  - PS-ON Warning Example- PractitionerSpecialty Binding Extensible – Other Identifier Type Provided:  
“Bundle.entry[1].resource.entry[3].resource.ofType(PractitionerRole).identifier[0].type: None of the codings provided are in the value set 'IdentifierType' (<http://hl7.org/fhir/ValueSet/identifier-type>), and a coding should come from this value set unless it has no suitable code (note that the validator cannot judge what is suitable) (codes = <http://terminology.hl7.org/CodeSystem/v2-0203#RRI>)”  
  
“Bundle.entry[3].resource.identifier[0].type: None of the codings provided are in the value set 'IdentifierType' (<http://hl7.org/fhir/ValueSet/identifier-type>), and a coding should come from this value set unless it has no suitable code (note that the validator cannot judge what is suitable) (codes = <http://terminology.hl7.org/CodeSystem/v2-0203#RRI>)”

# Expected Errors/Warnings – Non-Resolvable Displays

- TX.FHIR.ORG is experiencing a bug where display values for SNOMED CT CA Edition concepts are not resolving
- This results in two warnings being issued by the validator when display is provided– Warning on the Bundle.entry[x] resource of type and a warning on Bundle.entry[x]resource.code
  - *Bundle.entry[1].resource.entry[3].resource.ofType(PractitionerRole).specialty[0].coding[0]: The display "Primary care (qualifier value)" is not a valid display for the code {http://snomed.info/sct}999484691000087103 - should be one of [] (from http://tx.fhir.org/r4) for 'http://snomed.info/sct#999484691000087103'"*
  - *Bundle.entry[3].resource.specialty[0].coding[0]: The display "Primary care (qualifier value)" is not a valid display for the code {http://snomed.info/sct}999484691000087103 - should be one of [] (from http://tx.fhir.org/r4) for 'http://snomed.info/sct#999484691000087103'"*
- Additionally, there is at least one case where Additional Language displays for IPS value sets are being incorrectly incorporated by tx.fhir.org
  - *"Bundle.entry[7].resource.ofType(Condition).code.coding[0]: Display Name for http://hl7.org/fhir/uv/ips/CodeSystem/absent-unknown-uv-ips#no-problem-info should be one of 'No information about problems, Nessuna informazione disponibile su problemi o disabilità' instead of 'No information about current problems' for 'http://hl7.org/fhir/uv/ips/CodeSystem/absent-unknown-uv-ips#no-problem-info'"*

# Appendix

The background features a white field on the left and a dark blue field on the right, separated by a curved white boundary. A red triangular shape is positioned at the bottom right, overlapping the dark blue area.

# Non-Resolvable Value Sets - Lists

- <https://fhir.infoway-inforoute.ca/ValueSet/practitionerspecialty>
- <https://fhir.infoway-inforoute.ca/ValueSet/healthcareproviderroletype>
- <https://fhir.infoway-inforoute.ca/ValueSet/prescriptionmedicinalproduct>