FHIR Shorthand Quick Reference: Syntax

🚫 Planned features not yet implemented in SUSHI

Paths

Nested element	*element.subelement.subelement*
Array element	*array-element*[*index*] ([0] optional)
Choice [x] element	value*DataType*
Reference choices	*reference-element*[*Resource or Profile*]
Extensions	extension[*extension-name or id or url*]
Sliced arrays	*slice-path*[*slice-name*]
	slice-path[*slice-name*][*reslice-name*]
StructureDefinition Escape	^*structure-definition-path*
	element-path ^*element-definition-path*

Notations and Special Values

code	#*code* "*optional-display-text*"
Coding and CodeableConcept	*system*#*code* "*optional-display-text*"
	system|*version*#*code* "*optional-display*"
Cardinality	*min*..*max* (*min* integer, *max* int or *)
Comments	// *single line* /* *multi-line* */
Flags	MS (must support, S) SU (summary, Σ) ?! (modifier)
Binding strengths	required, extensible, preferred, example
Multi-line string	""" *string or markdown with new line* """

SUSHI and IG Publisher

File extension	.fsh
Install/update SUSHI	$ npm install -g fsh-sushi
Run SUSHI (in FSH directory)	$ sushi *input-folder* -o *output-folder* (default output ./build/input/resources)
Update IG Publisher (in output directory)	$ _updatePublisher (Windows) $ ./_updatePublisher.sh (Mac)
Run IG Publisher (in output directory)	$ _genonce (Windows) $ ./_genonce.sh (Mac)

More Information

FHIR Shorthand Zulip channel (#shorthand)	https://chat.fhir.org/#narrow/stream/215610-shorthand
FHIR Shorthand Documentation and Tutorial	http://build.fhir.org/ig/HL7/fhir-shorthand
FHIR Shorthand Documentation Issue Reports	https://github.com/HL7/fhir-shorthand/issues
SUSHI Code Repository	https://github.com/FHIR/sushi
SUSHI Issue Reports	https://github.com/FHIR/sushi/issues
HL7 Confluence Site	https://confluence.hl7.org/display/FHIRI/FHIR+Shorthand
Conference Calls	See http://hl7.org/concalls for details

Item / Keywords

Item	Keywords
Alias	**Alias:** *alias-name* = *url or oid*
Profile	**Profile:** *name* **Parent:** *profile or resource name or url* 🚫 **Mixins:** *mixin1, mixin2, ...* **Id:** *id* (optional, defaults to name) **Title:** *string* **Description:** *string or markdown*
Instance	**Instance:** *id* **InstanceOf:** *profile or resource name or URL*
Extension	**Extension:** *name* **Parent:** *extension name or id or url* (optional, defaults to FHIR *Extension* element) **Id:** *id* (optional, defaults to name) **Title:** *string* **Description:** *string or markdown*
Value set	**ValueSet:** *name* **Id:** *id* (optional, defaults to name) **Title:** *string* **Description:** *string or markdown*
Code system	**CodeSystem:** *name* **Title:** *string* **Description:** *string or markdown*
🚫 Invariant	**Invariant:** *key* **Id:** *id* (optional, defaults to name) **Description:** *string or markdown* **Expression:** *FHIRPath string* **Severity:** #error | #warning **XPath:** *XPath expression string*
🚫 Mixin	**Mixin:** *name* **Parent:** *profile or resource name*

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Rules

Fixed Value	* *path* = *value*
Binding	* *path* from *valueset* (*binding strength*)
Cardinality	* *path* *min*..*max*
Data type[x] restriction	* *path* only *type*
	* *path* only *type1* or *type2* or *type3* ...
Reference restriction	* *path* only Reference(*Resource or Profile*)
	* *path* only Reference(*Resource1* | *Profile2* | *Profile3* ...)
Flags	* *path* *flag1* *flag2* * *path1*, *path2*, *path3*... *flag*

Extensions	* *extension-path* contains
	   extension-reference1 card1 flags1 and
	   extension-reference2 card2 flags2 ...
	 (extension-reference can be id or name or url)

Slices	* *array-element-path* contains
	   slice-name1 card1 flags1 and
	   slice-name2 card2 flags2 ...

🚫 Invariants	* obeys *invariant* (applies to entire profile) * *path* obeys *invariant* * *path1*, *path2*, ... obeys *invariant*

Value Set Rules

Include single code	* *system*#*code* "*display*"
Exclude single code	* exclude *system*#*code* "*display*"
Include entire code system	* codes from system *codesystem*
Include from value set	* codes from valueset *valueset*
Exclude from value set	* exclude codes from valueset *valueset*
Filter syntax:	*property operator string-code-boolean-or-regex-value*
Operators (not all apply to every code system): is-a | = |descendent-of | is-not-a | regex | in | not-in | generalizes | exists	
Include codes with filtering	* codes from system *codesystem* where *filter1* and *filter2* and ...
Exclude codes with filtering	* exclude codes from system *codesystem* where *filter*

Slicing Rubric

* *array-path* ^slicing.discriminator.type = #pattern \| #value
* *array-path* ^slicing.discriminator.path = *FHIRPath string*
* *array-path* ^slicing.rules = **#open** \| #closed \| #openAtEnd (optional)
* *array-path* ^slicing.ordered = true \| **false**   (optional)
* *array-path* ^slicing.description = *string*   (optional)

FHIR Shorthand Quick Reference: Examples

🚫 Planned features not yet implemented in SUSHI

Paths

Nested element	stage.assessment
Array element	name[0].given[1]
Choice [x] element	valueQuantity, valueReference
Reference choices	performer[Organization]
Extensions	extension[EvidenceType]
	extension[http://hl7.org/fhir/StructureDefinition/location-distance]
Sliced arrays	component[DiastolicPressure]
Resliced arrays	component[RespiratoryScore][OneMinute]
StructureDefinition Escape	^abstract
	component[VariationCode] ^short

Notations and Special Values

code	#confirmed
Coding and CodeableConcept	http://snomed.info/sct#363346000 "Malignant neoplastic disease (disorder)"
	ICD10CM#C004
Cardinality	0..0 1..1 1..*
Comments	// end of line or single line
	/* This comment continues over multiple lines */

SUSHI and IG Publisher

FSH file	MyFile.fsh
Install/update SUSHI	$ npm install -g fsh-sushi
Run SUSHI (executed in FSH directory; output to ./build)	$ sushi .
Update IG Publisher (in output directory)	$ _updatePublisher (Windows)
	$ ./_updatePublisher.sh (Mac)
Run IG Publisher (in output directory)	$ _genonce (Windows)
	$ ./_genonce.sh (Mac)

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Conference Calls	See http://hl7.org/concalls for details

Item / Keywords

Item	Keywords
Alias	Alias: LNC = http://loinc.org
	Alias: RACE = urn:oid:2.16.840.1.113883.6.238
	Alias: USCorePatient = http://hl7.org/fhir/us/core/StructureDefinition/us-core-patient
Profile	Profile: CancerPatient Parent: USCorePatient (alias defined above) Id: CancerPatient Title: "Cancer Patient" Description: "A patient diagnosed with cancer"
Instance	Instance: mCODETumorMarkerExample01 InstanceOf: TumorMarker
Extension	Extension: TerminationReason Id: TerminationReason Title: "Termination Reason" Description: "Reason for stopping a treatment."
Value set	ValueSet: AnatomicalOrientationVS Title: "Anatomical Orientation Value Set" Description: "Values for anatomical orientation."
Code system	CodeSystem: AJCC_FairUse Title: "AJCC Fair Use" Description: "A small subset of AJCC staging codes used for IG examples."
🚫 Invariant	Invariant: us-core-8 Description: "Patient.name.given or Patient.name.family or both SHALL be present" Expression: "family.exists() or given.exists()" Severity: #error XPath: "f:given or f:family"
🚫 Mixin	Mixin: USCoreMetadata Parent: DomainResource

Rules

Fixed Value	* status = #arrived
	* code = SCT#363346000 "Malignant neoplastic disease (disorder)"
	* onsetDateTime = "2019-04-02"
	* subject = Reference(EveAnyperson)
Binding	* bodySite from CancerBodyLocationVS (preferred)
	* valueCodeableConcept from http://loinc.org/vs/LL1971-2 (required)
Cardinality	* severity 0..0
Datatype[x] restriction	* value[x] only CodeableConcept
	* effective[x] only dateTime or Period
Reference restriction	* subject only Reference(CancerPatient)
	* asserter only Reference(Practitioner | Patient)
Flags	* deceased[x] MS ?! SU
	* reasonCode, extension[TerminationReason] MS
Extensions	* extension contains TreatmentIntent 0..1 MS and TerminationReason 0..* MS
Slicing	* component contains GeneStudied 0..* MS and VariationCode 0..* and GenomicDNAChange 0..1
🚫 Invariants	* obeys us-core-9
	* name obeys us-core-8

Value Set Rules

Single code	* SCT#54102005 "G1 grade (finding)"
Exclude single code	* exclude SCT#12619005
All codes in system	* codes from system HGVS
Filter Rules for SNOMED-CT (assumes code system aliased as 'SCT')	
Subsumption	* codes from system SCT where concept is-a #123037004 "Body Structure"
Exclude subsumptions	* exclude codes from system SCT where concept is-a #128462008 "Secondary malignant neoplastic disease (disorder)"

Slicing Rubric

* component ^slicing.discriminator.type = #pattern
* component ^slicing.discriminator.path = "code"
* component ^slicing.rules = #open
* component ^slicing.ordered = false
* component ^slicing.description = "Slice pattern for component.code"