# FHIR DSTU2 Templates for USPSTF Statin Use Artifact

The following document includes basic templates showing how each data element should be represented in the FHIR format. Please note the following:

* The aspects of the templates that contain variable information depending on the specific data are noted by angles and highlighting (e.g., **<INFO>**).
* Each template also has a specific example provided.
* Where data elements have the same form in FHIR (e.g., HDL-C and LDL-C), I’ve provided a single template for all rather than repeating the template.
* These templates represent the minimum data needed. Sending additional data attributes (as long as they are valid FHIR) is permissible.
* In some cases, there may be a choice of properties (e.g., either effectiveDateTime or effectivePeriod). In these cases, both are shown in the template, but it’s noted that only one of them is required.
* DateTimes have the full format “2017-05-18T15:30:00-04:00”, but are allowed to be at lesser precisions (e.g., “2017-05-18T15:30”, “2017-05-18”, or even “2017”).
* Additional information, including value sets, is available in other documentation.

# FHIR Patient

The following template uses the FHIR Patient resource.

## Age

#### Template

{

"resourceType": "Patient",

"id": **"<PATIENT-ID**>",

"birthDate": "**<BIRTHDATE>**"

}

#### Example

{

"resourceType": "Patient",

"id": **"12345**",

"birthDate": "**1970-02-17**"

}

# FHIR Observation

The following templates are for data elements that use the FHIR Observation resource.

## 10-year ASCVD Risk Score Observation

#### Template

{

"resourceType": "Observation",

"status": "**<STATUS is final or amended>**",

"code": {

"coding": [{

"system": "http://loinc.org",

"code": "79423-0",

"display": "Cardiovascular disease 10Y risk [Likelihood] ACC-AHA Pooled Cohort by Goff 2013"

}]

},

"subject": {

"reference": "Patient/**<PATIENT-ID>**"

},

"issued": "**<ISSUED DATETIME>**",

"valueQuantity": {

"value": **<SCORE as a decimal>**,

"system": "http://unitsofmeasure.org",

"code": "%"

}

}

#### Example

{

"resourceType": "Observation",

"status": "**final**",

"code": {

"coding": [{

"system": "http://loinc.org",

"code": "79423-0",

"display": "Cardiovascular disease 10Y risk [Likelihood] ACC-AHA Pooled Cohort by Goff 2013"

}]

},

"subject": {

"reference": "Patient/**12345**"

},

"issued": "**2017-05-18T15:30:00-04:00**",

"valueQuantity": {

"value": **7.86**,

"system": "http://unitsofmeasure.org",

"code": "%"

}

}

## LDL-C, HDL-C

#### Template

{

"resourceType": "Observation",

"status": "**<STATUS is final or amended>**",

"code": {

"coding": [{

"system": "**<CODE-SYSTEM for test code >**",

"code": "**<CODE for test code>**"

}]

},

"subject": {

"reference": "Patient/**<PATIENT-ID>**"

},

"issued": "**<ISSUED DATETIME>**",

"valueQuantity": {

"value": **<RESULT-VALUE-SCALAR in mg/dL>**,

"system": "http://unitsofmeasure.org",

"code": "mg/dL"

}

}

#### Example

{

"resourceType": "Observation",

"status": "**final**",

"code": {

"coding": [{

"system": "**http://loinc.org**",

"code": "**2089-1**"

}]

},

"subject": {

"reference": "Patient/**12345**"

},

"issued": "**2017-05-18T15:30:00-04:00**",

"valueQuantity": {

"value": **145**,

"system": "http://unitsofmeasure.org",

"code": "mg/dL"

}

}

## Smoking Status

#### Template

{

"resourceType": "Observation",

"status": "**<STATUS is final or amended>**",

"code": {

"coding": [{

"system": "http://loinc.org",

"code": "72166-2",

"display": "Tobacco smoking status"

}]

},

"subject": {

"reference": "Patient/**<PATIENT-ID>**"

},

"issued": "**<ISSUED DATETIME>**",

"valueCodeableConcept": {

"coding": [{

"system": "**<CODE-SYSTEM for smoking status answer>**",

"code": "**<CODE for smoking status answer>**"

}]

}

}

#### Example

{

"resourceType": "Observation",

"status": "**final**",

"code": {

"coding": [{

"system": "http://loinc.org",

"code": "72166-2",

"display": "Tobacco smoking status"

}]

},

"subject": {

"reference": "Patient/**12345**"

},

"issued": "**2017-05-18T15:30:00-04:00**",

"valueCodeableConcept": {

"coding": [{

"system": "**http://snomed.info/sct**",

"code": "**428041000124106**"

}]

}

}

## Active Pregnancy (Observation)

Note that pregnancy can be modeled as an Observation *or* a Condition – whatever works best for you. In addition, you only need to report one date attribute: either effectiveDateTime, effectivePeriod, or issued.

#### Template

{

"resourceType": "Observation",

"status": "**<STATUS is final or amended>**",

"code": {

"coding": [{

"system": "http://loinc.org",

"code": "82810-3",

"display": "Pregnancy status"

}]

},

"subject": {

"reference": "Patient/**<PATIENT-ID>**"

},

"effectiveDateTime": "**<EFFECTIVE DATETIME - *can be excluded if effectivePeriod or issued is supplied*>**",

"effectivePeriod": {

"start": "**<EFFECTIVE PERIOD START - *can be excluded if effectiveDateTime or issued is supplied*>**",

"end": "**<EFFECTIVE PERIOD END - *can be excluded if effectiveDateTime or issued is supplied. Start without end implies ongoing.*>**"

},

"issued": "**<ISSUED DATETIME - *can be excluded if effectiveDateTime or effectivePeriod is supplied*>**",

"valueCodeableConcept": {

"coding": [{

"system": "http://snomed.info/sct",

"code": "77386006",

"display": "Patient currently pregnant (finding)"

}]

}

}

#### Example

{

"resourceType": "Observation",

"status": "**final**",

"code": {

"coding": [{

"system": "http://loinc.org",

"code": "82810-3",

"display": "Pregnancy status"

}]

},

"subject": {

"reference": "Patient/**12345**"

},

"effectiveDateTime": "**2017-05-18T15:30:00-04:00**",

"valueCodeableConcept": {

"coding": [{

"system": "http://snomed.info/sct",

"code": "77386006",

"display": "Patient currently pregnant (finding)"

}]

}

}

# FHIR Condition

The following templates are for data elements that use the FHIR Condition resource.

## Diabetes, Hypertension, Familial Hypercholesterolemia, Active Pregnancy (Condition), Breast Feeding, End Stage Renal Disease, Active Cirhhosis

#### Template

{

"resourceType": "Condition",

"clinicalStatus": "active",

"verificationStatus": "confirmed",

"code": {

"coding": [{

"system": "**<CODE-SYSTEM for diagnosis>**",

"code": "**<CODE for diagnosis>**"

}]

},

"subject": {

"reference": "Patient/**<PATIENT-ID>**"

}

}

#### Example

{

"resourceType": "Condition",

"clinicalStatus": "active",

"verificationStatus": "confirmed",

"code": {

"coding": [{

"system": "**http://snomed.info/sct**",

"code": "**44054006**"

}]

},

"subject": {

"reference": "Patient/**12345**"

}

}

## Myocardial Infarction, Ischemic Vascular Disease

These differ from the Conditions template above, in that they don’t require the status to be “active”.

#### Template

{

"resourceType": "Condition",

"verificationStatus": "confirmed",

"code": {

"coding": [{

"system": "**<CODE-SYSTEM for diagnosis>**",

"code": "**<CODE for diagnosis>**"

}]

},

"subject": {

"reference": "Patient/**<PATIENT-ID>**"

}

}

#### Example

{

"resourceType": "Condition",

"verificationStatus": "confirmed",

"code": {

"coding": [{

"system": "**http://snomed.info/sct**",

"code": "**22298006**"

}]

},

"subject": {

"reference": "Patient/**12345**"

}

}

# FHIR Procedure

The following templates are for data elements that use the FHIR Procedure resource.

## CABG, PCI, Carotid Intervention

#### Template

{

"resourceType": "Procedure",

"subject": {

"reference": "Patient/**<PATIENT-ID>**"

},

"status": "completed",

"code": {

"coding": [{

"system": "**<CODE-SYSTEM for procedure>**",

"code": "**<CODE for procedure>**"

}]

}

}

#### Example

{

"resourceType": "Procedure",

"subject": {

"reference": "Patient/**12345**"

},

"status": "completed",

"code": {

"coding": [{

"system": "**http://snomed.info/sct**",

"code": "**232717009**"

}]

}

}

## Dialysis in Last Week

Note that you only need to report one date attribute: either performedDateTime or performed Period.

#### Template

{

"resourceType": "Procedure",

"subject": {

"reference": "Patient/**<PATIENT-ID>**"

},

"status": "completed",

"code": {

"coding": [{

"system": "**<CODE-SYSTEM for dialysis procedure>**",

"code": "**<CODE for dialysis procedure>**"

}]

},

"performedDateTime": "**<PERFORMED DATETIME - *can be excluded if performedPeriod is supplied*>**",

"performedPeriod": {

"start": "**<PERFORMED PERIOD START - *can be excluded if performedDateTime is supplied*>**",

"end": "**<PERFORMED PERIOD END - *can be excluded if performedDateTime is supplied. Start without end implies ongoing.*>**"

}

}

#### Example

{

"resourceType": "Procedure",

"subject": {

"reference": "Patient/**12345**"

},

"status": "completed",

"code": {

"coding": [{

"system": "**http://snomed.info/sct**",

"code": "**108241001**"

}]

},

"performedDateTime": "**2017-05-18T15:30:00-04:00**"

}

# FHIR MedicationOrder

The following template uses the FHIR MedicationOrder resource.

## Active Statin (Order)

#### Template

{

"resourceType": "MedicationOrder",

"status": "active",

"medicationCodeableConcept": {

"coding": [{

"system": "**<CODE-SYSTEM for medication>**",

"code": "**<CODE for medication>**"

}]

},

"patient": {

"reference": "Patient/**<PATIENT-ID>**"

}

}

#### Example

{

"resourceType": "MedicationOrder",

"status": "active",

"medicationCodeableConcept": {

"coding": [{

"system": "**http://www.nlm.nih.gov/research/umls/rxnorm**",

"code": "**197904**"

}]

},

"patient": {

"reference": "Patient/**12345**"

}

}

# FHIR MedicationStatement

The following template uses the FHIR MedicationStatement resource.

## Active Statin (Statement)

#### Template

{

"resourceType": "MedicationStatement",

"status": "active",

"medicationCodeableConcept": {

"coding": [{

"system": "**<CODE-SYSTEM for medication>**",

"code": "**<CODE for medication>**"

}]

},

"patient": {

"reference": "Patient/**<PATIENT-ID>**"

},

}

#### Example

{

"resourceType": "MedicationStatement",

"status": "active",

"medicationCodeableConcept": {

"coding": [{

"system": "**http://www.nlm.nih.gov/research/umls/rxnorm**",

"code": "**197904**"

}]

},

"patient": {

"reference": "Patient/**12345**"

},

}