This document represents a table for use in evaluating the likelihood QDM datatype information may be available in existing clinical software. The document maps QDM datatypes to FHIR Argonaut (based on FHIR DSTU 2.0) and FHIR USCore (based on FHIR STU 3.0). Items indicated by green (now) should be available in existing software compliant with the Common Clinical Data Set (CCDS) and FHIR Argonaut. Items indicated by yellow (soon) should be available in software compliant with FHIR USCore 3.0 as it is expected to be updated by August, 2018. Items indicated by red (late) require additional evaluation and standardization for interoperability before consistently relying upon their presence as structured data in clinical software or clinical data stores. The [appendix](#Appendix: Vital Sign Specifications) provides a table of existing physical examination findings (vital signs) as defined in FHIR Argonaut. Note that some FHIR STU 3.0 and FHIR R4 resources represent the data elements differently than FHIR DSTU 2. Hence, the mappings provided here may not be identical to FHIR STU 3.0 or R4 representations.

| **QDM Datatypes** | **Now** | **Soon** | **Late** | **CCDS Data Element** | **FHR Resource** | **Comments** |
| --- | --- | --- | --- | --- | --- | --- |
| Patient Characteristic (Generic) |  |  |  | Patient Name | PatientArgonaut Patient Resource: [http://fhir.org/guides/argonaut/StructureDefinition/argo-patient] | Generally measures do not identify patient name |
| Patient Characteristic: Sex |  |  |  | Sex | PatientArgonaut Patient Resource: [http://fhir.org/guides/argonaut/StructureDefinition/argo-patient] | Argonaut (CCDS) requires birth sex; measures use Administrative Sex |
| Patient Characteristic: Birthdate |  |  |  | Date of birth | PatientArgonaut Patient Resource: [http://fhir.org/guides/argonaut/StructureDefinition/argo-patient] |  |
| Patient Characteristic: Race |  |  |  | Race | PatientArgonaut Patient Resource: [http://fhir.org/guides/argonaut/StructureDefinition/argo-patient] |  |
| Patient Characteristic: Ethnicity |  |  |  | Ethnicity | PatientArgonaut Patient Resource: [http://fhir.org/guides/argonaut/StructureDefinition/argo-patient] |  |
| Patient Characteristic (Generic) – no specific QDM datatype for preferred language |  |  |  | Preferred language | PatientArgonaut Patient Resource: [http://fhir.org/guides/argonaut/StructureDefinition/argo-patient] |  |
| Patient Characteristic: expired |  |  |  |  | PatientArgonaut Patient Resource: [http://fhir.org/guides/argonaut/StructureDefinition/argo-patient]Patient:argoprofile.deceased[x] | Argonaut supports deceased as a Boolean value (Yes/No) but not an expiration dateTime. Expiration dateTime requires an observation with a dateTime result. |
| Patient Characteristic: ClinicalTrialParticipant |  |  |  |  |  | Clinical trial participant is an extension:Patient.extension.clinicalTrial.reasonPatient.extension.clinicalTrial.periodPatient.extension.clinicalTrial.NCT (code) |
| Patient Characteristic: Payer |  |  |  |  | FHIR 3.0 Financial Resource:Coverage.payor (The program or plan underwriter or payor including both insurance and non-insurance agreements, such as patient-pay agreements. May provide multiple identifiers such as insurance company identifier or business identifier (BIN number).) | Payer, financial responsible party, etc. not covered in Argonaut |
| Assessment, Performed |  |  |  | Smoking status | Observation[<http://fhir.org/guides/argonaut/StructureDefinition/argo-observationresults>]observation.value[x] | Note – CCDS Value set for smoking status is limited to tobacco smoking; it does not include all tobacco use as measures require. |
| Diagnosis |  |  |  | Problems | Condition[<http://fhir.org/guides/argonaut/StructureDefinition/argo-condition>]Condition.clinicalStatusCondition.onset[x], or Condition.assertedCondition.abatementCondition.bodySiteCondition.severityCondition.codeCondition.idCondition.asserter |  |
| Medication, OrderMedication, Active |  |  |  | Medications | Medication, MedicationStatement, MedicationOrderMedication [<http://fhir.org/guides/argonaut/StructureDefinition/argo-medication>] – defines the medicationMedicationOrder [<http://fhir.org/guides/argonaut/StructureDefinition/argo-medicationorder>] (subsequent versions use MedicationRequest)MedicationOrder.dosageInstruction.dose[x]MedicationOrder.dispenseRequest.quantityMedicationOrder.dosageInstruction.timingMedicationOrder.medication[x]MedicationOrder.dosageInstruction.methodMedicationOrder.reason[x]MedicationOrder.dispenseRequest.numberOfRepeatsAllowedMedicationOrder.dispenseRequest.expectedSupplyDurationMedicationOrder.dosageInstruction.routeMedicationOrder.dateWrittenMedicationOrder.idMedicationOrder.prescriberMedicationStatement [[http://fhir.org/guides/argonaut/StructureDefinition/argo-medicationstatement]](http://fhir.org/guides/argonaut/StructureDefinition/argo-medicationstatement%5D)MedicationStatement.statusMedicationStatement.dosage.doseMedicationStatement.reasonNotTakenMedicationStatement.reasonForUseMedicationStatement.dosageTimingMedicationStatement.dosageRouteMedicationStatement.effective[x]MedicationStatement.dateAssertedMedicationStatement.medication[x]MedicationStatement.idMedicationStatement.informationSource | For QDM negation rationale (MedicationRequest), FHIR 4.0 uses DoNotPerformFHIR 3.0 includes MedicationRequest.category (site where the medication should be taken) |
| Medication, AdministeredMedication, DispensedMedication, Discharge |  |  |  |  |  |  |
| Substance, OrderSubstance, RecommendedSubstance, Administered |  |  |  |  |  |  |
| AllergyIntolerance |  |  |  | Medication allergies | AllergyIntolerance [<http://fhir.org/guides/argonaut/StructureDefinition/argo-allergyintolerance>]AllergyIntolerance.onsetAllergyIntolerance.recordedDateAllergyIntolerance.reaction.substanceAllergyIntolerance.reaction.manifestationAllergyIntolerance.reaction.severityAllergyIntolerance.recorderAllergyIntolerance.reporterAllergyIntolerance.id |  |
| Laboratory Test, PerformedDiagnostic Study, Performed (Lab reports using DiagnosticReport) |  |  |  | Laboratory test(s) | Observation, DiagnosticReportObservation.category [<http://hl7.org/fhir/ValueSet/observation-category>] defines the kind of observation (vital signs, lab, procedure, etc.)Observation.code [<http://hl7.org/fhir/ValueSet/observation-codes>] defines the specific observation using LOINC codes (observable entities)Observaton.method Observation.dataAbsentReasonObservation.component.dataAbsentReasonObservation.basedOnObservation.referenceRange.highObservation.referenceRange.typeObservation.referenceRange.lowObservation.referenceRange.type Observation.value(x)Observation.issuedObservaton.effective[x]Observation.statusObservation.codeObservation.specimenObservation.componentObservation.component.code.Observation.component.value(x)Observation.component.referenceRangeObservation.id Observation.performer |  |
| Laboratory Test, OrderLaboratory Test, RecommendedLaboratory Test, PerformedDiagnostic Study, OrderDiagnostic Study, PerformedDiagnostic Study, Performed (Imaging Studies) |  |  |  |  |  |  |
| Laboratory Test, Performed |  |  |  | Laboratory value(s)/result(s) | Observation, DiagnosticReportObservation.value[x] (UCUM for coded quantity units, SNOMED-CT for coded results – note that normative LOINC should be used for normative LOINC responses) |  |
| Diagnostic Study, Performed |  |  |  |  |  |  |
| Physical Exam, Performed (vital signs only) |  |  |  | [Vital signs [full Vital Signs Argonaut Content in Table Below)](#Appendix: Vital Sign Specifications) | ObservationUSCore January 2018 ballot included reference to FHIR Vital Signs profile (should be published by August 2018).See full vital signs content table below [<http://hl7.org/fhir/StructureDefinition/vitalspanel>][<http://hl7.org/fhir/StructureDefinition/vitalsigns>] |  |
| Physical Exam, Performed (other than vital signs)Physical Exam, OrderPhysical Exam, Recommended |  |  |  |  | - |  |
| Procedure, Performed |  |  |  | Procedures | Procedure [<http://fhir.org/guides/argonaut/StructureDefinition/argo-procedure>]Procedure.statusProcedure.performed[x]Procedure.notDoneReasonProcedure.reasonCodeProcedure.outcomeProcedure.bodySiteProcedure.statusProcedure.codeProcedure.idProcedure.performer | IncisionTime handled by an extension: Procedure.extension ([CanonicalType[1]] |
| Intervention, Performed (depends on procedures shared in Argonaut implementations – most likely more invasive procedures as compared with education and counseling.) |  |  |  |  |  |  |
| Procedure, OrderProcedure, RecommendedIntervention, OrderIntervention, Recommended |  |  |  |  |  |  |
| Provider Characteristic |  |  |  | Care team member(s) | Care PlanCarePlan.participant.member referencing Practitioner resource which can include:Practitioner.managingOrganizationPractitioner.role [Example value set: <http://hl7.org/fhir/ValueSet/practitioner-role>]Practitioner.specialty [Example value set: <http://hl7.org/fhir/ValueSet/practitioner-specialty>]  | Available only in the context of care teams participating in a care plan. |
| Immunization, Administered |  |  |  | Immunizations | Immunization[<http://fhir.org/guides/argonaut/StructureDefinition/argo-immunization>]Immunization.statusImmunization.doseQuantityImmunization.explanation.ReasonNotGivenImmunization.explanationImmunization.dateImmunization.vaccineCodeImmunization.idImmunization.performer |  |
| Immunization, Order |  |  |  |  |  |  |
| Device, Applied (identify a device)  |  |  |  | Unique device identifier(s) for a patient’s implantable device(s) | Device[<http://fhir.org/guides/argonaut/StructureDefinition/argo-device>]Device.kind [<http://fhir.org/guides/argonaut/ValueSet/device-kind>]Device.manufacturerDevice.modelDevice.versionDevice.maufactureDateDevice.expiryDevice.udiDevice.lotNumber |  |
| Device, OrderDevice, Recommended |  |  |  |  |  |  |
| Assessment, Performed (only in context of a Care Plan) |  |  |  | Assessment and plan of treatment | CarePlan[[http://fhir.org/guides/argonaut/StructureDefinition/argo-careplan]](http://fhir.org/guides/argonaut/StructureDefinition/argo-careplan%5D) | CCDS “Assessment and Plan of Treatment” is addressed solely by Argonaut/USCore “CarePlan” resource. QDM would view individual care plan actions as planned Procedures (Procedure, Order or Procedure, Recommended) or Interventions (Intervention, Order, or Intervention, Recommended), or possibly as:Laboratory Test, OrderLaboratory test, RecommendedDiagnostic Study, OrderDiagnostic Study, RecommendedPhysical Exam, OrderPhysical Exam, Recommended |
| Assessment, OrderAssessment, RecommendedAssessment, Performed – including general observations and evaluation tools or questionnaires |  |  |  |  |  |  |
| Care Goal |  |  |  | Goals | GoalCarePlan.goal (desired outcome of plan)CarePlan.periodCarePlan.statusCarePlan.category [<http://hl7.org/fhir/ValueSet/care-plan-category>]CarePlan.detail.code [<http://hl7.org/fhir/ValueSet/care-plan-activity>]CarePlan.detail.reasonCode [<http://hl7.org/fhir/ValueSet/activity-reason>]CarePlan.activity.detail.scheduled[x] [careplan:argoprofile.activity.detail.scheduled[x]](when activity is to occur) |  |
| DiagnosisSymptom (if captured on the problem list) |  |  |  | Health concerns | Condition[<http://fhir.org/guides/argonaut/StructureDefinition/argo-condition>]Condition.clinicalStatusCondition.onset[x], or Condition.assertedCondition.abatementCondition.bodySiteCondition.severityCondition.codeCondition.idCondition.asserter |  |
| Encounter, Performed |  |  |  |  |  | USCore STU 3.0 will include Encounter as of August 2018 |
| AdverseReactionEncounter, OrderEncounter, RecommendedFamily HistoryParticipationCommunication, PerformedPatient Care ExperienceProvider Care Experience |  |  |  |  |  |  |

# Appendix: Vital Sign Specifications

| **Vital Sign Name** | **LOINC Code** | **LOINC Name and Comments** | **UCUM Unit Code** |
| --- | --- | --- | --- |
| [Vital Signs Panel](http://hl7.org/fhir/STU3/vitalspanel.html) | 85353-1 | *Vital signs, weight, height, head circumference, oxygen saturation and BMI panel* - It represent a panel of vital signs listed in this table. All members of the panel are optional and note that querying for the panel may miss individual results that are not part of the actual panel. When used, Observation.valueQuantity is not present; instead, related links (with type=has-member) reference the vital signs observations (e.g. respiratory rate, heart rate, BP, etc). Note that querying for the panel may miss individual results that are not part of an actual panel. This code replaces the deprecated code 8716-3 - *Vital signs* which is used in the Argonaut Data Query Implementation Guide. [<http://hl7.org/fhir/StructureDefinition/vitalspanel>] | - |
| [Respiratory Rate](http://hl7.org/fhir/STU3/resprate.html) | 9279-1 | *Respiratory Rate [*[*http://hl7.org/fhir/StructureDefinition/resprate*](http://hl7.org/fhir/StructureDefinition/resprate)*]* | /min |
| [Heart rate](http://hl7.org/fhir/STU3/heartrate.html) | 8867-4 | *Heart rate* - To supplement this vital sign observation, 8887-2 -*Heart rate device type* MAY be used as an additional observation. [<http://hl7.org/fhir/StructureDefinition/heartrate>] | /min |
| [Oxygen saturation](http://hl7.org/fhir/STU3/oxygensat.html) | 59408-5 | *Oxygen saturation in Arterial blood by Pulse oximetry* - This code replaces the deprecated code 2710-2 -*Deprecated Oxygen saturation in Capillary blood by Oximetry* which had been listed in C-CDA. [<http://hl7.org/fhir/StructureDefinition/oxygensat>] | % |
| [Body temperature](http://hl7.org/fhir/STU3/bodytemp.html) | 8310-5 | *Body temperature* - o supplement this vital sign observation, 8327-9 - *Body temperature measurement site* (oral, forehead, rectal, etc.) and 8326-1 -*Type of body temperature device* MAY be used as additional observations [<http://hl7.org/fhir/StructureDefinition/bodytemp>] | Cel, [degF] |
| [Body height](http://hl7.org/fhir/STU3/bodyheight.html) | 8302-2 | *Body height [*[*http://hl7.org/fhir/StructureDefinition/bodyheight*](http://hl7.org/fhir/StructureDefinition/bodyheight)*]* | cm, [in\_i] |
| [Body length](http://hl7.org/fhir/STU3/bodylength.html) | 8306-3 | *Body height --lying* - Like height, but lying down, typically this is used for infants [<http://hl7.org/fhir/StructureDefinition/bodylength>] | cm, [in\_i] |
| [Head circumference](http://hl7.org/fhir/STU3/headcircum.html) | 8287-5 | *Head Occipital-frontal circumference by Tape measure [*[*http://hl7.org/fhir/StructureDefinition/headcircum*](http://hl7.org/fhir/StructureDefinition/headcircum)*]* | cm, [in\_i] |
| [Body weight](http://hl7.org/fhir/STU3/bodyweight.html) | 29463-7 | *Body weight* - To supplement this vital sign observation, 8352-7 - *Clothing worn during measure* and 8361-8 - *Body position with respect to gravity* MAY be used as additional observations. [<http://hl7.org/fhir/StructureDefinition/bodyweight>] | g, kg,[lb\_av] |
| [Body mass index](http://hl7.org/fhir/STU3/bmi.html) | 39156-5 | *Body mass index (BMI) [Ratio] [*[*http://hl7.org/fhir/StructureDefinition/bmi*](http://hl7.org/fhir/StructureDefinition/bmi)*]* | kg/m2 |
| [Blood pressure systolic and diastolic](http://hl7.org/fhir/STU3/bp.html) | 55284-4 | *Blood pressure systolic and diastolic* - This is component observation. It has no value in Observation.valueQuantity and contains at least one component (systolic and/or diastolic). To supplement this vital sign observation, 8478-0 - *Mean blood pressure*, 8357-6 - *Blood pressure method*, 41904-4 - *Blood pressure measurement site*, 8358-4 - *Blood pressure device cuff size*, 41901-0 - *Type of blood pressure device* MAY be used as additional observations. [<http://hl7.org/fhir/StructureDefinition/bp>]  | - |
| [Systolic blood pressure](http://hl7.org/fhir/STU3/bp.html) | 8480-6 | *Systolic blood pressure* - Observation.component code for a blood pressure Observation | mm[Hg] |
| [Diastolic blood pressure](http://hl7.org/fhir/STU3/bp.html) | 8462-4 | *Diastolic blood pressure* - Observation.component code for a blood pressure Observation | mm[Hg] |