

* Poprecord Entity Types

[Oracle Health-IT Certification Documentation](#)

** Actor

FullName: com.cerner.pophealth.program.models.avro.poprecord.Actor

A structure representing an actor. An actor requires at least one of the following: type, provider, organization, or relatedPerson.

Field name	Type	Description
role	nullable Code	How the individual is involved in the resources content that is described in the exception. For example, verifier, amender, etc.
type	nullable string	Individual or entity controlled by this rule (or group, by role).
provider	nullable ProviderLite	DEPRECATED - Use ProviderPersonnel Identifies the individual controlled by this rule (or group, by role) in the patient's consent.
providerPersonnel	nullable ProviderPersonnelLite	Identifies the individual controlled by this rule (or group, by role) in the patient's consent.
organization	nullable OrganizationLite	Identifies the entity controlled by this rule (or group, by role) in the patient's consent.
relatedPerson	nullable RelatedPerson	Identifies the individual controlled by this rule (or group, by role) in the patient's consent. The individual typically has a personal or non-healthcare-specific professional relationship to the patient.

** Address

FullName: com.cerner.pophealth.program.models.avro.poprecord.Address

A model containing attributes of an address, including an optional type. At least one of the following values should be present (i.e "streetAddresses", "city", "stateOrProvince", "postalCode", "countyOrParish", "country")

Field name	Type	Description
type	nullable Code	The type of the address (e.g. home, business, previous).
streetAddresses	Array of string	A list of street addresses associated with the address. Typically there are 1-3 street addresses. For example, "123 Washington Ave."
city	nullable string	The city portion of the address. For example, "Kansas City".
stateOrProvince	nullable Code	The state or province portion of the address. For example, "Missouri".
postalCode	nullable string	The postal code or zip code portion of the address. For example, "64117".
countyOrParish	nullable Code	The county or parish portion of the address. For example, "Clay".
country	nullable Code	The country portion of the address. For example, "USA".
updateDateTime	nullable string	ISO8601 timestamp indicating the point in time when data was last updated. Format: YYYY-MM-DDThh:mm:ss.SSSZ
updatePersonnelId	nullable string	Identifier of the Personnel responsible for the last update.
beginEffectiveDate	nullable string	The beginning date and time of an address. It is only populated when both the date and the time are specified. Should be in ISO-8601 extended format, with precision ranging from YYYY-MM-DDThh to YYYY-MM-DDThh:mm:ss.SSS, though equivalent ISO-8601 basic is also allowed (e.g. YYYYMMDD).
endEffectiveDate	nullable string	The end date and time of an address. It is only populated when both the date and the time are specified. Should be in ISO-8601 extended format, with precision ranging from YYYY-MM-DDThh to YYYY-MM-DDThh:mm:ss.SSS, though equivalent ISO-8601

basic is also allowed (e.g. YYYYMMDD).

** AdministratorType

FullName:

com.cerner.pophealth.program.models.avro.poprecord.AdministratorType

An enumeration that identifies the medication administrator type.

Symbols

SELF

PROVIDER

_NOT_VALUED

_NOT_RECOGNIZED

** AdvanceDirective

FullName:

com.cerner.pophealth.program.models.avro.poprecord.AdvanceDirective

A model representing various advance directives that pertain to the medical treatment of a person. Examples are a living will or power of attorney.

Field name	Type	Description
empiPersonMetadata	nullable EmpiVersionedPersonId	Field contains meta information related to EMPI Person.
processingVersion	nullable string	The processing version, for which pipeline was ran, and data was produced. Format yyyy/MM/dd/HHmm
recordId	nullable RecordId	A structure representing a recordId from which this is originated.
advanceDirectiveId	string	An id that uniquely identifies this Advance Directive for a person or encounter in a source system.
uid	string	A unique id for an advance directive across the person reference record.
personId	string	The identifier of the person, provided by the data source, associated with the advance directive.
encounterId	nullable	The identifier of the encounter or visit associated with the advance

	string	directive.
type	Code	The code value that identifies the advance directive, such as Living Will, DPOA (Durable Power of Attorney), or DNR (Do Not Resuscitate).
recordedDate	nullable string	The date/time when the advance directive were recorded as provided by the data source, in ISO 8601 format.
recordingProvider	nullable ProviderPersonnelLite	The provider, most likely the author on behalf of the person, related to the advance directive.
source	nullable Source	Source information for the advance directive data.
active	boolean	DEPRECATED: This field is not used in the Pop Record and should be ignored by consumers. The field was incorrectly added and cannot be removed for passivity reasons.
provenances	Array of Provenance	Records that describe entities and processes involved in producing and delivering or otherwise influencing this Advance Directive.

** AdvanceDirectiveGroup

FullName:

com.cerner.pophealth.program.models.avro.poprecord.AdvanceDirectiveGroup

A model representing a group of advance directives that are related.

Field name	Type	Description
personId	nullable string	A unique identifier for the person that the advance directives group is associated with.
advanceDirectiveGroupId	string	The identifier for the group.
advanceDirectives	Array of AdvanceDirective	The collection of advance directives that make up the group.
source	nullable Source	Source information for the advance directive group.

** AdverseEvent

FullName: com.cerner.pophealth.program.models.avro.poprecord.AdverseEvent

Resource representing an event (i.e. any change to current patient status) that may be related to unintended effects on a patient or research participant. FHIR: <https://hl7.org/fhir/R5/adverseevent.html>

Field name	Type	Description
adverseEventId	nullable string	ID of the resource that uniquely identifies it across all resources of the same resource type and within the same data partition. FHIR: https://hl7.org/fhir/R5/resource-definitions.html#Resource.id
uid	string	ID of the resource that uniquely identifies it across all data partition, regardless of resource type. FHIR: NA
status	nullable Code	Current status of the adverse event or potential adverse event (e.g in-progress completed entered-in-error unknown). FHIR: https://hl7.org/fhir/R5/adverseevent-definitions.html#AdverseEvent.status
actuality	nullable Code	Whether the event actually happened or was a near miss (e.g. actual potential). Note that this is independent of whether anyone was affected or harmed or how severely. FHIR: https://hl7.org/fhir/R5/adverseevent-definitions.html#AdverseEvent.actuality
categories	Array of Code	The overall type of event, intended for search and filtering purposes (e.g. wrong-patient procedure-mishap medication-mishap device unsafe-physical-environment hospital-acquired-infection wrong-body-site). FHIR: https://hl7.org/fhir/R5/adverseevent-definitions.html#AdverseEvent.category
code	nullable Code	Specific event that occurred or that was averted, such as patient fall, wrong organ removed, or wrong blood transfused. FHIR: https://hl7.org/fhir/R5/adverseevent-definitions.html#AdverseEvent.code
personId	nullable string	ID referencing a patient (i.e. PersonDemographics) resource, within the same data partition, representing the subject impacted by the event. FHIR: https://hl7.org/fhir/R5/adverseevent-definitions.html#AdverseEvent.subject
encounterId	nullable string	ID referencing an Encounter resource, within the same data partition, that is associated with the start of the adverse event. FHIR: https://hl7.org/fhir/R5/adverseevent-definitions.html#AdverseEvent.encounter
cause	nullable AdverseEventCause	When the cause of the adverse event occurred. FHIR: https://build.fhir.org/adverseevent-definitions.html#AdverseEvent.cause_x
effect	nullable	When the effect of the adverse event occurred. FHIR:

	AdverseEventEffect	https://build.fhir.org/adverseevent-definitions.html#AdverseEvent.effect_x_
recordedDate	nullable string	When the event was recorded FHIR: https://hl7.org/fhir/R5/adverseevent-definitions.html#AdverseEvent.recordedDate
recorder	nullable AdverseEventRecorder	Who recorded the adverse event. FHIR: https://hl7.org/fhir/R5/adverseevent-definitions.html#AdverseEvent.recorder
comments	Array of Comment	Comments associated with the adverse event. FHIR: https://hl7.org/fhir/R5/adverseevent-definitions.html#AdverseEvent.note
provenances	Array of Provenance	Records that describe entities and processes involved in producing and delivering or otherwise influencing this resource. FHIR: NA
source	nullable Source	Metadata about this resource FHIR: NA
recordId	nullable RecordId	A structure representing a recordId from which this is originated.
empiPersonMetadata	nullable EmpiVersionedPersonId	Field contains meta information related to EMPI Person.
processingVersion	nullable string	The processing version, for which pipeline was ran, and data was produced. Format yyyy/MM/dd/HHmm

** AdverseEventCause

FullName:

com.cerner.pophealth.program.models.avro.ppoprecord.AdverseEventCause

Backbone element representing the options allowed to represent when the cause of the adverse event occurred. FHIR: https://hl7.org/fhir/6.0.0-ballot1/adverseevent-definitions.html#AdverseEvent.cause_x_

Field name	Type	Description
dateTime	nullable string	A date when the cause of the adverse event occurred.
period	nullable	A period of time when the cause of the adverse event occurred.

[Period](#)

** AdverseEventEffect

FullName:

com.cerner.pophealth.program.models.avro.poprecord.AdverseEventEffect

Backbone element representing the options allowed to represent when the effect of the adverse event occurred. FHIR: https://hl7.org/fhir/6.0.0-ballot1/adverseevent-definitions.html#AdverseEvent.effect_x_

Field name	Type	Description
dateTime	nullable string	A date when the effect of the adverse event occurred.
period	nullable Period	A period of time when the effect of the adverse event occurred.

** AdverseEventRecorder

FullName:

com.cerner.pophealth.program.models.avro.poprecord.AdverseEventRecorder

Backbone element representing the options allowed to represent who recorded the adverse event. FHIR: <https://hl7.org/fhir/R5/adverseevent-definitions.html#AdverseEvent.recorder>

Field name	Type	Description
provider	nullable ProviderPersonnelLite	A practitioner/provider who recorded the adverse event.

** Alert

FullName: com.cerner.pophealth.program.models.avro.poprecord.Alert

An issue with the potential to affect a patient's ability to receive care, comply with expectations, or progress. The Alert contains facts that need to be brought to the attention of users. Examples can include patient's posing particular risks (falls,

physical violence), patient's needing special accommodations (hard of hearing, use easy-open caps), administrative concerns (verify postal address, pre-payment required) or any other situation that needs to be brought to attention within the context of a particular workflow. At least one category should be included.

Field name	Type	Description
category	nullable Code	A code value identifying the category of the alert. Examples may include financial, legal, safety, language, impairment, etc.

** Allergy

FullName: com.cerner.pophealth.program.models.avro.poprecord.Allergy

A model representing an allergy.

Field name	Type	Description
empiPersonMetadata	nullable EmpiVersionedPersonId	Field contains meta information related to EMPI Person.
processingVersion	nullable string	The processing version, for which pipeline was ran, and data was produced. Format yyyy/MM/dd/HHmm
allergyId	nullable string	An id that uniquely identifies this Allergy for a person within the same data partition.
allergyUid	nullable string	A unique identifier for the recorded allergy.
recordId	RecordId	A structure representing a recordId from which this is originated.
uid	string	A unique id for an allergy across the person reference record.
personId	string	A unique identifier for the person for whom the allergy was identified.
encounterId	nullable string	The identifier of the encounter or visit associated with the recorded allergy. Normally, allergies are person-level attributes.

asserter	nullable Asserter	The source of the information about the allergy that is recorded.
encounterUid	nullable string	A unique identifier for the encounter or visit associated with the recorded allergy. This can be used to retrieve encounter specific information from the encounter service.
summaryPersonRecordUid	nullable string	Optional summaryPersonRecord uid for the Allergy. This represents that the Allergy was extracted from the SummaryPersonRecord on the same pop record
allergenCode	nullable Code	A codified value representing the allergen that triggers the allergy or adverse reaction (e.g. drug, food, or environment). If null then description field will have free text description of the allergy (e.g. penicillin).
statusConcepts	Array of OntologyConceptReference	A list of ontological concepts that represent the status, such as Active, Inactive, etc.
description	nullable string	A description of the causative allergen, from the source system.
onsetDate	nullable string	The date the allergy was first reported, in ISO 8601 date format.
assertedDate	nullable string	The date the allergy was first acknowledged/recorded. Should be in ISO-8601 extended format, with precision ranging from YYYY to YYYY-MM-DDThh:mm:ss.SSSZ (e.g. 1997 through 1997-07-16T19:20:00.000Z), though equivalent ISO-8601 basic is also allowed (e.g. YYYYMMDD).
resolvedDate	nullable string	The date and time the allergy was updated to resolved status, in ISO 8601 datetime format.
category	nullable Code	Identifies the category of allergic reaction, e.g. adverse reaction, allergy, or intolerance.

allergyType	nullable Code	Represents a combination of the type of allergen, such as drug, food, or substance, and whether it is an allergy or intolerance.
criticality	nullable Code	Criticality is defined as "The potential seriousness of a future reaction." This represents a clinical judgment about the worst case scenario for a future reaction. It would be based on the severity of past reactions, the dose and route of exposure that produced past reactions, and the life-threatening or organ system threatening potential of the reaction type. Criticality is an attribute of the allergic condition, not the reaction(s).
reactions	Array of Reaction	The reactions when the person is exposed to the allergen, e.g. rash, hives, itching, swelling.
comments	Array of Comment	Comments associated with the allergy.
status	nullable Code	The current status of the allergy, e.g. Active, Inactive, Canceled, Resolved.
source	nullable Source	The information related to source.
updateDateTime	nullable string	ISO8601 timestamp indicating the point in time when data was last updated. New data (from metadata) holds a millisecond precision. Existing legacy data will hold a second precision. Format: YYYY-MM-DDThh:mm:ssZ or YYYY-MM-DDThh:mm:ss.SSSZ
updatePersonnelId	nullable string	Identifier of the Personnel responsible for the last update.
allergenCategories	Array of Category	The list of categories that the allergy is associated with, such as Fish, Egg, Nut etc.
conditionCategories	Array of Category	The list of categories to which the condition is associated with for the Allergy.
provenances	Array of Provenance	Records that describe entities and processes involved in producing and delivering or otherwise

		influencing this allergy.
partitionRecordRef	nullable PartitionRecordReference	Reference to the partition record containing this allergy.
patient	nullable PatientReference	Patient resource that this allergy is related to.
encounter	nullable EncounterReference	Encounter resource that this allergy is related to.

** Appointment

FullName: com.cerner.pophealth.program.models.avro.poprecord.Appointment

A structure representing an appointment for a patient and/or practitioner(s) where a service may take place. An appointment can be used to provide information about a planned meeting that may be in the future or past. An appointment is about a patient, but the patient may not be a required attendee (e.g. when the physician meets with a lawyer to discuss a patient). Examples include a scheduled surgery, a follow-up for a clinical visit, etc.

Field name	Type	Description
empiPersonMetadata	nullable EmpiVersionedPersonId	Field contains meta information related to EMPI Person.
processingVersion	nullable string	The processing version, for which pipeline was ran, and data was produced. Format yyyy/MM/dd/HHmm
recordId	nullable RecordId	A structure representing a recordId from which this is originated.
appointmentId	string	An id that uniquely identifies this appointment about a person in a source system.
personId	string	The identifier of the person, provided by the data source, associated with the appointment.
uid	nullable string	An id for an appointment across the person reference record. It has been set optional as opposed to mandatory field in reference record model since it will create non passive change
encounterId		The identifier of the encounter or

	nullable string	visit associated with the appointment.
startDate	nullable string	The date and time that the appointment takes place. This will be in context of the person's appointment date, such that if the person is not required to attend the appointment, the date will be NULL. In ISO-8601 extended format, with precision ranging from YYYY to YYYY-MM-DDThh:mm:ss.SSSZ (e.g. 1997 through 1997-07-16T19:20:00.000Z)
endDate	nullable string	The date and time that the appointment is to conclude This will be in context of the person's appointment date, such that if the person is not required to attend the appointment, the date will be NULL. In ISO-8601 extended format, with precision ranging from YYYY to YYYY-MM-DDThh:mm:ss.SSSZ (e.g. 1997 through 1997-07-16T19:20:00.000Z)
status	nullable Code	The status of this appointment. Preferred coding system includes HL7 Standard Code OID: 2.16.840.1.113883.5.14, such as Active, Normal, Canceled, Completed, etc.
type	nullable Code	The type of appointment that is being booked. Type is descriptive of the appointment and not the clinical procedure being done.
reason	nullable Code	The reason for this appointment. Preferred coding system include SNOMED OID: 2.16.840.1.113883.6.96 such as 71388002 (Procedure), 404684003 (Clinical Findings), 406524005 (Diagnosis), etc.
actions	Array of AppointmentAction	Actions taken on the appointment, such as reschedule, check-in, check-out.
location	nullable LocationLite	The primary location that this appointment is to take place.
slots	Array of Slot	A concept that represents an open time or place an appointment is filling. An appointment can be scheduled outside (without) a slot.
participants	Array of Participant	A list of all participants involved in the appointment. These participants may include those who are not assigned to slots.
source	nullable Source	Source information for the appointment data.

provenances	Array of Provenance	This describes entities and processes involved in producing and delivering or otherwise influencing a resource (e.g. Appointment).
appointmentReason	nullable string	The reason that this appointment is being scheduled.

** AppointmentAction

FullName:

com.cerner.pophealth.program.models.avro.poprecord.AppointmentAction

A structure representing an action taken on an appointment. At least one of the following values should be present ("type", "reason")

Field name	Type	Description
type	nullable Code	Type of action taken on the appointment such as Book, Confirm, Reschedule, Check-In, Check-Out, Patient Seen. Preferred coding system include SNOMED OID: 2.16.840.1.113883.6.96 such as 385646003 (Reject Appointment), 410543007 (No Show), 44996008 (Reschedule), etc.
date	nullable string	The date the action was taken in ISO 8601 extended format. In ISO-8601 extended format, with precision ranging from YYYY to YYYY-MM-DDThh:mm:ss.SSSZ (e.g. 1997 through 1997-07-16T19:20:00.000Z)
reason	nullable Code	The reason (if provided) that the action was taken, such as No Show, Patient Request, Patient Deceased, Admin Error, Bad Weather. Preferred coding system include SNOMED OID: 2.16.840.1.113883.6.96 such as 385646003 (Reject Appointment), 410543007 (No Show), 44996008 (Reschedule), etc.

** Asserter

FullName: com.cerner.pophealth.program.models.avro.poprecord.Asserter

The source of the information about the allergy that is recorded.

Field name	Type	Description
type	nullable string	Type of the entity that provided the assertion.
provider	nullable ProviderLite	DEPRECATED - This field leverages ProviderLite, use providingProvider instead Provider who provided the assertion.

providerRole	nullable ProviderRole	Role of provider who asserted the record.
providingProvider	nullable ProviderPersonnelLite	Provider who provided the assertion.
relatedPerson	nullable RelatedPerson	Related person who provided the assertion.

** AssignerType

FullName: com.cerner.pophealth.program.models.avro.poprecord.AssignerType

An enumeration that identifies the assigner type for the care plan .

Symbols
SELF
PROVIDER
SYSTEM
UNKNOWN
_NOT_RECOGNIZED
_NOT_VALUED

** Attachment

FullName: com.cerner.pophealth.program.models.avro.poprecord.Attachment

A structure for containing or referencing attachments.

Field name	Type	Description
contentType	nullable Code	The MIME type of the attachment, such as 'text/html', 'img/jpeg', 'img/png'
uri	nullable string	The uri of the attachment. Format should be '/partitions: {partitionId}/persons: {personId}/documents: {documentId}'
binaryId	nullable	An id that uniquely identifies binary content in the binary

	string	store.
binaryPartitionRecordRef	nullable PartitionRecordReference	Reference to a partition record containing the attachment.
title	nullable string	Label to display in place of the attachment contents.
binaryUid	nullable string	An id that uniquely identifies a binary content for a document reference across all data partitions.
size	nullable int	DEPRECATED - use 'byteSize' instead. The number of bytes of data that make up this attachment.
byteSize	nullable long	The number of bytes of data that make up this attachment.
creationDateTime	nullable string	When the attachment was first created, in ISO-8601 extended format, with precision ranging from YYYY to YYYY-MM-DDThh:mm:ss.SSSZ (e.g. 1997-07-16T19:20:00.000Z)

** AuthorType

FullName: com.cerner.pophealth.program.models.avro.poprecord.AuthorType

An enumeration that identifies the author type for the questionnaire

Symbols

SELF

PROVIDER

__NOT_RECOGNIZED

** BenefitCoverage

FullName:
com.cerner.pophealth.program.models.avro.poprecord.BenefitCoverage

A model representing a

Field name	Type	Description
benefitCoverageId	nullable string	An id that uniquely identifies this BenefitCoverage for a person within the same data partition.
memberId	nullable string	The unique Member Id assigned to the person by the Payer.
relationToSubscriber	nullable Code	The relationship of the person to the benefit Subscriber. Example values: 18 = Self, 01 = Spouse, 19 = Child, etc
subscriberNumber	nullable string	A number shared by the Subscriber and all of their dependents. Ties everyone in a family together.
priorityRank	nullable int	A Non Negative value of priorityRank of a benefit coverage.
plan	nullable BenefitPlanLite	DEPRECATED - to be replaced by the benefitPlan. The Health Benefit/Insurance plan.
beginDate	nullable string	The start date of the Benefit Coverage, in ISO 8601 format. Could be the most recent effective date.
endDate	nullable string	The end date of the Benefit Coverage, in ISO 8601 format.
benefitPlan	nullable StandardizedBenefitPlanLite	The Health Benefit/Insurance plan that has been normalized. It contains both raw and standard plan if a match found in client specified reference data.

** BenefitPlan

FullName: com.cerner.pophealth.program.models.avro.poprecord.BenefitPlan

Benefit Plan, mainly modeled for reference data

Field name	Type	Description
sourceId	string	DEPRECATED - to be replaced by the

		standardBenefitPlanId. The id of the Plan provided by the data source.
ids	Array of PlanId	ids for the Health Benefit Payer/Plan. Not necessarily unique to the plan. For example, EDI Payer IDs This attribute would could be populated with EDI Payer Ids, HIPAA National Plan IDs, External IDs
name	nullable string	Name for the Payer/Plan Examples: 'CIGNA C5 PLAN', 'UHC CHOICE EPO SELECT', 'UHC OPTIONS PPO'
payerName	nullable string	Name of the Payer organization/entity that administers the Plan.
payerSourceId	nullable string	A higher level payer based Id for plans. Allows a subset of plans to be identified without explicit knowledge of the underlying plan sourceIds.
payerDisplayName	nullable string	The preferred display name of the Payer organization/entity that administers the Plan.
addresses	Array of Address	The addresses of the Payer.
telecoms	Array of Telecom	The phone or telecommunication information for the Payer.
emails	Array of EmailAddress	The email information for the Payer. These have a type (personal, work...) and an address
benefitType	nullable Code	Code representing the Insurance Line/Benefit Type associated with the Benefit Plan. Examples of Insurance Line/Benefit Type: Health Maintenance Organization, Exclusive Provider Organization, Preferred Provider Organization, Health...
lineOfBusiness	nullable string	Used to distinguish sub-plan products or populations within a particular Benefit Plan. The term 'Line of Business' is pulled from 834 terminology.
memberIdAssigningAuthority	nullable string	The unique identifier of the Assigning Authority to associated with member Ids from this Plan
contractBeginDate	nullable string	The contractBeginDate attribute defines the begin date that the entity who provided the Benefit Plan reference data is under contract to manage persons having benefit coverage with this Benefit Plan. This attribute may be used to determine what Benefit Coverage plans qualify a person to be included in a given managed population. In ISO-8601 extended format, with precision ranging from YYYY to YYYY-MM-DD

		(e.g. 1997 through 1997-07-16)
contractEndDate	nullable string	The contractEndDate attribute defines the end date that the entity who provided the Benefit Plan reference data is under contract to manage persons having benefit coverage with this Benefit Plan. This attribute may be used to determine what Benefit Coverage plans qualify a person to be included in a given managed population. In ISO-8601 extended format, with precision ranging from YYYY to YYYY-MM-DD (e.g. 1997 through 1997-07-16)
source	nullable Source	Source information for the Benefit Plan.
standardBenefitPlanId	nullable string	A unique identifier for BenefitPlan from a reference/standard source system.

** BenefitPlanLite

FullName: com.cerner.pophealth.program.models.avro.poprecord.BenefitPlanLite

A model representing a BenefitPlanLite. At least one of the following should be present. sourceId, ids, name, payerName, benefitType.

Field name	Type	Description
sourceId	nullable string	DEPRECATED - to be replaced by the standardBenefitPlanId. The id of the Plan provided by the data source.
ids	Array of PlanId	ids for the Health Benefit Payer/Plan. Not necessarily unique to the plan. For example, EDI Payer IDs This attribute would could be populated with EDI Payer Ids, HIPAA National Plan IDs, External IDs
name	nullable string	Name for a Health Benefit/Insurance plan
payerName	nullable string	Name of the Payer organization/entity that administers the Plan.
payerSourceId	nullable string	A higher level payer based Id for plans. Allows a subset of plans to be identified without explicit knowledge of the underlying plan sourceIds.
policyOrGroupNumber		DEPRECATED. To be replaced by

	nullable string	BenefitPlanClasses. Policy or Group number. Often a health insurance card will display a Policy or Group number. This is the Policy or Group Number from the SBR03 element on 837 claims.
policyOrGroupName	nullable string	DEPRECATED. To be replaced by BenefitPlanClasses. If a Policy or Group number is not available, a Policy or Group name may be provided. This is the Policy or Group Name from the SBR04 element on 837 claims.
benefitType	nullable Code	Code representing the Insurance Line/Benefit Type.
lineOfBusiness	nullable string	A 834 terminology used to distinguish sub-plan or populations within a health plan.
benefitPlanId	nullable string	An id that uniquely identifies this benefitPlan in a source system.
standardBenefitPlanId	nullable string	A unique identifier for BenefitPlan from a reference/standard source system.
benefitPlanClasses	Array of HealthPlanClass	Classifications of the coverage for which a number and/or name is provided. For example, may be used to identify policy name, policy number, group name, group number, product name, product id, contract name, or contract id etc.

**** BillingRankType**

FullName:

com.cerner.pophealth.program.models.avro.poprecord.BillingRankType

An enumeration of ranking to indicate the significance or priority of a billing diagnosis or procedure. Possible values include PRIMARY, SECONDARY, _NOT_RANKED, etc.

Symbols

PRIMARY

SECONDARY

_NOT_RANKED

_NOT_RECOGNIZED

** BillingStatus

FullName: com.cerner.pophealth.program.models.avro.poprecord.BillingStatus

A value to determine whether the claim is a billed claim or an adjudicated claim. BILLED - Indicates that the claim is billed and likely originating from a provider billing system ADJUDICATED - Indicates that the claim is adjudicated by a payer system UNKNOWN - Indicates that the status is unknown _NOT_VALUED - No value present _NOT_RECOGNIZED - Indicates that the claim is not recognized

Symbols

BILLED

ADJUDICATED

UNKNOWN

_NOT_VALUED

_NOT_RECOGNIZED

** BrandType

FullName: com.cerner.pophealth.program.models.avro.poprecord.BrandType

An enumeration that identifies if a drug is a Brand drug, a Generic Drug, or is unable to be determined

Symbols

BRAND

GENERIC

_NOT_VALUED

_NOT_RECOGNIZED

** CarePlan

FullName: com.cerner.pophealth.program.models.avro.poprecord.CarePlan

A structure representing a care plan that describes the intention of how one or more practitioners intend to deliver care for a particular patient for a period of time, possibly limited to care for a specific condition or set of conditions. Care Plans are used in many of areas of healthcare with a variety of scopes. They can be as simple as a general practitioner keeping track of when their patient is next due for a tetanus immunization through to a detailed plan for an oncology patient covering diet, chemotherapy, radiation, lab work and counseling with detailed timing relationships.

Field name	Type	Description
empiPersonMetadata	nullable	Field contains meta information

	EmpiVersionedPersonId	related to EMPI Person.
processingVersion	nullable string	The processing version, for which pipeline was ran, and data was produced. Format yyyy/MM/dd/HHmm
recordId	nullable RecordId	A structure representing a recordId from which this is originated.
carePlanId	string	An id that uniquely identifies this Care Plan for a person in a source system.
personId	string	The identifier of the person, provided by the data source, associated with the care plan.
uid	nullable string	A unique id for the care plan across the person reference record.
encounterId	nullable string	The identifier of the encounter or visit associated with the care plan.
carePlanActivities	Array of CarePlanActivity	A list of activities within this care plan.
goals	Array of Goal	A list of goals within this care plan.
assignerType	AssignerType	An enumeration that identifies type of the assigner for the care plan. It has a default value of <code>__NOT_VALUED</code> which indicates no value present.
source	nullable Source	Source information for the care plan data.
active	boolean	DEPRECATED: This field is not used in the Pop Record and should be ignored by consumers. The field was incorrectly added and cannot be removed for passivity reasons.
provenances	Array of Provenance	Records that describe entities and processes involved in producing and delivering or otherwise influencing this Care Plan.
encounterUid	nullable string	The unique id of the encounter or visit associated with the care plan.

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CarePlanActivity

FullName:

com.cerner.pophealth.program.models.avro.poprecord.CarePlanActivity

A structure representing a care plan activity that identifies a planned action as part of a care plan. Examples include education, a medication to be used, lab tests to perform, or follow-up appointments needed.

Field name	Type	Description
category	nullable Code	Category of the activity, such as appointment, education, diet, drug, procedure.
activityValue	TypedActivityValue	Detailed description of the activity such as education, procedure, test, or follow-up appointment. If category is education, then the activityValue will be a workshop name represented as textValue. If category is follow-up, then activityValue will be an appointmentValue.
status	nullable Code	Status of the activity, such as not started, scheduled, in progress, on hold, completed, cancelled, or behind schedule.
activityId	nullable string	An id that uniquely identifies this Care Plan activity.
relatedActivityId	nullable string	An activity identifier that relates to current activity that could be triggered by a cancel action, a system expiration action, etc. This identifier can be used to reconcile activities.
activityDate	nullable string	The date when the activity was done. (e.g. done elsewhere). In ISO-8601 extended format, with precision ranging from YYYY to YYYY-MM-DDThh:mm:ss.SSSZ (e.g. 1997 through 1997-07-16T19:20:00.000Z)
recordedDate	nullable string	The date when the activity was recorded. Should be In ISO-8601 extended format, with precision ranging from YYYY to YYYY-MM-DDThh:mm:ss.SSSZ (e.g. 1997 through 1997-07-16T19:20:00.000Z)
scheduledStartDate	nullable string	The date/time the activity is scheduled to start. The date or time may take place in the future. In ISO-8601 extended format, with precision ranging from YYYY to YYYY-MM-DDThh:mm:ss.SSSZ (e.g. 1997 through 1997-07-16T19:20:00.000Z)
scheduledEndDate	nullable Timing	The date/time the activity is scheduled to end. The end date is an estimated or expected time for the activity to end and not an actual completion time.
goalIds	Array of string	A list of goals associated with this care plan activity.
comments	Array of Comment	Textual comments associated with the activity.

carePlanId	nullable string	The unique id of the CarePlan in the source system to which this CarePlanActivity is associated.
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** CarePlanAppointment

FullName:

com.cerner.pophealth.program.models.avro.poprecord.CarePlanAppointment

A structure representing an appointment for a patient and/or practitioner(s) where a service may take place. An appointment can be used to provide information about a planned meeting that may be in the future or past. Examples include a scheduled surgery, a follow-up for a clinical visit, etc.

Field name	Type	Description
appointmentId	string	An id that uniquely identifies this appointment for a person in a source system.
timing	nullable Timing	A timing upon which the carePlan appointment is to occur.
providerParticipants	Array of ProviderParticipant	The provider who is expected to be involved in the activity. In the case of education, this array would be empty. In the case of a follow-up appointment, this would be the follow-up appointment provider For a surgery, there might be both a surgeon and anaesthesiologist.
comments	nullable string	Additional comments about the appointment
instruction	nullable Code	The code representing the instructions from the provider to the patient (e.g. an appointment is required, or as needed). Example: patient follow-up to return when necessary (SNOMED 91310009)

** CareTeam

FullName: com.cerner.pophealth.program.models.avro.poprecord.CareTeam

A model representing a Care Team includes all the people and/or organizations who plan to participate in the coordination and delivery of care for a patient.

Field name	Type	Description
empiPersonMetadata	nullable EmpiVersionedPersonId	Field contains meta information related to EMPI Person.

processingVersion	nullable string	The processing version, for which pipeline was ran, and data was produced. Format yyyy/MM/dd/HHmm
recordId	nullable RecordId	A structure representing a recordId from which this is originated.
careTeamId	nullable string	An id that uniquely identifies this care team for a person within the same data partition.
uid	string	A unique id for an CareTeam across the person reference record.
participants	Array of CareTeamParticipant	A list of participants of the care team.
period	nullable Period	Time period for the care team covers this person
type	nullable Code	Type of the care team
source	nullable Source	Source information for the care team.
provenances	Array of Provenance	Records that describe entities and processes involved in producing and delivering or otherwise influencing this Care Team.
supportingFacts	Array of SupportingFact	A collection of Supporting Facts (Person Provider Relationship (PPR)) It will only be populated if it is a generated Care Team. supportingFactId is set to PPR id. entityId is set to PPR id entityUid is set to PPR uid if available It will have at least one supportingFact per generated Care Team. This field will not be populated for Care Teams belonging to Longitudinal Record
status	nullable Code	Indicates the current state of the care team.
encounterId	nullable string	The Encounter during which this CareTeam was created or to which the creation of this record is tightly associated.
careTeamUid	nullable	Universal ID of the careTeam resource that uniquely identifies it across all resources, regardless of

	string	resource type, across all data partitions.
encounterUid	nullable string	Universal ID of the Encounter resource that uniquely identifies it across all resources, regardless of resource type, across all data partitions.
partitionRecordRef	nullable PartitionRecordReference	Reference to the partition record containing this resource, if the resource was produced by modern DI service processing. If this resource is contained in another resource, this element is not populated.
patient	nullable PatientReference	Patient resource that this resource is related to.
encounter	nullable EncounterReference	Encounter resource that this resource is related to.

** CareTeamParticipant

FullName:

com.cerner.pophealth.program.models.avro.poprecord.CareTeamParticipant

A structure that encapsulates different types of care team participants, such as provider or organization.

Field name	Type	Description
organization	nullable OrganizationLite	A organization participant as a member of a care team.
provider	nullable ProviderPersonnelLite	A provider participant as a member of a care team. When both provider and organization are specified, the provider should belong to the organization.
role	nullable Code	Role of the care team participant on the care team. Can only hold one value, so a provider with multiple care team roles will need to have multiple entries as a care team participant.

** Category

FullName: com.cerner.pophealth.program.models.avro.poprecord.Category

A model containing the attributes of a Category. A category is used to provide further definition on a given model field. For example, an allergenCode may represent the SNOMED value for a Almond Allergy; we might categorize that allergen as a Nut Allergy to allow multiple Nut Allergies to be categorized in the same way.

Field name	Type	Description
id	string	The unique identifier of the category. For example a concept identifier
display	string	The displayed name of category which comes from an ontology. For example, "Fish"
groupId	string	The group identifier for this category. This would be the Ontology context alias. For example, "LONGITUDINAL_RECORD_ALLERGY_FOOD" In order to uniquely identify a concept, consumers should use the groupId (contextId), over groupId (context alias)
groupVersion	int	The Ontology context version applied for this category.
aliases	Array of string	The Ontological aliases associated with this category.
categoryTiers	Array of Array of CategoryTier	The list of CategoryTiers this Category belongs to. We construct this field to represent structural, unordered groupings for a given category. In Ontology terms, this is equivalent to the nth-tier representation model; or more formally, the tier 2 model. This avro record is capable of belonging to one or more parents, or tiers, of record type CategoryTier. This scenario is an example of a tier2 modeling, in which a CategoryTier "is a" parent of a Category. When the tier category is said to belong to another tier category, then a third tier scenario occurs. This behavior is iterated until the nth parent has no more parents; thus naming this design the nth-tier model.
sequence	nullable int	The sequence representation of this Category in respective to its category siblings. This field is used to apply logical ordering of different Categories that are sibling to each other. Each categoryTier within categoryTiers will contain its own sequence and thus displayed in their own record.
immediateParentTiers	Array of string	This field represents the immediate tiers of this Category. The immediate tier is equivalent to the next CategoryTier for this particular Category. The String value is the groupId of the parent CategoryTier, or next CategoryTier. Because a Category cannot be a parent of another Category, all values in this field are groupId's from CategoryTier records.
groupId	nullable string	The unique identifier of the Ontology Context, which is used for this category. In order to uniquely identify a concept, consumers should use the groupId (contextId), over groupId (context alias).

** CategoryTier

FullName: com.cerner.pophealth.program.models.avro.poprecord.CategoryTier

A model containing the attributes of a CategoryTier. The structure for this record is very similar to that of a Category record. The only reason why we've created a new record to represent the same resemblance of a Category is because of the inability to represent a record field recursively. Thus, unlike the Category record, this record will not contain categoryTiers.

Field name	Type	Description
id	string	The unique identifier of the category. For example a concept identifier
display	string	The displayed name of category which comes from an ontology. For example, "Fish"
groupId	string	The group identifier for this category. This would be the Ontology context alias. For example, "LONGITUDINAL_RECORD_ALLERGY_FOOD"
groupVersion	int	The Ontology context version applied for this category.
sequence	nullable int	The sequence representation of this CategoryTier in respective to its tier siblings. This is used to apply logical ordering of CategoryTiers belonging to the same tier.
immediateParentTiers	Array of string	This field represents the immediate tiers of this CategoryTier. The immediate tier is equivalent to the next CategoryTier for this particular CategoryTier. The String value is the groupId of the parent CategoryTier, or next CategoryTier. A CategoryTier can only have parents of other CategoryTier records, and when this CategoryTier does not have immediateParentTiers, it means that this CategoryTier in particular has reached its top-most tier structure.

** Claim

FullName: com.cerner.pophealth.program.models.avro.poprecord.Claim

Field name	Type	Description
empiPersonMetadata	nullable EmpiVersionedPersonId	Field contains meta information related to EMPI Person.
processingVersion	nullable string	The processing version, for which pipeline was ran, and data was produced. Format yyyy/MM/dd/HHmm
recordId	RecordId	A structure representing a recordId from which this is originated.
claimId	string	The unique id from payer to identify the claim. This is a required field. Think of this as the payer's Claim Number
payerClaimNumber	nullable string	The id used by the Payer to identify/track the Claim.

providerClaimNumber	nullable string	The id used by the Provider to identify/track the Claim.
payerReplacementClaimNumber	nullable string	The id previously supplied by the payer to be replaced by the payerClaimNumber.
providerReplacementClaimNumber	nullable string	The id previously supplied by the provider to be replaced by the providerClaimNumber.
reconciliationType	ReconciliationType	A value to determine what type of reconciliation needs to be performed for claims. The type is needed so we only perform reconciliation among claims if necessary.
personId	string	Unique Id of the Person that we need to associate the Claim with.
memberId	nullable string	The unique identifier for a member who is responsible for the claim.
uid	string	a unique identifier for claim across the whole reference record.
replacementClaimId	nullable string	DEPRECATED - replaced by payerReplacementClaimNumber. The claim id that is replaced by the payerClaimId.
originalClaimId	nullable string	DEPRECATED - this attribute is not really useful. A payerReplacementClaimNumber is sufficient. The original claim id that is replaced by the payerClaimId. If the claim is replaced once, the value will be same as replacementPayerClaimId. If the claim is replaced multiple times, the value will be different replacementPayerClaimId and its value does not change.
plan	nullable BenefitPlanLite	The Payer/Plan information from the claim. For example: Payer/Plan Name, Payer Plan Id, Group or Policy Number, Claim Filing Indicator/Benefit Type (plan.benefitType) from the claim.
receivedDate	nullable string	The date that the claim was received by the Payer, ISO 8601 Date Format Only, YYYY-MM-DD.
paidDate	nullable	The date that a clam is paid, ISO 8601 Date Format Only, YYYY-

	string	MM-DD.
claimStatus	ClaimStatus	The status of a claim, such as Approved, Rejected, Denied, Pending, not valued etc. Unlikely to be received in a standard. Will need to convert the source values to one of the ClaimStatus enum values.
facilityType	nullable Code	Code identifying where services were, or may be, performed. CMS Place of Service Codes not found on Institutional Claims CMS Place of Service Codes for Professional Claims - OID: 2.16.840.1.113883.15.5
typeOfBill	nullable Code	Code specifying the 'Type of Bill' including the type of facility where services were performed. TO DO: Consider having Type of Bill values from the source written to both typeOfBill & facilityType. This would allow 'facility type' Concepts to look in one place (facilityType) for matching NUBC & CMS codes. All 3 positions/digits of the NUBC Type of Bill for Institutional Claims - OID: 2.16.840.1.113883.6.301.1
frequency	nullable Code	Code specifying the frequency of the claim; this is the 3rd position of the National Uniform Billing Claim Form Type of Bill. A single digit Claim Frequency Type code defined in 837I and 837P (CLM05 - 3). The 3rd position Type of Bill on the UB92/UB04. Will often need to be parsed out of the 3 digit Type of Bill field values passed in Payer extracts. OID: 2.16.840.1.113883.6.301.2
statementFromDate	nullable string	Statement from Date, ISO 8601 Date Format Only, YYYY-MM-DD.
statementToDate	nullable string	Statement to Date, ISO 8601 Date Format Only, YYYY-MM-DD.
formType	FormType	The Form or Type of Claim. e.g. I = Institutional, P = Professional, D = Dental, Rx = Pharmacy This is a required field. This will often not be explicitly passed in Payer extracts. May need to infer based on other fields (e.g. Type of Bill) in the file or other criteria.
personIds	Array of PersonId	Additional Ids for the Patient that this claim is associated with. e.g. MI = Member Identification Number, SSN = Social Security Number
personName	nullable PersonName	Patient F

personBirthDate	nullable string	Patient date of birth, ISO 8601 Date Format Only, YYYY-MM-DD.
personDeathDate	nullable string	Patient date of death In ISO-8601 extended format, with precision ranging from YYYY to YYYY-MM-DD (e.g. 1997 through 1997-07-16).
personGender	nullable Code	Patient gender code.
personAddress	nullable Address	Patient Address.
personTelecoms	Array of Telecom	The phone or telecommunication information for the patient.
subscriberNumber	nullable string	A number shared by the subscriber and all of their dependents. Ties everyone in a family together. This is not the number uniquely identifying the subscriber.
subscriberName	nullable PersonName	The name of the person listed in the health insurance policy specified the benefitPlan. In cases where the patient is not uniquely identifiable to the health plan, the patientName and subscriberName will be different.
planRank	nullable int	A sequence value to represent subscriber's insurance carrier's level of responsibility. Examples: 1 for primary, 2 for secondary, 3 for tertiary, etc.) This is a non negative value.
otherSubscribers	Array of Subscriber	A list of other subscribers who shared the responsibility for the payment of the claim.
personsRelationshipToSubscriber	nullable Code	Person subscriber relationship code defined in 834. (e.g. 18 = Self, 01 = Spouse, 19 = Child, etc.)
billingProvider	nullable Provider Organization	DEPRECATED: Use `typedBillingProvider` field instead. The Billing Provider is the Person or Organization Provider that submitted for the Claim.
typedBillingProvider	nullable TypedProvider	The Billing TypedProvider that submitted for the Claim.

operatingProvider	nullable ProviderPersonnelLite	Code to represent Provider specialty. Our standard will be National Uniform Claims Committee Provider Taxonomy Codes; however, we are likely to get proprietary values or nothing at all in some extracts.
attendingProvider	nullable Provider	AttendingProvider contains personnel linking information
renderingProvider	nullable Provider	DEPRECATED - this attribute will be replaced by typedRenderingProvider. Information regarding renderingProvider
typedRenderingProvider	nullable TypedProvider	Rendering provider who is different from the attending provider who deliver non-surgical medical services. Can support both Provider and Organization
referringProvider	nullable ProviderPersonnelLite	Information regarding referringProvider
supervisingProvider	nullable ProviderPersonnelLite	Information regarding supervisingProvider
otherOperatingProvider	nullable ProviderPersonnelLite	The individual performing a secondary surgical procedure or assisting the Operating Physician.
principalDiagnosis	nullable Code	DEPRECATED - this attribute will be replaced by principalClaimDiagnosis. Principal diagnosis code. Typically expressed in the ICD9 or ICD10 standard. ICD9 Diagnosis Codes OID: 2.16.840.1.113883.6.103 ICD10 Diagnosis Codes OID: 2.16.840.1.113883.6.90
principalClaimDiagnosis	nullable ClaimDiagnosis	Principal diagnosis represented by ClaimDiagnosis containing diagnosis code and an optional present on admission code. The diagnosis code is typically expressed in the ICD9 or ICD10 standard. ICD9 Diagnosis Codes OID: 2.16.840.1.113883.6.103 ICD10 Diagnosis Codes OID: 2.16.840.1.113883.6.90
diagnoses	Array of Code	Up to 24 additional diagnosis codes
diagnosisRelatedGroup	nullable	A classification scheme that

	Code	clusters patients into categories on the basis of patient's illness, diseases, and medical problems. Also known as 'DRGs'. DRGs are assigned by a "grouper" program based on ICD (International Classification of Diseases) diagnoses, procedures, age, sex, discharge status, and the presence of complications or comorbidities Standard values for DRGs are defined in the Federal Register and Health Insurance Manual -
procedures	Array of ClaimProcedure	A list of procedure codes typically in HCPCS, CPT4 for Professional Claims or ICD9 or ICD10 standards for Institutional Claims. HCPCS Level 1 start with a numeric character. HCPCS Level 2 start with an alpha character. HCPCS Level 1/CPT-4, Codes OID: 2.16.840.1.113883.6.12 HCPCS Level 2 OID: 2.16.840.1.113883.6.285 ICD9 Procedure Codes OID: 2.16.840.1.113883.6.104 ICD10 Procedure Codes OID: 2.16.840.1.113883.6.4 On Institutional claims, claim/header level Procedures may have dates associated with them. The ClaimProcedure data type has a date field for this.
admissionDate	nullable string	Admission date time in ISO8601 format, YYYY-MM-DDThh:mmTZD (e.g. 1997-07-16T19:20+01:00) Typically only provided on/associated with Institutional Inpatient claims or Professional Claims involving Inpatient medical visits.
dischargeDate	nullable string	Discharge date time in ISO8601 format, YYYY-MM-DDThh:mmTZD (e.g. 1997-07-16T19:20+01:00) Typically only provided on/associated with Institutional Inpatient claims or Professional Claims involving Inpatient medical visits.
admissionType	nullable Code	A variety of codes explaining the priority of the admission to a medical facility. If provided in a standard, that standard will likely be 837 code source 231: National Uniform Billing Committee (NUBC) Admission Type Codes NUBC Admission Type Codes OID: TBD
admissionSource	nullable Code	Code indicating the source of this admission If provided in a standard, that standard will likely be 837 code source 230: National Uniform Billing Committee (NUBC) Admission Source Codes NUBC Admission Source Codes OID: TBD
patientStatus	nullable Code	Code indicating patient status as of the statement covers through date If provided in a standard, that standard will likely be 837

		code source 239: National Uniform Billing Committee (NUBC) Patient Status Codes NUBC Patient Status Codes OID: TBD
admittingDiagnosis	nullable Code	DEPRECATED: use `admittingClaimDiagnosis` instead. Diagnosis code for inpatient admission. Typically expressed in the ICD9 or ICD10 standard. ICD9 Diagnosis Codes OID: 2.16.840.1.113883.6.103 ICD10 Diagnosis Codes OID: 2.16.840.1.113883.6.90
admittingClaimDiagnosis	nullable ClaimDiagnosis	In-patient admission diagnosis represented by ClaimDiagnosis containing diagnosis code and an optional present on admission code. The diagnosis code is typically expressed in the ICD9 or ICD10 standard. ICD9 Diagnosis Codes OID: 2.16.840.1.113883.6.103 ICD10 Diagnosis Codes OID: 2.16.840.1.113883.6.90
conditionCodes	Array of Code	Code indicating a condition from a specific industry code list, in code source 132: National Uniform Billing Committee (NUBC)
occurrenceCodes	Array of InfoCode	Occurrence code that in code source 132: National Uniform Billing Committee (NUBC)
valueInfoCodes	Array of InfoCode	Use a Value Code that applies to this claim, in code source 132: National Uniform Billing Committee (NUBC)
externalCauseOfInjuryCodes	Array of InfoCode	Used to describe external Cause of Injury such as poisoning, or adverse effect, in ICD9 or ICD10.
patientReasonForVisitCodes	Array of Code	Codes for claim involved outpatient visits.
services	Array of Service	A list of service lines that contain detail claim information.
pregnancyIndicator	nullable boolean	Indicates that the person is pregnant.
claimBilledAmount	nullable string	Monetary amount billed for the claim. This is the string representation of a decimal value.
payerPaidAmount	nullable string	Monetary amount paid by the payer. This is the string representation of a decimal value
serviceFacilityLocation	nullable Organization	The organization (or organizational provider) provided to identify the Service Location. Must be an organization external to the organization represented by the Billing Provider.

reconciliationInfo	nullable TypedReconciliationInfo	Indicates the type of Reconciliation that needs to be performed on the claims
billingStatus	BillingStatus	A value to determine whether the claim is a billed claim or an adjudicated claim.
adjudicatedPayerAllowedAmount	nullable string	The maximum reimbursement the member's health policy allows for covered health care services. This is the string representation of a decimal value
source	nullable Source	The information related to source.
otherClaimDiagnoses	Array of ClaimDiagnosis	Up to 24 other diagnoses in addition to the principal diagnosis.
principalProcedure	nullable ClaimProcedure	A procedure normally defined for Institutional claims as a primary procedure for the claim. It is coded in ICD9 or ICD10 standards.
approvedInpatientDays	nullable string	The number of inpatient stay days approved by the payer.
interimBillingSeriesId	nullable string	A shared identifier that identifies the interim billing series or an encounter a claim is part of. This is deprecated and replaced by <code>RelatedClaim.groupId</code>
networkPaymentCategory	nullable string	Payment category for covered health care services to providers
relatedClaims	Array of RelatedClaim	Defines a list of claims which are related.
type	nullable Code	The classification of the claim. The expected classifications are institutional, professional, pharmacy, vision, or oral. If the source data provides a finer grain classification than these expected classifications (e.g., a CMS NCH Claim Type Code indicating an Inpatient Institutional claim classification), the corresponding expected higher level classification code must be conveyed in the <code>type.standard.id</code> (e.g., <code>Claim.type.standard.id = 'institutional'</code>) and the finer grain classification provided by the source, should be conveyed via an entry in the <code>type.standardCodings</code> array (e.g., <code>Claim.type.standardCodings(0).id = '60'</code>).

** ClaimDiagnosis

FullName: com.cerner.pophealth.program.models.avro.poprecord.ClaimDiagnosis

A structure representing claim diagnosis that contains a diagnosis code and an optional code indicating if the diagnosis is present on admission.

Field name	Type	Description
diagnosisCode	Code	A code identifying a diagnosis
presentOnAdmission	nullable Code	A code indicating if the diagnosis is present on admission. Possible standard codes include SNOMED CT 373066001 (Yes), 373067005 (No), 261665006 (Unknown)

** ClaimProcedure

FullName:
com.cerner.pophealth.program.models.avro.poprecord.ClaimProcedure

A procedure code has date of performance and list of modifier

Field name	Type	Description
procedureCode	Code	A code identifying a procedure or service product
date	nullable string	ISO 8601 Date Format Only, YYYY-MM-DD.
modifiers	Array of Code	Procedure modifier used to clarify the reporting accuracy of the associated procedure code.

** ClaimStatus

FullName: com.cerner.pophealth.program.models.avro.poprecord.ClaimStatus

An enumeration for Claim Status representations. e.g. A = Approved, D = Denied, R = Rejected, `__NOT_VALUED` = No value present

Symbols

A

D

R

_NOT_VALUED

_NOT_RECOGNIZED

** CmsAcoCclfReconciliationInfo

FullName:

com.cerner.pophealth.program.models.avro.poprecord.CmsAcoCclfReconciliationInfo

Information defining how the claims from CmsAcoCclf need to be reconciled.

Field name	Type	Description
naturalKey	string	A key that combines different claim attributes to be used to identify related claims that may have different identifiers.
matchingCancellationKey	string	A key that combined different claim attributes to be used to match related claims when a claim having adjustment type of CANCELLATION.
adjustmentType	ReconciliationAdjustmentType	Indicates how the claim should be reconciled against other instances of the same claim . Defaults to 'ORIGINAL'

** CmsDrg

FullName:

com.cerner.pophealth.program.models.avro.poprecord.groupers.CmsDrg

A model representing 3M CMS grouper's fields.

Field name	Type	Description
id	string	Unique id for C guaranteed to processing. Th claimId + drg.c
processingVersion	nullable string	The processing; pipeline was r; produced. For
empiPersonMetadata	nullable EmpiVersionedPersonId	Field contains to EMPI Perso
supportingFacts	Array of SupportingFact	Supporting fac this DRG.
drgInitial	nullable	A Code represe

	Code	related groupi extracted from from CMS DRG
drgFinal	nullable com.cerner.pophealth.program.models.avro.poprecord.Code	A Code repre related groupi extracted from CMS DRG grou
mdcInitial	nullable Grouper3MCode	A model repre: Major Diagnos values extract CmsOut_Initi: grouper.
mdcFinal	nullable Grouper3MCode	A model repre: Major Diagnos values extract CmsOut_Mdc
mosFlagFinal	nullable Grouper3MCode	A field repre surgical flag. V extracted from CmsOut_Med: CMS DRG grou
principalDiagnosisCodeEdit	nullable Grouper3MCode	Edits applicab diagnosis code extracted from CmsOut_Princ CMS DRG grou
procedureAffectDRGFlags	Array of Grouper3MCode	A number repr procedure affe Note: 0: did no DRG, 2: Affect initial and fina Description ca UCA(Universa Will contain v CmsOut_Proc CMS DRG grou
returnCodeFinal	nullable Grouper3MCode	Error return co assignment. W extracted from CmsOut_Retu grouper.
dischargeDateUsed	nullable string	The date(in IS discharge used extracted from CmsOut_Disc
dischargeStatusUsed	nullable Grouper3MCode	Field represen Will contain v CmsOut_Disc
returnCodeAfterDischargeStatusMapping	nullable Grouper3MCode	A number repr of discharge st Note: 00: succ Invalid status, available. Note from UCA(Uni Architecture). extracted from CmsOut_Disc from CMS/MS

icdVersionQualifierUsed	nullable Grouper3MCode	A number which code set used 19(Code: "9") contain values CmsOut_ICDV from CMS DRG
procedureOperatingRoomFlags	Array of Grouper3MCode	Flag indicating associated to a Procedure. No Procedure Code Room code, 1 - Operating Room values extracted from CmsOut_Proc from CMS DRG occurrence.
drgWeight	nullable string	The weight for multiplied by 1 National FSP A reimbursemer Occurrences: 1 occurrence: 1 V extracted from DrgOut_Weig
drgMeanLos	nullable string	The Geometric (nth root of th of stay). This v determining tl transfer cases. than the arith 1 Max values p contain values - DrgOut_Mea
drgMeanLos2	nullable string	The Arithmeti used in determ payments for 1 Occurrences: 1 occurrence: 4 7 extracted from DrgOut_Mean
drgStatus	nullable string	This field will no description valid descripti DrgOut_Statu Null Occurrence: 2 1 extracted from DrgOut_Statu
drgStatusDescription	nullable string	This field retu for the Status 1 Null Occurrence: 25 extracted from DrgOut_Statu

** CmsMemberInfo

FullName:
com.cerner.pophealth.program.models.avro.poprecord.CmsMemberInfo

A structure representing a CmsMemberInfo. Centers for Medicare & Medicaid Services.

Field name	Type	Description
empiPersonMetadata	nullable EmpiVersionedPersonId	Field contains meta information related to EMPI Person.
processingVersion	nullable string	The processing version, for which pipeline was ran, and data was produced. Format yyyy/MM/dd/HHmm
cmsMemberInfoId	string	An identifier that uniquely identifies this CmsMemberInfo in a source system.
uid	string	A unique identifier for CmsMemberInfo across the whole population record.
personId	string	The id of the person associated with the CmsMemberInfo.
type	nullable string	Type of CmsMemberInfo, if the value is not one of the following defined, type value will not be set. CMS_DUAL_STATUS: Identifies the most recent entitlement status of beneficiaries eligible for a program(s) in addition to Medicare (e.g., Medicaid). CMS_ORIG_REASON: Indicates the reason for the beneficiary's original entitlement to medicare benefits. CMS_REASON: Indicates the reason for a beneficiary's entitlement to Medicare benefits as of a particular date. CMS_ACO_EXCLUSION_REASON: Indicates that the CMS Beneficiary is eligible for CCLF data sharing based on their primary care services with the ACO, but they have been withheld from CCLF for any of the following reasons: BD - Beneficiary Declined EC - Excluded by CMS PL - Participant List Change CMS_ENTITLEMENT_BUYIN: Indicates for each month of the denominator reference year, the entitlement of the beneficiary to Medicare Part A, Medicare Part B, or Medicare Parts A and B both, as well as whether or not the beneficiary's state of residence was liable and paid for the beneficiary's Medicare Part B monthly premiums.
code	nullable Code	Indicates the code value
effectivePeriod	nullable Period	The effective period the CmsMemberInfo.
active	boolean	An indication whether the cmsMemberInfo is active or inactive as determine by the data source. If no indication was provided from the data source, the entity is assumed to be active.

source	nullable Source	Source information for the CmsMemberInfo.
recordId	nullable RecordId	A structure representing a recordId from which this is originated.

** Code

FullName: com.cerner.pophealth.program.models.avro.poprecord.Code

An aggregation of a raw code and the standard code it is mapped to.

Field name	Type	Description
raw	RawCode	The source id of the code.
standard	nullable StandardCode	The source system of the code.
standardCodings	Array of StandardCode	A unique list of all additional standard codings (excludes the StandardCode object in the Code.standard field)
extensions	Array of ElementExtension	Conveys extensions to a Code-based element. FHIR: https://hl7.org/fhir/R5/types-definitions.html#Element.extension

** CodeableConcept

FullName:
com.cerner.pophealth.program.models.avro.poprecord.CodeableConcept

A model representing a value that is usually supplied by providing a reference to a code, but may also be defined by text.

Field name	Type	Description
text	nullable string	Localized or annotated description of the element or the display of one of the codes.
coding	nullable Code	A Code (or coding) is comprised of zero to many RawCodes and/or StandardCodes. The concept may have translations coded multiple times in different code systems. Each RawCode and StandardCode is a representation of the same concept and may have slightly different granularity due to the differences in the definitions of the underlying codes.

** CodifiedValue

FullName: com.cerner.pophealth.program.models.avro.poprecord.CodifiedValue

A structure representing a result value when the ValueType = CODIFIED.

Field name	Type	Description
value	Code	The code value and its attributes from the source system.
sequence	nullable int	Indicates the sequence, order or priority of the codified values when a result has multiple codified values. This is a non negative value.

** CodifiedValues

FullName: com.cerner.pophealth.program.models.avro.poprecord.CodifiedValues

A structure representing one or multiple codified values for a single result. Note that usually a codified result will only have one code value.

Field name	Type	Description
values	Array of CodifiedValue	A list of the codified values associated with the result.

** Comment

FullName: com.cerner.pophealth.program.models.avro.poprecord.Comment

A model representing a common comment.

Field name	Type	Description
text	string	The text of the comment. This attribute is required.
provider	nullable ProviderPersonnelLite	The provider, most likely the author, related to the comment.
date	nullable string	The date, in ISO 8601 format, of the comment.
commentType	nullable Code	Type of the comment, which represents the source of the comment such as lab interpretations, results etc.

** Communication

FullName:

com.cerner.pophealth.program.models.avro.poprecord.Communication

Resource representing a clinical or business level record of information being transmitted or shared; e.g. an alert that was sent to a responsible provider, a public health agency communication to a provider/reporter in response to a case report for a reportable condition. FHIR:

<https://hl7.org/fhir/R5/communication.html>

Field name	Type	Description
empiPersonMetadata	nullable EmpiVersionedPersonId	Field contains meta information related to EMPI Person.
processingVersion	nullable string	The processing version, for which pipeline was ran, and data was produced. Format yyyy/MM/dd/HHmm
recordId	nullable RecordId	A structure representing a recordId from which this is originated.
communicationId	string	The identifier that uniquely identifies the communication event.
personId	string	The identifier of the person who is the focus or subject of the communication.
encounterId	nullable string	The identifier of the encounter associated with the communication.
uid	nullable string	A unique identifier for the recorded communication.
sender	nullable Communicator	The entity that is the source of the communication.
recipient	nullable Communicator	The entity that is the target of the communication.
medium	nullable Code	The medium of the communication. Examples include phone, email, fax, etc.

outcomes	Array of CommunicationOutcome	The outcomes of the communication. Outcomes represent an established goal, action, or result established in the communication.
communicationDate	nullable string	* DEPRECATED This element is ambiguous as to whether it is the date when the communication was sent or received. The 'sent' or 'received' elements should be used instead. The date and time of the communication. In ISO-8601 extended format, with precision ranging from YYYY to YYYY-MM-DDThh:mm:ss.SSSZ (e.g. 1997 through 1997-07-16T19:20:00.000Z).
duration	nullable Quantity	The length of time of the communication event. Most often used for telephone conversations. Duration includes both a value and unity type.
comments	Array of Comment	Textual comments or notes associated with the communication.
source	nullable Source	Source information for the communication.
topic	nullable Code	Description of the purpose/content, similar to a subject line in an email. FHIR: https://hl7.org/fhir/R5/communication-definitions.html#Communication.topic
sent	nullable string	Date time when this communication was sent. FHIR: https://hl7.org/fhir/R5/communication-definitions.html#Communication.sent
received	nullable string	Date time when this communication was received. FHIR: https://hl7.org/fhir/R5/communication-definitions.html#Communication.received
extensions	Array of CommunicationExtension	Extensions to the resource model. FHIR: https://hl7.org/fhir/R5/domainresource-definitions.html#DomainResource.extension
basedOn	Array of CommunicationBasedOn	References to resources (e.g. ServiceRequest) fulfilled by the communication. FHIR: https://hl7.org/fhir/R5/communication-definitions.html#Communication.basedOn
partOf	Array of CommunicationPartOf	References to resources (e.g. Procedure) for which the Communication is part of. FHIR: https://hl7.org/fhir/R5/communication-definitions.html#Communication.partOf
status	nullable Code	Status of the communication transmission (preparation in-progress not-done on-hold stopped completed entered-in-error unknown). FHIR: https://hl7.org/fhir/R5/communication-definitions.html#Communication.status
statusReason	nullable Code	Reason for the current state of the communication (unknown system-error invalid-phone-number recipient-unavailable family-objection patient-objection). FHIR: https://hl7.org/fhir/R5/communication-definitions.html#Communication.statusReason

** CommunicationBasedOn

FullName:

com.cerner.pophealth.program.models.avro.poprecord.CommunicationBasedOn

Backbone element representing the options allowed to represent a resource (e.g. ServiceRequest) for which the Communication is based on. FHIR:

<https://hl7.org/fhir/R5/communication-definitions.html#Communication.basedOn>

Field name	Type	Description
serviceRequestId	nullable string	Resource ID of a ServiceRequest resource for which the Communication is based on. FHIR: https://hl7.org/fhir/R5/resource-definitions.html#Resource.id

** CommunicationExtension

FullName:

com.cerner.pophealth.program.models.avro.poprecord.CommunicationExtension

A special-purpose data type model representing an extension to the Communication resource model. The value of an extension can be represented as different data types, but only one value representation is allowed for a given extension. FHIR: <https://hl7.org/fhir/R5/extensibility.html#Extension>, <https://hl7.org/fhir/R5/domainresource-definitions.html#DomainResource.extension> Due to limitations (recursive record inclusion) within Avro, there are coresponding limitations to possible data types allowed to represent the value of the extension.

Field name	Type	Description
extensionUri	nullable string	Identifies definition and meaning of the extension. FHIR: https://hl7.org/fhir/R5/extensibility-definitions.html#Extension.url
valueDateTime	nullable string	A DateTime-based value of the extension. FHIR: https://hl7.org/fhir/R5/extensibility-definitions.html#Extension.value_x

** CommunicationOutcome

FullName:

com.cerner.pophealth.program.models.avro.poprecord.CommunicationOutcome

Communication outcome is a determination, action, or conclusion established in a communication. CodifiedOutcome is expected to be present and is nullable for passivity.

Field name	Type	Description
codifiedOutcome	nullable Code	A codified action to indicate an outcome or event.

** CommunicationPartOf

FullName:

com.cerner.pophealth.program.models.avro.poprecord.CommunicationPartOf

Backbone element representing the options allowed to represent a resource (e.g. Procedure) for which the Communication is part of. FHIR:

<https://hl7.org/fhir/R5/communication-definitions.html#Communication.partOf>

Field name	Type	Description
procedureId	nullable string	An ID of a Procedure resource. FHIR: https://hl7.org/fhir/R5/resource-definitions.html#Resource.id

** Communicator

FullName: com.cerner.pophealth.program.models.avro.poprecord.Communicator

A structure representing an entity associated with the communication. Should only contain one of {"provider", "relatedPerson"} if type does not contain patient. A human is the primary usage but in the future it can be expanded to organization or device.

Field name	Type	Description
type	CommunicatorType	The type of the communicator. Potential values include {PATIENT, PROVIDER, RELATED_PERSON}
provider	nullable ProviderParticipant	A provider associated to the communication.
practitioner	nullable ProviderLite	A practitioner-based (provider-based) communicator.
relatedPerson	nullable PersonContact	A person with a relationship to the patient, like a relative or guardian.

system	nullable System	A system, program, or algorithm associated to the communication.
role	nullable Code	Represents the role of the communicator (e.g., Care giver, Pharmacist, Family Member, etc)

** CommunicatorType

FullName:

com.cerner.pophealth.program.models.avro.poprecord.CommunicatorType

An enumeration that identifies the type of person tied to the communication.

Symbols
PATIENT
PROVIDER
RELATED_PERSON
_NOT_RECOGNIZED

** Condition

FullName: com.cerner.pophealth.program.models.avro.poprecord.Condition

A structure representing a condition.

Field name	Type	Description
empiPersonMetadata	nullable EmpiVersionedPersonId	Field contains meta information related to EMPI Person.
processingVersion	nullable string	The processing version, for which pipeline was ran, and data was produced. Format yyyy/MM/dd/HHmm
recordId	nullable RecordId	A structure representing a recordId from which this is originated.
conditionId	nullable string	An id that uniquely identifies this Condition for a person within the same data partition.

conditionUid	nullable string	A unique identifier for the recorded condition.
uid	string	a unique identifier for condition across the whole reference record.
claimUid	nullable string	Optional claim uid for the condition. This represents that the Condition was extracted from the Claim on the same pop record
summaryPersonRecordUid	nullable string	Optional summaryPersonRecord uid for the Condition. This represents that the Condition was extracted from the SummaryPersonRecord on the same pop record
personId	string	The identifier of the person, provided by the data source, associated with the condition.
encounterId	nullable string	The identifier of the encounter or visit, provided by the data source, associated with the condition.
encounterUid	nullable string	A unique identifier for the encounter or visit associated with the recorded condition. This can be used to retrieve encounter specific information from the encounter service.
conditionCode	nullable Code	The code value that identifies the condition, such as ICD9-CM or SNOMED code. If null then description field will have free text description of the Condition.
statusConcepts	Array of OntologyConceptReference	A list of ontological concepts that represent the status, such as Active, Inactive, etc.
confirmationStatusConcepts	Array of OntologyConceptReference	A list of ontological concepts that represent the confirmation status of the Condition, such as Confirmed, Differential, Possible, Probable, Complaint Of, Rule Out, etc.
billingRank	BillingRankType	A enumerated value to identify the significance or priority of a billing diagnosis. Default to <code>_NOT_RANKED</code>
description	nullable string	The textual description of the condition, provided by the data source. In Millennium, this can be the annotated display entered by the clinician or the nomenclature source string.
effectiveDate	nullable string	The date the Diagnosis or Condition was first reported as present.
assertedDate	nullable string	The date the condition was first asserted or acknowledged. FHIR: https://hl7.org/fhir/extensions/StructureDefinition-condition-assertedDate.html
type	nullable Code	The level of medical judgement used to determine the existence of the condition. Examples are: Condition, Problem, Diagnosis, Finding, Symptom, Complaint, and Functional Limitation. This equates

		to the CCD Problem Type.
classification	nullable Code	Classification indicates the clinical stage or process at which the condition was identified. Examples are: Admitting, Discharge, Final, Billing, etc. This equates to the Millennium Diagnosis Type (code set 17), the HL7 Problem Classification (PRB-10) and the HL7 Diagnosis Type (DG1 segment).
managementDisciplines	Array of Code	Management Discipline is the category of care to treat or manage the condition. This equates to the Millennium Dx Classification (code set 12033) and to the HL7 Problem Management Discipline (PRB-11).
confirmationStatus	nullable Code	Examples of confirmation status are: Confirmed, Differential, Possible, Probable, Complaint Of, Rule Out, etc.
responsibleProvider	nullable ProviderPersonnelLite	The provider responsible for treating the condition.
comments	Array of Comment	The comments associated with the condition.
status	nullable Code	The status of the condition, such as ACTIVE, CANCELLED, INACTIVE, RESOLVED.
statusDate	nullable string	Deprecated: The 'Condition.abatementDate' element is used to convey when the condition resolved or went into remission. The date that the status was updated in ISO 8601 format.
recorder	nullable Recorder	The provider who recorded the condition.
source	nullable Source	The information related to source.
updateDateTime	nullable string	ISO8601 timestamp indicating the point in time when data was last updated. New data (from metadata) holds a millisecond precision. Existing legacy data will hold a second precision. Format: YYYY-MM-DDThh:mm:ssZ or YYYY-MM-DDThh:mm:ss.SSSZ
updatePersonnelId	nullable string	Identifier of the Personnel responsible for the last update.
presentOnAdmission	nullable Code	A code indicating if the condition is present on admission. The code may be defined in the SNOMED CT coding system. Example values include 373066001 for Yes (Condition was present at time of admission), 373067005 for No (Condition was not present at time of admission), 261665006 for Unknown, etc.
conditionCategories	Array of Category	The list of categories that the condition is associated

		with, such as Diabetes Type II etc.
supportingFact	nullable SupportingFact	A supporting fact that relates entities to the condition. For example, a claim service line is a supporting fact that can be used to infer the condition event occurred.
provenances	Array of Provenance	Records that describe entities and processes involved in producing and delivering or otherwise influencing this condition.
partitionRecordRef	nullable PartitionRecordReference	Reference to the partition record containing this condition.
patient	nullable PatientReference	Patient resource that this condition is related to.
encounter	nullable EncounterReference	Encounter resource that this condition is related to.
recordedDate	nullable string	When this particular Condition record was created in the system, which is often a system-generated date. FHIR: https://hl7.org/fhir/R5/condition-definitions.html#Condition.recordedDate
severity	nullable Code	Subjective assessment of the severity of the condition as evaluated by the clinician. FHIR: https://hl7.org/fhir/R5/condition-definitions.html#Condition.severity
bodySites	Array of Code	Anatomical location where this condition manifests itself. FHIR: https://hl7.org/fhir/R5/condition-definitions.html#Condition.bodySite
abatementDate	nullable string	The date or estimated date that the condition resolved or went into remission. This is called "abatement" because of the many overloaded connotations associated with "remission" or "resolution". Some conditions, such as chronic conditions, are never really resolved, but they can abate. Replaced the 'Condition.statusDate' element FHIR: https://hl7.org/fhir/R5/condition-definitions.html#Condition.abatement_x

** Consent

FullName: com.cerner.pophealth.program.models.avro.poprecord.Consent

A structure representing patient consent.

Field name	Type	Description
empiPersonMetadata	nullable EmpiVersionedPersonId	Field contains meta information related to EMPI Person.

processingVersion	nullable string	The processing version, for which pipeline was ran, and data was produced. Format yyyy/MM/dd/HHmm
recordId	nullable RecordId	A structure representing a recordId from which this is originated.
consentId	string	An id that uniquely identifies the consent agreement for a person in a source system.
personId	string	A unique identifier for the person who is the subject of the consent.
uid	string	A unique identifier of the consent across all partitions of the reference record.
recordedDate	nullable string	Date on which the consent is recorded. In ISO-8601 extended format, with precision ranging from YYYY to YYYY-MM-DDThh:mm:ss.SSSZ (e.g. 2017 through 2017-06-06T24:00:00.000Z)
startDate	nullable string	Date on which the consent term begins. In ISO-8601 extended format, with precision ranging from YYYY to YYYY-MM-DDThh:mm:ss.SSSZ (e.g. 2019 through 2019-09-06T24:00:00.000Z)
expirationDate	nullable string	Date on which the consent term ends. In ISO-8601 extended format, with precision ranging from YYYY to YYYY-MM-DDThh:mm:ss.SSSZ (e.g. 2019 through 2019-09-06T24:00:00.000Z)
consentType	nullable Code	A selector of the type of consent being presented: ADR, Privacy, Treatment, Research.
consentStatus	Code	The current status of the consent. Values indicate if data is okay to share, not okay to share, or if the consent is unknown.
source	Source	Source information for the consent.
actors	Array of Actor	Who or what is controlled by this rule (or group, by role). Group could be used to identify a set of actors by some property they share, for example, admitting officers.
purposes	Array of Code	The context of the activities a user is taking. For example, why the user is accessing the data that are controlled by this rule.
provenances	Array of Provenance	This describes entities and processes involved in producing and delivering or otherwise influencing a resource (e.g. Consent).

** ContainedResult

FullName:

com.cerner.pophhealth.program.models.avro.poprorecord.ContainedResult

A specialized version of Result resource containing a subset of the elements available on the full version. This version is typically used when the Result resource is referenced from another resource, but the Result resource does not have its own identity within the standardized data partition, but it is desired to preserve some information about the ServiceRequest in-line (contained) within the referencing resource. The need for this special version is due to limitations (recursive record inclusion) within Avro. FHIR:

<https://hl7.org/fhir/R5/observation.html>

Field name	Type	Description
code	nullable Code	A code value and its attributes that identifies the test or measurement, for example an event code or LOINC code. FHIR: https://hl7.org/fhir/R5/observation-definitions.html#Observation.code
servicePeriod	nullable Period	The time or time-period the observed value is asserted as being true. FHIR: https://hl7.org/fhir/R5/observation-definitions.html#Observation.effective_x_
originalValue	nullable ResultValue	The original result value that represents either a numeric, codified, text, or date value. FHIR: https://hl7.org/fhir/R5/observation-definitions.html#Observation.value_x_
normalizedValue	nullable ResultValue	The normalized result value that represents either a numeric, codified, text, or date value. Normalization generally is only applied to quantity-based result values. FHIR: https://hl7.org/fhir/R5/observation-definitions.html#Observation.value_x_
components	Array of ResultComponent	Some observations have multiple component observations. These component observations are expressed as separate code value pairs that share the same attributes. Examples include systolic and diastolic component observations for blood pressure measurement and multiple component observations for genetics observations. FHIR: https://hl7.org/fhir/R5/observation-definitions.html#Observation.component

** ContainedServiceRequest

FullName:

com.cerner.pophhealth.program.models.avro.poprorecord.ContainedServiceRequest

A specialized version of ServiceRequest resource containing a subset of the elements available on the full version. This version is typically used when the ServiceRequest resource is referenced from another resource, but the ServiceRequest resource does not have its own identity within the standardized data partition, but it is desired to preserve some information about the ServiceRequest in-line (contained) within the referencing resource. The need for

this special version is due to limitations (recursive record inclusion) within Avro.
FHIR: <https://hl7.org/fhir/R5/servicerequest.html>

Field name	Type	Description
code	nullable Code	A code that identifies a particular ServiceRequest, for example, procedure, diagnostic investigation, or panel of investigations that have been requested. FHIR: https://hl7.org/fhir/R5/servicerequest-definitions.html#ServiceRequest.code

** Content

FullName: com.cerner.pophealth.program.models.avro.poprecord.Content

A structure for representing the content of a document reference.

Field name	Type	Description
attachment	nullable Attachment	Contains the reference to the document content (binary), along with critical metadata to prove the content has integrity.
format	nullable Code	Indicates the document encoding, structure, and template that the document conforms to beyond the base format indicated in the attachment's MIME type.

** ContributingClaim

FullName:
com.cerner.pophealth.program.models.avro.poprecord.ContributingClaim

Model representing contributing Claim

Field name	Type	Description
claim	Claim	Original Claim with only the required fields that contributed in the formation of DerivedEncounter. The fields which are optional or have default value, will have default value. Consumer can get back the original Claim by doing a lookup for field: uid, on Claim passed on PopulationRecord.
services	Array of Service	Original Service with only the required fields that contributed in the formation of DerivedEncounter. The fields which are optional or have default value, will have default value. Consumer can get back the original Service by doing a lookup for field: lineNumber, on Service for specific Claim (uid), passed on PopulationRecord. Note: the number of elements on this field, might not be same as number of elements in claim.services

** DateValue

FullName: com.cerner.pophealth.program.models.avro.poprecord.DateValue

A structure representing a result value when the ValueType = DATE.

Field name	Type	Description
date	string	The date and/or time value in ISO 8601 format.

** DerivedDate

FullName: com.cerner.pophealth.program.models.avro.poprecord.DerivedDate

A model representing the derived date.

Field name	Type	Description
date	string	The date associated with entity. Date can be either of below: ISO 8601 standard format, YYYY-MM-DDThh:mmTZD (e.g. 1997-07-16T19:20+01:00) ISO 8601 Date Format Only, YYYY-MM-DD (e.g. 1997-07-16)
id	RecordId	The record identifier that contributed the date field.
sourceType	SourceDataType	The type of data that contributed to populating the record.

** DerivedEncounter

FullName:

com.cerner.pophealth.program.models.avro.poprecord.DerivedEncounter

A model representing a DerivedEncounter

Field name	Type	Description
startDate	DerivedDate	The beginning date for this record. This is the earliest date that could be found from the originating record, while creating this record.
endDate	DerivedDate	The end date for this record. This is the latest date that could be found from the originating record, while creating this record.
originatingEncounters	Array of Encounter	Original Encounter(s) with only the required fields that contributed in the formation of DerivedEncounter. Consumer can get back the original Encounter by doing a lookup for field: uid, on Encounter passed on PopulationRecord. The field can be empty if no Encounter qualified in the formation of

		this record.
originatingClaims	Array of Claim	DEPRECATED - The field will always be empty, instead use field: contributingClaims
contributingClaims	Array of ContributingClaim	The Claim(s) that contributed in the formation of this record. The field can be empty if no Claim qualified in the formation of this record.
derivedEncounterCategory	nullable Category	Category to which the entity is associated. The field is guaranteed to be present
derivedEncounterTypeCode	nullable Code	DEPRECATED - The field will always be null, instead use field: contributingCodes
contributingCodes	Array of Code	List of contributing Code(s) indicating what type of DerivedEncounter, this record represents. We need to pass all Code(s), which corresponds to Concept, as it is needed by Synapse for doing Client specific Ontology look up when necessary. Possible standard codes include XXXXX (INPATIENT), XXXXXX (OUTPATIENT) The field will have atleast 1 element.
uid	nullable string	A unique identifier for DerivedEncounter across PopulationRecords. Input: empiid + start date + conceptId If the start date changes, then the uid will change.
empiPersonMetadata	nullable EmpiVersionedPersonId	A model representing a EmpiPerson with a version.
processingVersion	nullable string	Identifier for the version of processing (equivalent to the coordinator nominal time) a given DerivedEncounter record was created in.

** DescriptiveDate

FullName:

com.cerner.pophealth.program.models.avro.poprecord.DescriptiveDate

A structure that describes the date or timing of an activity.

Field name	Type	Description
amount		A number in combination of unit describing a

	nullable string	timing element.
timingUnit	TimingUnitType	A timing unit in MINUTE, HOUR, DAY, WEEK, MONTH, or YEAR. Default to <code>__NOT_VALUED</code> .
timingUnitCode	nullable Code	The codified units of time for the duration or period. The value could be SECONDS, MINUTES, HOURS, DAYS, WEEKS, MONTHS, or YEARS. Default to <code>__NOT_VALUED</code> .
freeText	nullable string	Free text describing a date or a date range.

** Device

FullName: com.cerner.pophealth.program.models.avro.poprecord.Device

This resource identifies an instance or a type of a manufactured item that is used in the provision of healthcare without being substantially changed through that activity. Medical devices includes durable (reusable) medical equipment, implantable devices, as well as disposable equipment used for diagnostic, treatment, and research for healthcare and public health. FHIR: <https://hl7.org/fhir/6.0.0-ballot1/device-definitions.html>

Field name	Type	Description
model	nullable string	The model identifier assigned by the manufacturer for the device. This may be a product name or a series of identifying characters. FHIR: https://hl7.org/fhir/6.0.0-ballot1/device-definitions.html#Device.modelNumber
serialNumber	nullable string	A number or group of numbers and letters that uniquely identifies an individual device. FHIR: https://hl7.org/fhir/6.0.0-ballot1/device-definitions.html#Device.serialNumber
type	Code	The type of device. FHIR: https://hl7.org/fhir/6.0.0-ballot1/device-definitions.html#Device.type
manufacturer	nullable string	The name of the device manufacturer. FHIR: https://hl7.org/fhir/6.0.0-ballot1/device-definitions.html#Device.manufacturer
names	Array of DeviceName	The name of the device. FHIR: https://hl7.org/fhir/6.0.0-ballot1/device-definitions.html#Device.name

** DeviceName

FullName: com.cerner.pophealth.program.models.avro.poprecord.DeviceName

A backbone element representing the manufacturer's name of the device as provided by the device, from a UDI label, or by a person describing the Device.

Field name	Type	Description
name	nullable string	Name that identifies the device
type	nullable Code	Type of device name. Note that Manufacture Device Name refers to the name of the device as given by the manufacturer, not the name of the manufacturer's name. Examples: UDI Label Name, User Friendly Name, Patient Reported Name, Manufacture Device Name, Model Name

** DeviceRequest

FullName: com.cerner.pophealth.program.models.avro.poprecord.DeviceRequest

Resource representing a request for a patient to employ a medical device. The device may be an implantable device, or an external assistive device, such as a walker. FHIR: <https://hl7.org/fhir/R5/devicerequest.html>

Field name	Type	Description
personId	nullable string	A unique identifier for the person for whom the group was identified.
uid	nullable string	A unique identifier for the recorded communication.
deviceRequestId	nullable string	Uniquely identifies a DeviceRequest resource within the scope of the single standardized data partition that contains it.
encounterId	nullable string	The identifier of the encounter or visit associated with the DeviceRequest order.
status	nullable Code	The status of the request, such as Active, Complete, Discontinued, On hold.
device	nullable Device	Optional details of the device to be used. FHIR: https://hl7.org/fhir/6.0.0-ballot1/device-definitions.html
timingPeriod		The Time Period Scheduled for use.

	nullable Period	
orderingProvider	nullable ProviderPersonnelLite	The individual or entity who initiated the request and has responsibility for its activation. FHIR: https://hl7.org/fhir/R5/devicerequest-definitions.html#DeviceRequest.requester
reasons	Array of DeviceRequestReason	Reasons or justifications for the requested use of this device. Typically a condition code. FHIR: https://hl7.org/fhir/R5/devicerequest-definitions.html#DeviceRequest.reason
extensions	Array of DeviceRequestExtension	Extensions to the resource model. FHIR: https://hl7.org/fhir/R5/domainresource-definitions.html#DomainResource.extension
doNotPerform	nullable boolean	If true, indicates that the provider is asking for the patient to either stop using or to not start using the specified device or category of devices. For example, the patient has undergone surgery and the provider is indicating that the patient should not wear contact lenses. This element negates the request to occur (e.g. this is a request for the device not to be ordered or used). FHIR: https://hl7.org/fhir/R5/devicerequest-definitions.html#DeviceRequest.doNotPerform
authoredOn	nullable string	When the request transitioned to being actionable FHIR: https://hl7.org/fhir/R5/devicerequest-definitions.html#DeviceRequest.authoredOn
empiPersonMetadata	nullable EmpiVersionedPersonId	Field contains meta information related to EMPI Person.
recordId	nullable RecordId	A structure representing a recordId from which this is originated.
processingVersion	nullable string	The processing version, for which pipeline was ran, and data was produced. Format yyyy/MM/dd/HHmm

** DeviceRequestExtension

FullName:

com.cerner.pophealth.program.models.avro.poprecord.DeviceRequestExtension

A special-purpose data type model representing an extension to the DeviceRequest resource model. The value of an extension can be represented as different data types, but only one value representation is allowed for a given extension. FHIR: <https://hl7.org/fhir/R5/extensibility.html#Extension>, <https://hl7.org/fhir/R5/domainresource-definitions.html#DomainResource.extension> Due to limitations (recursive record

inclusion) within Avro, there are corresponding limitations to possible data types allowed to represent the value of the extension.

Field name	Type	Description
extensionUri	nullable string	Identifies definition and meaning of the extension. FHIR: https://hl7.org/fhir/R5/extensibility-definitions.html#Extension.url
valueCode	nullable Code	A Code-based value of the extension. FHIR: https://hl7.org/fhir/R5/extensibility-definitions.html#Extension.value_x_

** DeviceRequestReason

FullName:

com.cerner.pophhealth.program.models.avro.poprecord.DeviceRequestReason

Backbone element representing the options allowed to represent a reason for the device request. FHIR: <https://hl7.org/fhir/R5/references.html#CodeableReference>

Field name	Type	Description
concept	nullable Code	A codified concept representing the reason for the device request. FHIR: https://hl7.org/fhir/R5/references-definitions.html#CodeableReference.concept

** DiagnosticDocumentReference

FullName:

com.cerner.pophhealth.program.models.avro.poprecord.DiagnosticDocumentReference

A structure representing a single report associated to a diagnostic service request.

Field name	Type	Description
documentId	string	An id that uniquely identifies document in a source system.
diagnosticServiceRequestUid	string	The UID of the DiagnosticServiceRequest this document reference originates from.
title	nullable string	The title or subject of the document.
type	Code	The type of the report such as preliminary, final, or addendum.
docStatus	nullable	The status of the document, such as dictated, authenticated, nullified, likely defined by LOINC or HL7 coding system. For a more complete list

	Code	http://hl7.org/implement/standards/fhir/v3/DocumentCompletion/in
actions	Array of DocumentAction	Includes all actions taken on the document including authors, authenticators and reviewers.
lastUpdateDate	nullable string	The last date and time that the document was updated in a clinically significant way. The value should be in valid ISO 8601 extended format.
serviceDate	nullable string	The clinically significant date and time associated with the document. The value should be in valid ISO 8601 extended format.
authors	Array of DocumentAction	Authors of the report document.
authenticators	Array of DocumentAction	Providers or persons who sign, cosign, and verify the report document.
reviewers	Array of DocumentAction	Providers or persons who review the report document.
content	nullable Attachment	The content of the document

** DiagnosticReport

FullName:

com.cerner.pophealth.program.models.avro.poprecord.DiagnosticReport

A resource representing the findings and interpretation of diagnostic tests performed on a patient. The report may include clinical context such as requesting provider information, and some mix of atomic results, images, textual and coded interpretations, and formatted representation of diagnostic reports. The report also includes non-clinical context such as batch analysis and stability reporting of products and substances. FHIR: <https://hl7.org/fhir/R5/diagnosticreport.html>

Field name	Type	Description
empiPersonMetadata	nullable EmpiVersionedPersonId	Uniquely identifies a specific version of the master person, within the scope of the single Enterprise Master Person Index (EMPI) that contains it, that is the patient (subject) of the DiagnosticReport resource.
processingVersion	nullable string	Version identifying the specific instance of the batch processing pipeline that produced this resource.
recordId	nullable RecordId	Composite ID that uniquely identifies the source patient, that is the subject of the DiagnosticReport resource, across all standardized data partitions.

diagnosticReportId	nullable string	Uniquely identifies the standardized source DiagnosticReport resource, within the scope of the standardized data partition that contains it, from which this DiagnosticReport resource is based on.
uid	nullable string	Uniquely identifies the DiagnosticReport resource within the scope of ALL standardized data partitions.
personId	nullable string	Uniquely identifies the source person, within the scope of the single standardized data partition that contains it, that is the patient (subject) of the DiagnosticReport resource.
encounterId	nullable string	Uniquely identifies the standardized Encounter resource, within the scope of the single standardized data partition that contains it, that represents the patient healthcare event which the report is about.
encounterUid	nullable string	Uniquely identifies the Encounter resource, within the scope of all Longitudinal Record populations, that represents the patient healthcare event which the report is about.
code	nullable Code	A code or name that describes the diagnostic report. FHIR: https://hl7.org/fhir/R5/diagnosticreport-definitions.html#DiagnosticReport.code
codeText	nullable string	Text that describes the diagnostic report. FHIR: https://hl7.org/fhir/R5/diagnosticreport-definitions.html#DiagnosticReport.code
status	nullable Code	The status of the diagnostic report (final preliminary amended etc). FHIR: https://hl7.org/fhir/R5/diagnosticreport-definitions.html#DiagnosticReport.status
issued	nullable string	The date, with an optional time, that this version of the report was made available to providers, typically after the report was reviewed and verified. FHIR: https://hl7.org/fhir/R5/diagnosticreport-definitions.html#DiagnosticReport.issued
effective	nullable DiagnosticReportEffective	The time or time-period the observed values are related to. This is usually either the time of the procedure or of specimen collection(s), but very often the source of the date/time is not known, only the date/time itself. FHIR: https://hl7.org/fhir/R5/diagnosticreport-definitions.html#DiagnosticReport.effective_x
performers	Array of DiagnosticReportPerformer	The performers of the diagnostic service that is responsible for issuing the report. FHIR: https://hl7.org/fhir/R5/diagnosticreport-definitions.html#DiagnosticReport.performer
presentedForms	Array of Attachment	The report content of the entire result as issued by the diagnostic service. Multiple presented forms are allowed, but they all must be semantically equivalent. FHIR: https://hl7.org/fhir/R5/diagnosticreport-definitions.html#DiagnosticReport.presentedForm
results	Array of ResultReference	References to Observation (Result) resources representing all results that are part of this

		diagnostic report. FHIR: https://hl7.org/fhir/R5/diagnosticreport-definitions.html#DiagnosticReport.result
provenances	Array of Provenance	Records that describe entities and processes involved in producing and delivering or otherwise influencing this resource. FHIR: NA
source	nullable Source	Metadata about this resource FHIR: NA
identifiers	Array of Identifier	Business identifiers assigned to this report by the performer or other systems. A business identifier is not the same as a resource identifier. FHIR: https://hl7.org/fhir/R5/diagnosticreport-definitions.html#DiagnosticReport.identifier
specimens	Array of SpecimenReference	Specimens on which this diagnostic report is based. FHIR: https://hl7.org/fhir/R5/diagnosticreport-definitions.html#DiagnosticReport.specimen
basedOns	Array of DiagnosticReportBasedOn	What requested the report. FHIR: https://hl7.org/fhir/R5/diagnosticreport-definitions.html#DiagnosticReport.basedOn
categories	Array of Code	Classifies the clinical discipline, department or diagnostic service that created the report (cardiology biochemistry hematology MRI etc). FHIR: https://hl7.org/fhir/R5/diagnosticreport-definitions.html#DiagnosticReport.category
conclusionCodes	Array of Code	One or more codes that represent the summary conclusion (interpretation/impression) of the diagnostic report. FHIR: https://hl7.org/fhir/R5/diagnosticreport-definitions.html#DiagnosticReport.conclusionCode

** DiagnosticReportBasedOn

FullName:

com.cerner.pophealth.program.models.avro.poprecord.DiagnosticReportBasedOn

Backbone element type providing the options for representing what requested the report. FHIR: <https://hl7.org/fhir/R5/diagnosticreport-definitions.html#DiagnosticReport.basedOn>

Field name	Type	Description
serviceRequest	nullable ServiceRequestReference	Reference to the ServiceRequest resource.

** DiagnosticReportEffective

FullName:

com.cerner.pophealth.program.models.avro.poprecord.DiagnosticReportEffective

A backbone element type providing the options for representing the time the

observed values are related to. Only one choice can be valued. FHIR:

https://hl7.org/fhir/R5/diagnosticreport-definitions.html#DiagnosticReport.effective_x

Field name	Type	Description
dateTime	nullable string	Valued when representing a date and optional time.
period	nullable Period	Valued when representing a period.

**

DiagnosticReportPerformer

FullName:

com.cerner.pophealth.program.models.avro.poprecord.DiagnosticReportPerformer

A backbone element type providing the options for representing the performs of the diagnostic service that is responsible for issuing the report. Only one resource choice can be valued. FHIR: <https://hl7.org/fhir/R5/diagnosticreport-definitions.html#DiagnosticReport.performer>

Field name	Type	Description
organization	nullable OrganizationLite	A contained organization resource.
provider	nullable ProviderPersonnelLite	A contained provider resource.
providerRole	nullable ProviderRole	A contained provider role resource.

**

DiagnosticServiceRequest

FullName:

com.cerner.pophealth.program.models.avro.poprecord.DiagnosticServiceRequest

The structure representing the record of a diagnostic investigation. The diagnostic service request provides important contextual information for potentially multiple individual related documents.

Field name	Type	Description
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empiPersonMetadata	nullable EmpiVersionedPersonId	Field contains meta information related to EMPI Person.
processingVersion	nullable string	The processing version, for which pipeline was ran, and data was produced. Format yyyy/MM/dd/HHmm
recordId	nullable RecordId	A structure representing a recordId from which this originated.
diagnosticServiceRequestId	string	An id that uniquely identifies the diagnostic service request in a source system.
uid	string	A unique identifier of the diagnostic service request across all partitions of the reference record.
personId	string	A unique identifier for the person who is associated with the diagnostic service request.
encounterId	nullable string	The identifier of the encounter or visit associated with the diagnostic service request.
code	Code	The code that indicates the type of diagnostic request or test.
specimen	nullable Specimen	A model representing a specimen on a diagnostic service request.
status	nullable Code	The status of the diagnostic service request.
actions	Array of DocumentAction	The persons or providers responsible for the contents of the diagnostic service request.
accession	nullable string	The accession number for the diagnostic service request.
reports	Array of DiagnosticDocumentReference	The list of reports for the diagnostic service request. A report is a reference to the clinical findings of the

		diagnostic tests performed on the patient.
source	nullable Source	Source information for the diagnostic service request.

** DispenserType

FullName: com.cerner.pophealth.program.models.avro.poprecord.DispenserType

An enumeration that identifies the dispenser type for a medication.

HOSPITAL_PHARMACY - medication dispensed through hospital pharmacy, most likely for inpatient but could be for outpatient as well.

INPATIENT_FLOOR_STOCK - medication dispensed and administered from floor stock, recorded for charging purpose. RETAIL_PHARMACY - medication that requires a provider's prescription dispensed at a retail pharmacy. OTC - medication requires no prescription dispensed at a retail pharmacy. OFFICE - prescribed medication dispensed at a clinical office.

Symbols
HOSPITAL_PHARMACY
INPATIENT_FLOOR_STOCK
RETAIL_PHARMACY
OTC
OFFICE
UNKNOWN
_NOT_VALUED
_NOT_RECOGNIZED

** DocumentAction

FullName:

com.cerner.pophealth.program.models.avro.poprecord.DocumentAction

A structure representing an action that can be taken on a document by an actor.

Field name	Type	Description
type	nullable Code	Type of action performed on the document such as dictate, authenticate, etc. This code could be the same as the document status since it is the cause of the status change. For example, an authentication action will cause the document to be authenticated.
date	nullable	The date the action was taken in ISO 8601 extended format.

	string	
actor	nullable ProviderPersonnelLite	The person who took the action on the document.

** DocumentReference

FullName:

com.cerner.pophealth.program.models.avro.poprecord.DocumentReference

A structure representing reference to a document. It provides most important information related to the document but not content of the document.

Field name	Type	Description
empiPersonMetadata	nullable EmpiVersionedPersonId	Field contains meta information related to EMPI Person.
processingVersion	nullable string	The processing version, for which pipeline was ran, and da Format yyyy/MM/dd/HHmm
documentId	string	An id that uniquely identifies document in a source system
uid	string	A unique identifier of the document across all partitions of
recordId	RecordId	A structure representing a recordId from which this is orig
documentReferenceUid	nullable string	An id that uniquely identifies a document reference for a pe partitions.
personId	string	A unique identifier for the person who is associated with th
encounterId	nullable string	The identifier of the encounter or visit associated with the
title	nullable string	DEPRECATED - replaced by title from the attachment. The document.
type	Code	The type of the document such as admission, discharge sur likely defined by LOINC or HL7 codingSystem.
statusConcepts	Array of OntologyConceptReference	A list of ontological concepts that represent the status, suc etc.
ontologicalCategoryAliases	Array of string	The aliases of the top level concept of an Ontological hierar categorization.
documentCategories	Array of Category	The list of categories to which the document is associated.

docStatus	nullable Code	The status of the document, such as dictated, authenticated, likely defined by LOINC or HL7 codingSystem. For a more c http://hl7.org/implement/standards/fhir/v3/DocumentCo
actions	Array of DocumentAction	Includes all actions taken on the document including authc and reviewers.
lastUpdateDate	nullable string	The last date and time that the document was updated in a way.The value should be in valid ISO 8601 extended format
serviceDate	nullable string	The clinically significant date and time associated with the value should be in valid ISO 8601 extended format.
active	boolean	DEPRECATED: This field is not used in the Pop Record and consumers. The field was incorrectly added and cannot be passivity reasons.
source	nullable Source	Source information for the document
authors	Array of DocumentAction	Authors of the document
authenticators	Array of DocumentAction	Providers or persons who sign,cosign and verify the docum
reviewers	Array of DocumentAction	Providers or persons who review the document
content	nullable Attachment	The content of the document
contents	Array of Content	A list of the contents of the document reference.
aliases	Array of Identifier	A list of unique identifiers to identify an associated object given system.
requester	nullable ProviderLite	DEPRECATED - This field leverages ProviderLite, use requ instead The provider who made the request.
requestingProvider	nullable ProviderPersonnelLite	The provider who made the request.
provenances	Array of Provenance	Records that describe entities and processes involved in pr delivering or otherwise influencing this documentReferenc
description	nullable string	Human-readable description of the source document.
dateTime	nullable string	When the document reference was created, in *ISO* 8601 f precision ranging from YYYY to YYYY-MM-DDThh:mm:ss.
servicePeriod	nullable	The clinically significant time period over which the servic

	Period	the document was provided.
securityLabels	Array of Code	A set of Security-Tag codes specifying the level of privacy of the document. This represents a snapshot of the security labels the reference refers to.
sensitiveAliases	Array of OntologyConceptReference	A list of ontological concepts derived from security labels. e.g. sensitive, etc.
partitionRecordRef	nullable PartitionRecordReference	Reference to the partition record containing this DocumentReference
patient	nullable PatientReference	Patient resource that this document reference is related to.
encounter	nullable EncounterReference	Encounter resource that this document reference is related to.
encounterUid	nullable string	A unique identifier for the encounter or visit associated with the document reference. This can be used to retrieve encounter information from the encounter service.
custodian	nullable DocumentReferenceCustodian	Organization responsible for ongoing maintenance of, and distribution of, the document. Typically this is the logical organization (e.g. software vendor, or department) to go to find the current version, etc.

** DocumentReferenceCustodian

FullName:

com.cerner.pophealth.program.models.avro.poprecord.DocumentReferenceCustodian

A choice backbone element providing the possible resource types that can represent the custodian of a document. Only one can be populated.

Field name	Type	Description
organization	nullable OrganizationLite	An organization resource.

** Dosage

FullName: com.cerner.pophealth.program.models.avro.poprecord.Dosage

An element type representing how a medication is/was taken or should be taken.

Field name	Type	Description
sequence	nullable int	Order of the dosage instructions. Applicable to tapered dosings.
text	nullable string	Free text dosage instructions (i.e. sig line). For example: "1 tab PO QD".
additionalInstructions	Array of CodeableConcept	Supplemental instructions to the patient on how to take the medication (e.g. "take with meals" or "take one hour before food") or warnings (e.g. "may cause drowsiness" or "avoid sunlight").
patientInstruction	nullable string	Instructions in terms that are understood by the patient or consumer.
timing	nullable EventTiming	When the medication should be administered.
asNeeded	nullable DosageAsNeeded	Indicates whether the medication is only taken when needed within a specific dosing schedule.
route	nullable Code	How the drug should enter the body (e.g. topical, oral).
dose	nullable DosageDose	Amount of medication per dose. The dose and rate collectively represent the ordered amount of medication administered.
rate	nullable DosageRate	Amount of medication per unit of time. The dose and rate collectively represent the ordered amount of medication administered.

** DosageAsNeeded

FullName:

com.cerner.pophealth.program.models.avro.poprecord.DosageAsNeeded

An element type providing a choice of representations for indicating whether the medication is only taken when needed. Only one element is valued.

Field name	Type	Description

bool	nullable boolean	Indicates whether the medication is only taken when needed within a specific dosing schedule.
codeableConcept	nullable Code	Indicates a precondition for taking the medication.

** DosageDose

FullName: com.cerner.pophealth.program.models.avro.poprecord.DosageDose

An element type providing a choice of representations of dosage amount per dose.

Field name	Type	Description
quantity	nullable Quantity	Dosage amount as a quantity.

** DosageRate

FullName: com.cerner.pophealth.program.models.avro.poprecord.DosageRate

An element type providing a choice of representations of dosage amount per unit of time.

Field name	Type	Description
quantity	nullable Quantity	Dosage rate as a quantity.

** Dose

FullName: com.cerner.pophealth.program.models.avro.poprecord.Dose

A structure representing dose of the Ingredient.

Field name	Type	Description
strength	Quantity	DEPRECATED - to be replaced by the doseStrength. The strength of the dosage. WARNING: This could be incorrect and contain Volume in the situation where Dose has only volume and no Strength.

doseStrength	nullable Quantity	The strength of the dosage.
volume	nullable Quantity	The volume of the administered dose.
quantity	nullable Quantity	The quantity of the administered dose.

** Drg

FullName: com.cerner.pophealth.program.models.avro.poprecord.Drg

A structure representing a standard diagnosis-related group (DRG).

Field name	Type	Description
empiPersonMetadata	nullable EmpiVersionedPersonId	Field contains meta information related to EMPI Person.
processingVersion	nullable string	The processing version, for which pipeline was ran, and data was produced. Format yyyy/MM/dd/HHmm
drgId	string	An id that uniquely identifies DRG in a source system.
recordId	nullable RecordId	A structure representing a recordId from which this is originated.
personId	string	The identifier of the person, provided by the data source, associated with the DRG.
encounterId	nullable string	The identifier of the encounter or visit associated with the DRG.
drgCode	Code	A code to classify the diagnosis-related group concept. The coding system could be MS-DRG for Medicare, AP-DRG for All Patient, APR-DRG for All Patient Refined, R-DRG for Refined.
uid	string	A unique id for a drg across the person reference record.
billingRank	BillingRankType	An enumerated value to identify the significance or priority of a

		DRG. Default to <u>NOT_RANKED</u> .
status	nullable Code	The status of the DRG, such as draft, final, or working.
recordedDate	nullable string	The date/time when the DRG was recorded/updated, as provided by the data source, in ISO 8601 format.
codingCompletedDate	nullable string	The date and time of when the DRG coding is completed, in ISO 8601 format
weight	nullable string	A numeric value representing weight of the DRG. This could either be a calculated value or a reference value provided by the source system.
gmlos	nullable string	A numeric value representing Geometric Mean Length of Stay. Used by CMS to develop fractional reimbursement for persons whose medical treatment takes a much longer or shorter time than average.
amlos	nullable string	A numeric value to represent the Arithmetic Mean Length of Stay (AMLOS). The sum of the length of stay for the patients divided by the number of patients.
estimatedReimbursement	nullable string	The total estimated reimbursement amount for a particular DRG.
severityOfIllness	nullable Code	Represents the extent of organ system loss or physiologic decompensation for a patient (for example Minor, Moderate, Major, or Extreme). The coding system could be APR-DRG for All Patient Refined or coding system defined by other DRG type.
riskOfMortality	nullable Code	Represents the medical classification to estimate the likelihood of death for a patient (for example Minor, Moderate, Major, or Extreme). The coding system could be APR-DRG for All Patient Refined or coding system defined by other DRG type.
codingProvider	nullable ProviderLite	The coding provider who took the action on the DRG.

source	nullable Source	Source information for the DRG.
drgType	nullable Code	A code to specify the type of DRG. The coding system could be Billing, Analysis, Working, Dual Coding, etc.
drgGrouperType	nullable string	The grouperType of the DRG. The different grouper types can be found in enum {@link DrgGrouperType} available in program-runtime version >= 1.61
supportingFact	nullable SupportingFact	The supporting fact that contributed to this DRG. i.e. which claim contributed to the creation of this DRG.
provenances	Array of Provenance	This describes entities and processes involved in producing and delivering or otherwise influencing a resource (e.g. DRG).

**** Drug**

FullName: com.cerner.pophealth.program.models.avro.poprecord.Drug

Field name	Type	Description
drugCode	Code	Codified drug, mostly in NDC 5-4-2 format (e.g. 12345-6789-01)
prescriptionNumber	nullable string	Drug Prescription Number
ingredientCost	nullable string	This is a non negative value and a string representation of BigDecimal number.
quantity	nullable string	This is a string representation of BigDecimal number.
unitOfMeasure	nullable Code	Code specifying the units in which a value is being expressed, or manner in which a measurement has been taken
therapeuticClass	nullable	Code represents drug classification based on their

	Code	chemical characteristics, structure and how they are used to treat specific disease.
daysSupply	nullable string	This is a string representation of BigDecimal number.
refillCount	nullable int	This is a non negative value.
refillIndicator	nullable boolean	An indication whether the claim represents a prescription refill as indicated by the data source.
numberOfScriptsDispensed	nullable int	A count of the number of instances of the prescription that were filled by this claim. This is a non negative value. Example: A prescription allows 4 refills and the patient has the Pharmacy dispense 2 instances of that prescription in one transaction, numberOfScriptsDispensed = 2
sourceGenericIndicator	GenericIndicator	An indicator if the drug is generic or brand name
drugReference	nullable ReferenceDrug	Reference details about this drug
linkSequenceNumber	nullable string	The link sequence number is a provider assigned number that is unique to this claim. Its purpose is to enable the receiver to piece together the components of the compound drug.
dispensingFeeAmount	nullable string	Dispensing fee submitted by pharmacy. Included in Gross Amount Due. This is the string representation of a decimal value.
dispenseAsWritten	nullable Code	Code indicating whether or not the prescriber's instructions regarding generic substitution were followed. It will hold values as 0 = No DAW, 1 = Physical DAW, 2 = Patient DAW, 3 = Pharmacy DAW, 4 = No generic in stock, 5 = Brand as generic, 6 = Override, 7 = Brand by law, 8 = Generic not available and 9 = Plan requests brand be dispensed.
payerSpecialtyDrugDesignation	nullable	Payer flagged products as specialty drug with possible values as N, Y.

	string	
payerMaintenanceDrugDesignation	nullable string	Payer flagged products as potential maintenance products with possible values as N, Y.
sourceAvailability	nullable Code	A code indicating whether a drug is a single-source (due to monopoly/patent) or if it has multi-source drug products (generics). It could hold alpha numeric value to represent multiple source, single source, etc.
drugCoveredByMedicarePart	nullable string	Indicates what Medicare benefit part (e.g., Medicare Part B or Medicare Part D) the drug was covered by If present, should match one of {B, D} B = Medicare Part B, D = Medicare Part D

** EffectiveTime

FullName: com.cerner.pophealth.program.models.avro.poprecord.EffectiveTime

A structure representing an interval of time or a point in time during which the administration took place (or did not take place if the administration was not given). For single administrations an individual date is appropriate. For continuous infusions, a period may better capture the start and stop time of the administration. Only one of the following fields can be set: administeredDate, administeredPeriod

Field name	Type	Description
administeredDate	nullable string	The date and time the medication was administered (or not given) to the patient. Should be in ISO-8601 extended format, with precision ranging from YYYY to YYYY-MM-DDThh:mm:ss.SSSZ (e.g. 1997 through 1997-07-16T19:20:00.000Z), though equivalent ISO-8601 basic is also allowed (e.g. YYYYMMDD).
administeredPeriod	nullable Period	The period of time of the administration took place. AdministeredPeriod may be appropriate for administrations of intravenous medication. If the end date element is missing, it may mean that the administration is ongoing.

** ElementExtension

FullName:
com.cerner.pophealth.program.models.avro.poprecord.ElementExtension

A special-purpose data type model representing an extension to a model element. The value of an element extension can be represented as different data types, but

only one value representation is allowed for a given element extension. FHIR: <https://hl7.org/fhir/R5/extensibility.html#Extension>, <https://hl7.org/fhir/R5/types-definitions.html#Element.extension> Due to limitations (recursive record inclusion) within Avro, there are cooresponding limitations to possible data types allowed to represent the value of the extension. This special-purpose data type model is similar to the `com.cerner.pophealth.refrecord.models.standard.Extension` data type model, with the difference being this data model is targeted at aligning with FHIR's element extension (<https://hl7.org/fhir/R5/types-definitions.html#Element.extension>).

Field name	Type	Description
extensionUri	nullable string	Identifies definition and meaning of the extension. FHIR: https://hl7.org/fhir/R5/extensibility-definitions.html#Extension.url
valueCanonical	nullable string	A canonical-based value, consisting of a URI that refers to a resource by its canonical URL. FHIR: https://hl7.org/fhir/R5/extensibility-definitions.html#Extension.value_x_ , https://hl7.org/fhir/R5/datatypes.html#canonical

** EmailAddress

FullName: `com.cerner.pophealth.program.models.avro.poprecord.EmailAddress`

A model containing attributes of an email address, including an optional type.

Field name	Type	Description
type	nullable Code	The type of the email address (e.g. personal, work).
address	string	The address of the email address. For example, "johndoe@gmail.com". This attribute is required.
effectivePeriod	nullable Period	The effective period for the email address.

** EmpiPersonChange

FullName: `com.cerner.pophealth.program.models.avro.poprecord.EmpiPersonChange`

A model representing a Deprecated EmpiPerson

Field name	Type	Description
ancestor	EmpiVersionedPersonId	A person who has undergone changes.

descendants	Array of EmpiVersionedPersonId	The Descendants to deprecated empVersion
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** EmpiVersionedPersonId

FullName:
com.cerner.pophealth.program.models.avro.poprecord.EmpiVersionedPersonId

A model representing a EmpiPerson with a version

Field name	Type	Description
empiPersonId	string	The Empi Person Id that identifies EMPI person.
empiVersion	long	The Empi System Version of the identified person
empiPersonVersion	long	The Empi Person Version of the identified person

** Employment

FullName: com.cerner.pophealth.program.models.avro.poprecord.Employment

A model representing an instance of employment.

Field name	Type	Description
empiPersonMetadata	nullable EmpiVersionedPersonId	Field contains meta information related to EMPI Person.
processingVersion	nullable string	The processing version, for which pipeline was ran, and data was produced. Format yyyy/MM/dd/HHmm
recordId	nullable RecordId	A structure representing a recordId from which this is originated.
employmentId	nullable string	The unique employment Id within a given partition.
uid	string	A unique identifier of the employment across all partitions of the reference record.
employer	OrganizationLite	The employer organization.
personId	string	Represents ID of the person that is tied to the employment.
beginDate	nullable	The employment begin date and time. The date and time should be in

	string	ISO-8601 extended format, with precision ranging from YYYY to YYYY-MM-DDThh:mm:ss.SSSZ (e.g. 1997 through 1997-07-16T19:20:00.000Z), though equivalent ISO-8601 basic is also allowed (e.g. YYYYMMDD).
endDate	nullable string	The employment end date and time. The date and time should be in ISO-8601 extended format, with precision ranging from YYYY to YYYY-MM-DDThh:mm:ss.SSSZ (e.g. 1997 through 1997-07-16T19:20:00.000Z), though equivalent ISO-8601 basic is also allowed (e.g. YYYYMMDD).
occupationCode	nullable Code	A code qualifying the classification of kind-of-work based upon a recognized industry or jurisdictional standard. Occupation Code is used to convey the person's occupation as opposed to job code which characterizes this particular job. Occupation codes are intended primarily as work descriptions that are suitable for a multitude of public uses e.g., job matching, employment counseling, occupational and career guidance, and labor market information services.
employmentStatus	nullable Code	A value specifying the state of this employment relationship, for example, active, suspended, terminated.
source	nullable Source	Source information for the employment data.
location	nullable LocationLite	The work location of the person that is tied to the employment. This is not the location of the company's HQ.
address	nullable Address	Address of the work location.
workSchedule	nullable Code	A value specifying the person's arrangement of working hours, such as, full time, part time.

**

Encounter

FullName: com.cerner.pophealth.program.models.avro.poprecord.Encounter

A model representing an encounter (typically an episode of care).

Field name	Type	Description
empiPersonMetadata	nullable EmpiVersionedPersonId	Field contains meta information related to EMPI Person.
processingVersion	nullable string	The processing version, for which pipeline was ran, and data was produced. Format yyyy/MM/dd/HHmm
recordId	RecordId	A structure representing a recordId from which this is originated.
encounterId	nullable string	An id that uniquely identifies this Encounter for a person within the same data partition.
encounterUid	nullable string	A unique identifier for the encounter or visit. This can be used for other services to retrieve encounter specific information.
uid	string	A unique identifier of the encounter across all partitions of the reference record.
personId	string	The id of the patient associated with the encounter as provided by the data source.
reasonForVisit	nullable Code	DEPRECATED - To get the reasonForVisit, need to look at reasonCodes. The provider's description of the reason for visit.
reasonForVisitFreeText	nullable string	DEPRECATED - To get the reasonForVisitFreeText, need to look at reasonCodes. The provider's description of the reason for visit.
reasonCodes	Array of CodeableConcept	Reasons the encounter took place.
financialClass	nullable Code	Financial class for the encounter. Indicates if the patient has HMP, PPO, Medicaid, Self-Pay etc.
facility	nullable LocationLite	DEPRECATED - To get the most recent facility, need to look at the first item in the encounterLocations. The facility where the encounter occurred.
building	nullable LocationLite	DEPRECATED - To get the most recent building, need to look at the first item in the encounterLocations. The building where the encounter occurred.
serviceDeliveryLocation	nullable LocationLite	DEPRECATED - To get the most recent serviceDeliveryLocation, need to look at the first item in the encounterLocations. The service delivery location where the encounter occurred. Can be a nursing unit in an inpatient setting or an office in an ambulatory setting.

hospitalService	nullable Code	DEPRECATED - To get the most recent hospitalService, need to look at the first item in the encounterHospitalServices. The most recent hospital service provided during the encounter. If the Encounter is ongoing, it represent the service currently rendered to the patient. If the patient is discharged, it represents the service rendered at the time of discharge
classification	nullable Code	DEPRECATED - To get the most recent type, need to sort encounterTypes in descending order by beginDate and look at the first item. Classification of the encounter.
type	nullable Code	DEPRECATED - To get the most recent type, need to sort encounterTypes in descending order by beginDate and look at the first item. The type of the encounter. Examples: Inpatient, Outpatient and Recurring patient.
dischargeDisposition	nullable Code	The disposition of the patient at discharge of the encounter.
dischargeToLocation	nullable Code	The location that the patient was discharged to.
organization	nullable OrganizationLite	DEPRECATED - use serviceProviderOrg instead The organization that "owns" this encounter.
relatedProviders	Array of ProviderRelationship	A list of related providers to this encounter.
encounterNumber	nullable string	DEPRECATED - The encounterNumber is available in the aliases array A number that typically uniquely identifies this encounter to billing systems. This number usually can be found on claims or other bills.
admissionSource	nullable Code	The place the patient came from before being admitted to the current location. This typically applies to inpatient encounters where the patient was transferred from another hospital.
readmission	nullable boolean	Indicates whether this encounter represents a re-admission of the patient from a previous encounter.
serviceDate	string	The service date and time of the encounter. In an inpatient setting, this date represents when the patient was registered. Otherwise it represents the date of the service. The date and time will be in the ISO 8601 standard format.
dischargeDate	nullable string	The date and time the patient was discharged. The date and time will be in the ISO 8601 standard format.

source	nullable Source	The information related to source.
benefitCoverages	Array of BenefitCoverage	A list of Benefit coverages sorted based on priorityRank for the person/patient involved in the encounter
locations	Array of EncounterLocation	A list of all locations the patient was at during the encounter and duration of stay at those locations. Locations are sorted in descending order by beginDate.
hospitalServices	Array of EncounterService	A list of all services rendered during the Encounter and the duration of when they were rendered. Services are sorted in descending order by beginDate.
admissionType	nullable Code	A variety of codes explaining the priority of the admission to a medical facility (Elective, Emergent, Routine).
status	nullable Code	The status of the encounter. Indicates if it is active, hold, discharged, cancelled etc
statusConcepts	Array of OntologyConceptReference	A list of ontological concepts that represent the status, such as Active, Inactive, etc.
estimatedArrivalDate	nullable string	The estimated arrival date and time of the encounter. In an inpatient setting, this date represents when the patient is expected to arrive. The date and time should be in ISO-8601 extended format, with precision ranging from YYYY to YYYY-MM-DDThh:mm:ss.SSSZ (e.g. 1997 through 1997-07-16T19:20:00.000Z), though equivalent ISO-8601 basic is also allowed (e.g. YYYYMMDD).
estimatedDepartureDate	nullable string	Encounter.estimatedDepartureDate represents the discharge date (for inpatient) or departure date (for outpatient) whereas the EncounterLocation.estimatedDepartureDate represents when the patient is expected to leave that location. The date and time should be in ISO-8601 extended format, with precision ranging from YYYY to YYYY-MM-DDThh:mm:ss.SSSZ (e.g. 1997 through 1997-07-16T19:20:00.000Z), though equivalent ISO-8601 basic is also allowed (e.g. YYYYMMDD).
actualArrivalDate	nullable string	The actual arrival date and time of the encounter. In an inpatient setting, this date represents when the patient is registered. Otherwise it represents the date of the service. The date and time should be in ISO-8601 extended format, with precision ranging from YYYY to YYYY-MM-DDThh:mm:ss.SSSZ (e.g. 1997 through 1997-07-16T19:20:00.000Z), though equivalent ISO-8601 basic is also allowed (e.g. YYYYMMDD).
summaryPersonRecordUid	nullable string	Optional summaryPersonRecord uid for the Encounter. This represents that the Encounter was extracted from the SummaryPersonRecord on the same pop record

encounterTypes	Array of EncounterType	A list of encounterType to reflect encounter type change history. Encounter types are sorted in descending order by beginDate.
aliases	Array of EncounterId	The aliases (i.e. IDs) of the encounter. Examples are Financial Number, Encounter MRN, etc.
hospitalizationStartDate	nullable string	Indicates the date and time on which a patient was admitted to the hospital. The date and time should be in ISO-8601 extended format, with precision ranging from YYYY to YYYY-MM-DDThh:mm:ss.SSSZ (e.g. 1997 through 1997-07-16T19:20:00.000Z), though equivalent ISO-8601 basic is also allowed (e.g. YYYYMMDD).
serviceProviderOrg	nullable OrganizationLite	The facility where the encounter has occurred.
category	nullable Category	Category to which the encounter is associated with. It will always be null for regular encounters but it can be null or have value for InferredEncounters.
supportingFacts	Array of SupportingFact	A collection of Supporting Facts (Claims Service line and/or Encounter Information), which forms a single InferredEncounter (DerivedEncounter). It will be only populated if its an InferredEncounter (DerivedEncounter) and will be empty if its regular Encounter. If this is a Claim Service Line then the entityId will be the Claim uid.
contributingCodes	Array of Code	This field will be used only for InferredEncounters. List of contributing Code(s) indicating what type of InferredEncounter, this record represents. We need to pass all Code(s), which corresponds to Concept, as it is needed by Synapse for doing Client specific Ontology look up when necessary. Possible standard codes include XXXXX (INPATIENT), XXXXXX (OUTPATIENT) The field can be empty as well.
provenances	Array of Provenance	Records that describe entities and processes involved in producing and delivering or otherwise influencing this encounter.
partitionRecordRef	nullable PartitionRecordReference	Reference to the partition record containing this encounter.
patient	nullable PatientReference	Patient resource that this encounter is related to.

** EncounterGroup

FullName:
com.cerner.pophealth.program.models.avro.poprecord.EncounterGroup

A model representing a group of Encounters that are related.

Field name	Type	Description
personId	nullable string	A unique identifier for the person whom the encounter group is associated with.
encounterGroupId	string	The id of the group.
encounters	Array of Encounter	The collection of encounters that make up the group.
source	nullable Source	Source information for the encounter group.

** EncounterId

FullName: com.cerner.pophealth.program.models.avro.poprecord.EncounterId

A model representing an ID of an encounter. At least one of the "type, assigningAuthority" fields should be set non-null

Field name	Type	Description
type	nullable Code	The type of the encounter ID. Examples: Financial Number, Encounter MRN, etc.
value	string	The value of the ID.
assigningAuthority	nullable string	The assigning authority of the ID. It is strongly preferred that the assigning authority be an OID.
computationalValue	nullable string	This represents a unique value in the system and could be used for computational mapping (eg removing non-significant whitespace, dashes, etc)
renderedValue	nullable string	Provides a rendered version of the value intended for human display. For example, a sensitive identifier (e.g. social security number) partially obscured by asterisks; a drivers licence number with dashes inserted.

** EncounterLocation

FullName:
com.cerner.pophealth.program.models.avro.poprecord.EncounterLocation

A model representing the patient's stay at a location during the Encounter. At least one of the "facility", "building", "nurseUnit", "room", "bed", "serviceDeliveryLocation" fields should be set.

Field name	Type	Description
facility	nullable LocationLite	The facility of the encounter location
building	nullable LocationLite	The building of the encounter location
nurseUnit	nullable LocationLite	The nurse unit where the encounter occurred. This only applies to inpatient setting.
room	nullable LocationLite	The room of the encounter location
bed	nullable LocationLite	The bed the patient was in during the Encounter
serviceDeliveryLocation	nullable LocationLite	The service delivery location where the encounter occurred. Can be a nursing unit in an inpatient setting or an office in an ambulatory setting.
serviceProviderOrg	nullable OrganizationLite	The service provider's organization is the custodian of this encounter record and is in charge of maintaining the information of this encounter. The organization responsible for the place of service can be different than the service provider's organization.
beginDate	nullable string	The encounter's begin date and time at the location. In ISO-8601 extended format, with precision ranging from YYYY to YYYY-MM-DDThh:mm:ss.SSSZ (e.g. 1997 through 1997-07-16T19:20:00.000Z)
endDate	nullable string	The encounter end date and time at the location. In ISO-8601 extended format, with precision ranging from YYYY to YYYY-MM-DDThh:mm:ss.SSSZ (e.g. 1997 through 1997-07-16T19:20:00.000Z)
estimatedDepartureDate	nullable string	The estimated Departure date and time of the encounter location. EncounterLocation.estimatedDepartureDate represents when the patient is expected to leave that location whereas the Encounter.estimatedDepartureDate represents the discharge date (for inpatient) or departure date (for outpatient). The date and time should be in ISO-8601 extended format, with precision ranging from YYYY

to YYYY-MM-DDThh:mm:ss.SSSZ (e.g. 1997 through 1997-07-16T19:20:00.000Z), though equivalent ISO-8601 basic is also allowed (e.g. YYYYMMDD).

** EncounterReference

FullName:

com.cerner.pophealth.program.models.avro.poprecord.EncounterReference

Choice data type providing options to reference a resource. Only one option can be populated.

Field name	Type	Description
partitionRecordRef	nullable PartitionRecordReference	Reference to a partition record containing the resource. This reference option is similar to FHIR's literal reference. Use this option whenever the referenced resource has independent identity in a partition record and the required identification elements of that resource are known.
identifier	nullable EncounterId	Reference to the resource by identifier. This reference option is similar to FHIR's logical reference. Use this option when an identifier for the referenced resource is known, but a literal reference (i.e. 'partitionRecordRef') cannot be determined.

** EncounterService

FullName:

com.cerner.pophealth.program.models.avro.poprecord.EncounterService

Field name	Type	Description
encounterUid	nullable string	An id that uniquely identifies an Encounter to the EncounterService for a person across all data partitions.
service	Code	The hospital service provided during the encounter.
beginDate	nullable string	The begin date time of the service. In ISO-8601 extended format, with precision ranging from YYYY to YYYY-MM-DDThh:mm:ss.SSSZ (e.g. 1997 through 1997-07-16T19:20:00.000Z)
endDate	nullable string	The end date time of the service. In ISO-8601 extended format, with precision ranging from YYYY to YYYY-MM-DDThh:mm:ss.SSSZ (e.g. 1997 through 1997-07-16T19:20:00.000Z)

** EncounterType

FullName: com.cerner.pophealth.program.models.avro.poprecord.EncounterType

A model representing the type of the Encounter

Field name	Type	Description
type	Code	The type of the encounter. Examples: Inpatient, Outpatient and Recurring patient.
classification	nullable Code	Classification of the encounter. Examples: Inpatient, Outpatient.
ontologicalTypeAliases	Array of string	The aliases of the top level concept of an Ontological hierarchy.
beginDate	nullable string	The start of the effective time period for the encounter type. In ISO-8601 extended format, with precision ranging from YYYY to YYYY-MM-DDThh:mm:ss.SSSZ (e.g. 1997 through 1997-07-16T19:20:00.000Z)
endDate	nullable string	The end of the effective time period for the encounter type. In ISO-8601 extended format, with precision ranging from YYYY to YYYY-MM-DDThh:mm:ss.SSSZ (e.g. 1997 through 1997-07-16T19:20:00.000Z)

** EpisodeOfCare

FullName: com.cerner.pophealth.program.models.avro.poprecord.EpisodeOfCare

A structure representing an episode of care for a person. Episodes of care detail an association between a patient and a provider or organization over a period of time where the Healthcare Provider has some level of responsibility for the care of the patient regarding a specific condition or problem, even if not currently participating in an encounter. The primary difference between the EpisodeOfCare and the Encounter is that the Encounter records the details of an activity directly relating to the patient, while the EpisodeOfCare is the container that can link a series of Encounters together for a specific problem or issue. An EpisodeOfCare is alternatively known as a case.

Field name	Type	Description
empiPersonMetadata	nullable EmpiVersionedPersonId	Field contains meta information related to EMPI Person.
processingVersion	nullable string	The processing version, for which pipeline was ran, and data was produced. Format yyyy/MM/dd/HHmm
recordId	nullable	A structure representing a recordId

	RecordId	from which this is originated.
episodeOfCareId	string	An identifier that uniquely identifies the episode of care. An example might be the FIN number or case number.
personId	string	The identifier of the person, provided by the data source, associated with the episode of care.
encounterIds	Array of string	A collection of encounterIds related to the episode of care.
uid	string	A unique id for an episode of care across the person reference record.
careManager	nullable ProviderPersonnelLite	The person assigned as the care manager for the patient.
currentStatus	nullable Code	The current status of the episode of care. Possible statuses may include Planned, Enrolled, Active, Closed.
type	nullable Code	The specific type of episode of care. Examples include maternity, pediatric, care coordination, complex care, etc.
statusHistory	Array of StatusPeriod	A list of statuses and associated dates used to capture several significant periods of a episode of care. Examples include the assigned date, enrollment date, and closure date.
enrollmentDate	nullable string	The initial date on which the patient agreed to be enrolled and responsibility was assumed by the Organization for this episode of care. Putting the case in an Enrolled status doesn't always coincide with the date the patient actually agreed to be enrolled. The enrollment date will only ever be one date, but the dates the case was moved back and forth in statuses show more of the history of changes to the case. In ISO-8601 extended format, with precision ranging from YYYY to YYYY-MM-DDThh:mm:ss.SSSZ (e.g. 2017 through 2017-06-06T24:00:00.000Z)
closureReason	nullable Code	The reason the episode of care was closed or canceled.
referralRequestIds	Array of string	A collection of referral request ids related to the episode of care.
source	nullable Source	Source information for the episode of care.
priority	nullable	A code indicating the urgency or

	Code	importance of the case.
referralRequestUids	Array of string	A collection of referral request unique ids related to the episode of care.

** EventTiming

FullName: com.cerner.pophealth.program.models.avro.poprecord.EventTiming

Data type representing the occurrence of an event that may occur multiple times. FHIR: <https://hl7.org/fhir/R5/datatypes.html#Timing>

Field name	Type	Description
repeat	nullable EventTimingRepeat	A set of rules that describe when the event is scheduled (i.e. When the event occurs). FHIR: https://hl7.org/fhir/R5/datatypes-definitions.html#Timing.repeat
code	nullable Code	Code for the timing schedule (e.g. two times a day, three times a day, every morning, every evening). Sometimes referred to as the "frequency code" (e.g. C BID TID QID AM PM QD QOD). FHIR: https://hl7.org/fhir/R5/datatypes-definitions.html#Timing.code
event	Array of string	Identifies specific times when the event occurs. FHIR: https://hl7.org/fhir/R5/datatypes-definitions.html#Timing.event

** EventTimingRepeat

FullName: com.cerner.pophealth.program.models.avro.poprecord.EventTimingRepeat

An element type representing when an event occurs. FHIR: <https://hl7.org/fhir/R5/datatypes-definitions.html#Timing.repeat>

Field name	Type	Description
bounds	nullable EventTimingRepeatBounds	Either a duration for the length of the timing schedule, a range of possible length, or outer bounds for start and/or end limits of the timing schedule. FHIR: https://hl7.org/fhir/R5/datatypes-definitions.html#Timing.repeat.bounds_x_
count	nullable int	A total count of the desired number of repetitions across the duration of the entire timing specification. Expected to be a positive integer. FHIR: https://hl7.org/fhir/R5/datatypes-definitions.html#Timing.repeat.count

duration	nullable Quantity	How long the this thing happens for when it happens. Commonly used for describing IV infusion that take place over a duration of time. When duration.value is valued, duration.units is also expected to be valued FHIR: https://hl7.org/fhir/R5/datatypes-definitions.html#Timing.repeat.duration Future Consideration: If duration needs to support a range (e.g. FHIR's Timing.repeat.durationMax), then likely a 'durationMax' element should be added
frequency	nullable int	The number of times to repeat the action within the specified period (i.e. an event occurs 'frequency' times per 'period'). Expected to be a positive integer. FHIR: https://hl7.org/fhir/R5/datatypes-definitions.html#Timing.repeat.frequency
period	nullable Quantity	Indicates the duration of time over which repetitions are to occur. Example: "3 times per day" - Timing.repeat.frequency = 3, Timing.repeat.period.value = 1, Timing.repeat.period.units = 'day' When period.value is valued, period.units is also expected to be valued FHIR: https://hl7.org/fhir/R5/datatypes-definitions.html#Timing.repeat.period Future Consideration: If period needs to support a range (e.g. FHIR's Timing.repeat.periodMax), then likely a 'periodMax' element should be added

** EventTimingRepeatBounds

FullName:

com.cerner.pophealth.program.models.avro.poprecord.EventTimingRepeatBounds

Backbone element type representing the options for representing the bounds of an timing repeat. FHIR: https://hl7.org/fhir/R5/datatypes-definitions.html#Timing.repeat.bounds_x_x

Field name	Type	Description
duration	nullable Quantity	Use if bounds is a duration (e.g. 14 days).
period	nullable Period	Use if bounds is a period of time (e.g. start / stop dates).

** FormType

FullName: com.cerner.pophealth.program.models.avro.poprecord.FormType

An enumeration indicating the Form or Type of Claim. e.g. I = Institutional, P = Professional, D = Dental, Rx = Pharmacy

Symbols
I
P
D
Rx
_NOT_RECOGNIZED

** FreeBusyType

FullName: com.cerner.pophealth.program.models.avro.poprecord.FreeBusyType

An enumeration that identifies a free or busy type status for an appointment.

Symbols
BUSY
FREE
UNAVAILABLE
TENTATIVE
_NOT_RECOGNIZED
_NOT_VALUED

** GenericIndicator

FullName:
com.cerner.pophealth.program.models.avro.poprecord.GenericIndicator

An enumeration for Pharmacy Claim Generic Indicators. e.g. G = Generic, B = Brand, BF = Brand Formulary, BNF = Brand Non-Formulary, U = Unknown, _NOT_VALUED = No value present

Symbols
G
B
BF
BNF
U
_NOT_VALUED
_NOT_RECOGNIZED

**

GenericRiskScore

FullName:

com.cerner.pophealth.program.models.avro.poprecord.GenericRiskScore

A structure representing a risk score for a patient, such as a readmission risk score. This model will be used for both the current risk score and historical risk scores calculated over time. Only value or normalizedValue will be populated.

Field name	Type	Description
empiPersonMetadata	nullable EmpiVersionedPersonId	Field contains meta information related to EMPI Person.
processingVersion	nullable string	The processing version, for which pipeline was ran, and data was produced. Format yyyy/MM/dd/HHmm
recordId	nullable RecordId	A structure representing a recordId from which this is originated.
riskScoreId	string	An id that uniquely identifies risk score in a source system. Note: For some risk score types, such as Readmission risk scores, each change to the score yields a new identifier.
personId	string	The identifier of the person, provided by the data source, associated with the risk score.
uid	string	A unique id for a risk score across the person reference record.
encounterId	nullable string	The identifier of the encounter or visit associated with the risk score.
type	RiskScoreType	DEPRECATED: Consumers should use riskScoreType. The type of the risk score. Default value is "Readmission"
value	nullable string	The numeric value of the risk score. This can be a decimal value for risk, which is represented as a string.
normalizedValue	nullable string	The numeric value of the normalized risk score. This can be a decimal value for risk, which is represented as a string.
interpretation	nullable Code	Indicates whether the risk score value is very high, high, moderate, low, or very low.

recordedDate	nullable string	The date/time when the risk score was created/recorded, as provided by the data source, in ISO 8601 format. The date can be only of type ISO_DATE_AND_TIME
typeCode	nullable Code	Indicates the Risk Score type code.
effectivePeriod	nullable Period	Indicate the period of time of the person to which the riskScore applies. Should be in ISO-8601 extended format, with precision ranging from YYYY-MM-DDThh:mm:ss.SSSZ (e.g. 1997 through 1997-07-16T19:20:00.000Z)
method	nullable Code	Field indicated, the evaluation mechanism used to calculate the RiskScore, such as Mara, Verisk, etc.
source	Source	Source information for the risk score.
active	boolean	DEPRECATED: This field is not used in the Pop Record and should be ignored by consumers. The field was incorrectly added and cannot be removed for passivity reasons.
riskScoreType	nullable string	Identifies the type of risk score. Populated by converting RiskScoreType Enum from ref-record model into String type. It can only have READMISSION, BMI, CHOLESTEROL, BLOOD_PRESSURE, EXERCISE, BLOOD_GLUCOSE, DRUG_ALCOHOL, EMOTIONAL, NUTRITIONAL, PREVENTIVE_HEALTH, SAFETY, TOBACCO, MARA_TOTAL, HRA, ACUITY, _NOT_RECOGNIZED
supportingFacts	Array of SupportingFact	A list of supporting facts that relate Questionnaire, Questionnaire Group, etc.
medicarePaymentPeriod	nullable Period	The Medicare payment period associated with the risk score. This period is relevant for risk scores used to risk adjust payments made by CMS to health plans. e.g., Risk Adjustment Factor (RAF) risk scores used to risk adjust monthly CMS payments to Medicare Advantage plans will pertain to a particular payment period.
provenances	Array of Provenance	Records that describe entities and processes involved in producing and delivering or otherwise influencing this Risk Score.

** Goal

FullName: com.cerner.pophealth.program.models.avro.poprecord.Goal

An intended objective that a person or system envisions, plans, and commits to achieve. Goals can be measurable and may include a finite amount of time to achieve them.

Field name	Type	Description
goalId	nullable string	An id that uniquely identifies the goal in a source system.
description	nullable string	The textual description of the goal provided by the data source.
status	nullable Code	Indicates whether the goal has been met and is still being targeted. Possible statuses may include met, not met, proposed, in progress, etc.
category	nullable Code	High-level categorization of the type of goal. Examples may include safety, nutrition, behavior, heart failure, etc.
informant	Informant	An enumeration that identifies who is responsible for the creation of the goal. Examples include a clinician or patient. It has a default value of <code>_NOT_VALUED</code> which indicates no value present.
effectivePeriod	nullable Period	The time period for when the goal did (or is intended to) come into effect and end. The end date is an estimated or expected time for the goal to end and not an actual completion time. In ISO-8601 extended format, with precision ranging from YYYY to YYYY-MM-DDThh:mm:ss.SSSZ (e.g. 1997 through 1997-07-16T19:20:00.000Z)
barriers	Array of Alert	A list of barriers associated with the goal. Barriers are any factor that may affect how a patient is able to meet or complete a goal. Barriers are defined by the alert model as alerts document risks and concerns relevant for a person's care.
activityIds	Array of string	A list of activities associated with the goal. Activities included in the list imply they further the objectives of the goal.
comments	Array of Comment	Textual comments associated with the goal.

** Grouper3MCode

FullName:
com.cerner.pophealth.program.models.avro.poprecord.grouper.Grouper3MCode

A model representing 3M code.

Field name	Type	Description
processedValues	Array of string	The list of processed values (i.e.: transformation of the raw). Sometimes the processedValue is not equal to the Grouper3MCode.rawValue. Example: - Grouper3MCode.rawValue: "08,01,03" (string) - processedValues: 3 elements representing values 08, 01 and 03 respectively. Sometimes this field will equal to rawValue. This means splitting was not needed. Example: - Grouper3MCode.rawValue: "08" (string) - processedValues: 1 string element of "08".
occurrence	nullable int	The occurrence associated to processedValues, for this Grouper3MCode.
description	nullable string	The description from a source (i.e.: 3m, UCA) associated to the code.
rawValue	nullable string	The raw value from 3m associated to the code. This field represents the pre-processed value, which helps troubleshoot the processedValue.
returnCode	nullable int	The return code value from 3m associated to the code. This field helps troubleshoot the Grouper3MCode.
grouperOutputApiName	nullable string	Represents the field name recognized by the output API in 3M Groupers. Example value: PpcOut__DiagnosisRiskOfMortalityLevel

** HealthPlanClass

FullName:

com.cerner.pophealth.program.models.avro.poprecord.HealthPlanClass

Classifications of the coverage for which a number and/or name is provided. For example, may be used to identify policy name, policy number, group name, group number, product name, product id etc. At least one of the values must be present (i.e. "name", "value")

Field name	Type	Description
type	nullable Code	Type of classifier, such as policy or group.
value	nullable string	Value associated with the classifier. For example, when type is group, then this is the group number. When type is policy, then this is the policy number. When type is product, then it is the product id.

name	nullable string	A short description for the class. For example, when type is group, then this is the group name. When type is policy, then this is the policy name. When type is product, then it is the product name.
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** Identifier

FullName: com.cerner.pophealth.program.models.avro.poprecord.Identifier

A record used to identify an associated object or entity within a given system.

Field name	Type	Description
value	nullable string	A unique value used to identify an entity.
system	nullable string	The namespace for the identifier value.

** Immunization

FullName: com.cerner.pophealth.program.models.avro.poprecord.Immunization

A structure representing an immunization.

Field name	Type	Description
empiPersonMetadata	nullable EmpiVersionedPersonId	Field contains meta information related to EMPI Person.
processingVersion	nullable string	The processing version, for which pipeline was ran, and data was produced. Format yyyy/MM/dd/HHmm
recordId	nullable RecordId	A structure representing a recordId from which this is originated.
immunizationId	nullable string	An id that uniquely identifies this Immunization for a person within the same data partition.
immunizationUid		A unique identifier for the

	nullable string	recorded immunization.
uid	string	An identifier that uniquely identifies the immunization across all partitions of the population record.
claimUid	nullable string	Optional claim uid for the immunization. This represents that the immunization was extracted from the Claim on the same pop record
summaryPersonRecordUid	nullable string	Optional summaryPersonRecord uid for the Immunization. This represents that the Immunization was extracted from the SummaryPersonRecord on the same pop record
personId	string	A unique identifier for the person for whom the immunization was ordered or administered. This may also represent person EMPI ID.
encounterId	nullable string	The identifier of the encounter or visit associated with the immunization.
encounterUid	nullable string	A unique identifier for the encounter or visit associated with the recorded immunization. This can be used to retrieve encounter specific information from the encounter service.
immunizationCode	nullable Code	The codified value representing the immunization, such as a CVX or CPT code. If null then description field will have free text description of the Immunization.
statusConcepts	Array of OntologyConceptReference	A list of ontological concepts that represent the status, such as Active, Inactive, etc.
description	nullable string	The textual description of the immunization.
immunizationDate	nullable string	The date and time the immunization was administered or was planned to be administered, but was not given (e.g. refused, contraindicated), in ISO 8601 datetime format.

drugCode	nullable Code	A codified representation of the actual drug that was administered for the immunization.
route	nullable Code	Represents the route by which the immunization was administered. For example, orally, intravenously, etc.
doseQuantity	nullable string	The dose quantity for the drug that was ordered or administered. Cannot be Negative. This is a string representation of BigDecimal number.
doseUnit	nullable Code	The codified unit of measure associated with the dose quantity.
manufacturer	nullable Code	The codified manufacturer of the vaccine, for example an MVX code.
lot	nullable string	The lot number of the drug or vaccine administered.
status	nullable Code	The current status of the immunization, such as Completed or Refused.
performers	Array of Performer	The Ordering and Administering performers associated with an immunization.
primarySource	nullable boolean	An indication that the content of the record is based on information from the person who administered the vaccine. This reflects the context under which the data was originally recorded.
associatedProvider	nullable ProviderPersonnelLite	The provider associated with the immunization. This could be the ordering, performing, or last updating provider.
refusalIndicator	nullable boolean	DEPRECATED - givenIndicator should be used instead of this Indicates that the immunization was offered but was refused by the person.
givenIndicator	boolean	Indicates that the immunization was taken by

		the person.
refusalReason	nullable Code	DEPRECATED - The reasonNotGiven should be used instead of this A coded representation of the reason for refusal of the immunization or the exemption reason.
reasonNotGiven	nullable Code	A coded representation of the reason for not giving the immunization.
comments	Array of Comment	Textual comments associated with the immunization, which could include a reason for exemption or refusal.
source	nullable Source	The information related to source.
updateDateTime	nullable string	ISO8601 timestamp indicating the point in time when data was last updated. New data (from metadata) holds a millisecond precision. Existing legacy data will hold a second precision. Format: YYYY-MM-DDThh:mm:ssZ or YYYY-MM-DDThh:mm:ss.SSSZ
updatePersonnelId	nullable string	Identifier of the Personnel responsible for the last update.
immunizationCategories	Array of Category	The list of categories that the immunization is associated with, such as Hepatitis A Vaccine etc.
supportingFact	nullable SupportingFact	A supporting fact that relates entities to the immunization. For example, a claim service line is a supporting fact that can be used to infer the immunization event occurred.
aliases	Array of Identifier	A list of unique identifiers to identify an associated object or entity within a given system.
provenances	Array of Provenance	Records that describe entities and processes involved in producing and delivering or otherwise influencing this immunization.
partitionRecordRef	nullable PartitionRecordReference	Reference to the partition record containing this immunization.

patient	nullable PatientReference	Patient resource that this immunization is related to.
encounter	nullable EncounterReference	Encounter resource that this immunization is related to.

** InfoCode

FullName: com.cerner.pophealth.program.models.avro.poprecord.InfoCode

Define health care information codes and their associated dates, amounts and quantities

Field name	Type	Description
code	Code	
monetaryAmount	nullable string	This is a string representation of BigDecimal number.
date	nullable string	ISO 8601 Date Format Only, YYYY-MM-DD.
presentOnAdmissionIndicator	PresentOnAdmission	DEPRECATED: Use codified `presentOnAdmission` field instead. Present on Admission Indicator, e.g. N = No, U = Unknown, W = Not Applicable, Y = Yes, <u>NOT</u> VALUED = No value present
presentOnAdmission	nullable Code	A code indicating if the health care info code is present on admission. Possible standard codes include SNOMED CT 373066001 (Yes), 373067005 (No), 261665006 (Unknown)

** Informant

FullName: com.cerner.pophealth.program.models.avro.poprecord.Informant

An enumeration that identifies the person who reported information that contributed to the resource.

Symbols

SELF

PROVIDER

__NOT_VALUED

** Ingredient

FullName: com.cerner.pophealth.program.models.avro.poprecord.Ingredient

A structure representing an ingredient in the medication. At least one of drugCode or displayName is required

Field name	Type	Description
drugCode	nullable Code	A code that identifies the ingredient.
displayName	nullable string	The displayName represents the display of the drugCode of the ingredient.
dose	nullable Dose	The dosage of the ingredient.
medicationUid	nullable string	The uid that uniquely identifies the medication in the source system that the Ingredient belongs to.
drugReference	nullable ReferenceDrug	A standards-based substance which is used as a measurement base, as a similar substance to this medication.

** LocationLite

FullName: com.cerner.pophealth.program.models.avro.poprecord.LocationLite

A lightweight model that represents a location. Typically this model is used to represent a location (e.g. facility, building, nurse unit, service location, etc) in activity data. At least one of the following values should be present ("sourceId", "name")

Field name	Type	Description
sourceId	nullable string	The identifier of the location provided by the source system

name	nullable string	The display of the location
timeZoneId	nullable string	The Time zone Id of the location.
types	Array of Code	Indicates the types of function performed at the location.
ministryOrganizationId	nullable string	The ID of the corresponding Organization in the Personnel Ministry

** ManualDemographic

FullName:

com.cerner.pophealth.program.models.avro.manual.ManualDemographic

Field name	Type	Description
id	string	Unique id of the demographic itself
populationId	string	ID to uniquely identify a population.
empiId	string	The unique identifier for identifying person in EMPI.
empiVersion	long	Indicates a specific system version of EMPI.
deleteRequest	boolean	Boolean indicating that the Manual Demographic entry is flagged for deletion.
columnId	string	The random columnId that is generated on put.
address	nullable Address	Address of the person.
telecom	nullable Telecom	Telecom details of the person.
metadata	Metadata	Metadata info related to Manual Address entry.
manualDemographicVersion	nullable string	Place holder for the manual demographic version. Significance is only as data transfer variable while adding manual demographic data into Pop Record.

** Medication

FullName: com.cerner.pophealth.program.models.avro.poprecord.Medication

Resource representing an order or request for both supply of the medication and the instructions for administration of the medication to a patient. FHIR:

<https://hl7.org/fhir/R5/medicationrequest.html>

Field name	Type	Description
empiPersonMetadata	nullable EmpiVersionedPersonId	Field contains meta information related to EMPI Person
processingVersion	nullable string	The processing version, for which pipeline was ran, and data was produced. Format yyyy/MM/dd/HHmm
recordId	nullable RecordId	A structure representing a recordId from which this is originated.
medicationId	nullable string	An id that uniquely identifies this Medication for a person within the same data partition.
medicationUid	nullable string	A unique identifier for the recorded medication. This value is generated from these fields: Medication.partitionRecordRef, RecordId and refRecordId Medication fields: medicationId and Uid.
uid	string	A unique identifier for the medication. This remains consistent and is used to reconcile updates to an existing medication.
claimUid	nullable string	Optional claim uid for the medication. This represents that the Medication was extracted from the Claim on the same pop record
summaryPersonRecordUid	nullable string	Optional summaryPersonRecord uid for the Medication. This represents that the Medication was extracted from the SummaryPersonRecord on the same pop record
personId	string	A unique identifier for the person for whom the medication was ordered or prescribed. This may also represent person EMPI ID.
encounterId	nullable string	The identifier of the encounter or visit associated with the medication order or prescription.
encounterUid	nullable string	A unique identifier for the encounter or visit associated with the recorded medication. This can be used to retrieve encounter specific information from the encounter service.

displayName	nullable string	DisplayName represents the display of the drug from activity data in the source system, which often represents the drugCode name at the time of ordering. If the reference data (i.e. drugCode display) ever changes, the displayName preserves the display from the activity data.
drugCode	nullable Code	A code value and its attributes that identifies the medication. If null then displayName field will have a text description of the Drug.
statusConcepts	Array of OntologyConceptReference	A list of ontological concepts that represent the status such as Active, Inactive, etc.
referenceDrug	nullable ReferenceDrug	A standards-based substance which is used as a measurement base, as a similar substance to this medication.
drugSynonym	nullable Code	The synonym code or translation code for the medication. This may be a more specific representation of the activity drug that was given. DEPRECATED - drugCode could be used instead of drugSynonym.
startDate	nullable string	Start date of the period during which the medication is to be taken by the patient. This element is provided for convenience purposes and should not conflict with the timing information communicated in the Medication.dosageInstruction element. FHIR: https://hl7.org/fhir/R5/medicationrequest-definitions.html#MedicationRequest.effectiveDosePeriod.startDate
stopDate	nullable string	Stop date of the period during which the medication is to be taken by the patient. This element is provided for convenience purposes and should not conflict with the timing information communicated in the Medication.dosageInstruction element. FHIR: https://hl7.org/fhir/R5/medicationrequest-definitions.html#MedicationRequest.effectiveDosePeriod.stopDate
status	nullable Code	The current status of the medication, such as Active, Complete, Discontinued, On hold.
detailLine	nullable string	A text string containing clinically relevant details about the medication order. For example: "20 mg, 1 tab, Round PO, Drug form: TAB, Daily, Start date: 05/07/11 9:00:00, Duration: 30 day, Stop date: 06/05/11 9:00:00"
prescribingProvider	nullable ProviderPersonnelLite	The ordering or prescribing provider for the medication which optionally needs to include the provider's NPI number if available.
doseQuantity	nullable string	DEPRECATED- To be replaced by the dose in Ingredient. The dose quantity for the medication that was ordered or prescribed. This is a non negative value and a string representation of BigDecimal number.
doseUnit	nullable Code	DEPRECATED- To be replaced by the dose in Ingredient. The codified unit of measure associated with the dose quantity, such as mL, mg, tab(s), etc.

route	nullable Code	Represents the route that the medication was administered, for example, orally, intravenously, etc.
frequency	nullable Code	The frequency that a dose of the medication is to be administered, for example, Daily, BID, q6hr, PRN, As needed, etc.
patientInstructions	nullable string	Patient instructions for the medication order.
asNeeded	nullable boolean	This Indicates whether the Medication is only taken v needed within a specific dosing schedule.
category	nullable Code	This Indicates where the medication is expected to be consumed or administered.
comments	Array of Comment	Comments associated with the medication order.
source	nullable Source	The information related to source.
updateDateTime	nullable string	ISO8601 timestamp indicating the point in time when data was last updated. New data (from metadata) hold millisecond precision. Existing legacy data will hold a second precision. Format: YYYY-MM-DDThh:mm:ss.YYYY-MM-DDThh:mm:ss.SSSZ
updatePersonnelId	nullable string	Identifier of the Personnel responsible for the last up
mainIngredientCategories	Array of Category	The list of categories that the medication is associate with by the main ingredient of the medication, such a aspirin etc.
immunizationCategories	Array of Category	The list of categories to which the immunization is associated with for the Medication.
intendedAdministrator	AdministratorType	The intended administrator for the medication order. has a default value of <code>__NOT__VALUED</code> which indicate value present.
intendedDispenser	DispenserType	The intended dispenser for the medication order. It h default value of <code>__NOT__VALUED</code> which indicates no v present.
ingredients	Array of Ingredient	The ingredients of the medication.
supportingFact	nullable SupportingFact	A supporting fact that relates entities to the medicati For example, a claim service line is a supporting fact t can be used to infer the medication event occurred.
aliases	Array of Identifier	Identifiers associated with this medication that are defined by business processes. The identifiers can be

		to reference the medication as they should remain constant as the medication is updated.
dosageInstructions	Array of Dosage	How the medication should be taken.
provenances	Array of Provenance	Records that describe entities and processes involved producing and delivering or otherwise influencing the medication.
substitutionAllowed	nullable boolean	This indicates if substitution is allowed for this medication or not.
dispenseRequest	nullable MedicationRequestDispenseRequest	This indicates specific details for the dispense or supply part of the medication request.
partitionRecordRef	nullable PartitionRecordReference	Reference to the partition record containing this medication.
patient	nullable PatientReference	Patient resource that this medication is related to.
encounter	nullable EncounterReference	Encounter resource that this medication is related to.
intent	nullable Code	Indicates the intent of the request (proposal plan order original-order reflex-order filler-order instance-order option). This element may change the interpretation of the resource, so if valued, it must be considered in order to properly interpret the resource. FHIR: https://hl7.org/fhir/medicationrequest-definitions.html#MedicationRequest.intent
reported	nullable boolean	Indicates if this record was captured as a secondary 'reported' record rather than as an original primary source-of-truth record. It may also indicate the source of the report. FHIR: https://hl7.org/fhir/medicationrequest-definitions.html#MedicationRequest.reported
doNotPerform	nullable boolean	If true, indicates that the provider is asking for the patient to either stop taking or to not start taking the specified medication. For example, the patient is taking an existing medication and the provider is changing the medication...so two separate requests should be created: one to stop using the current medication and another to start the new medication. This element negates the request to occur (e.g. this is a request for the medication not to be ordered or prescribed). FHIR: https://hl7.org/fhir/R5/medicationrequest-definitions.html#MedicationRequest.doNotPerform
reasons	Array of MedicationRequestReason	Reason or the indication for ordering or not ordering medication. FHIR: https://hl7.org/fhir/R5/medicationrequest-definitions.html#MedicationRequest.reason
authoredOn	nullable string	The date (and perhaps time) when the prescription was initially written or authored on. Should be in ISO-8601 extended format, with precision ranging from YYYY to YYYY-MM-DDThh:mm:ss.SSSZ (e.g. 1997 through 19

		07-16T19:20:00.000Z), though equivalent ISO-8601 basic is also allowed (e.g. YYYYMMDD).
statusChanged	nullable string	The date (and perhaps time) when the status was changed. Generally only valued to track when the final status changed occurred (e.g. discontinued, suspended, etc.) FHIR: https://hl7.org/fhir/R5/medicationrequest-definitions.html#MedicationRequest.statusChanged
categories	Array of Code	Indicates the grouping or category of medication request (e.g. where the medication is expected to be consumed or administered (i.e. inpatient or outpatient)).

** MedicationAdministration

FullName:
com.cerner.pophealth.program.models.avro.poprecord.MedicationAdministration

A structure representing a medication administration event to a patient. Describes the event of a patient consuming or otherwise being administered a medication. Medication possibilities range from swallowing a tablet to a long running infusion.

Field name	Type	Description
empiPersonMetadata	nullable EmpiVersionedPersonId	Field contains meta information related to EMPI Person.
processingVersion	nullable string	The processing version, for which pipeline was ran, and data was produced. Format yyyy/MM/dd/HHmm
recordId	nullable RecordId	A structure representing a recordId from which this originated.
medicationAdministrationId	nullable string	An id that uniquely identifies this administration for a person in a source system.
uid	string	A unique identifier for the medication administration across all partitions of the reference record.
status	nullable Code	The code specifying the state of the medication administration. In general, the status will most likely be complete for most administrations. For long running administrations such as infusions, status may be in-progress or on-hold. Examples include: In-progress, On-hold, Completed, Entered in error, Stopped.
personId	string	An id that uniquely identifies the patient the medication administration is for.
administeringProvider	nullable ProviderLite	The individual who was responsible for giving the medication to the patient.

encounterId	nullable string	The identifier of the encounter or visit when the medication administration was performed or given.
authorizingMedicationOrderId	nullable string	The identifier of the medication order that gave the authority to perform the administration.
drugReference	nullable ReferenceDrug	A standards-based substance which is used as a measurement base, as a similar substance to this medication. DEPRECATED - The referenceDrug from ingredients should be used instead of this.
supportingFact	nullable SupportingFact	A supporting fact that relates entities to the medication administration. For example, a claim service line could be a supporting fact to infer the medication administration event occurred.
medications	Array of Ingredient	The medication or drug being administered to the patient. This value may not exactly match the provider or physician ordered medication. May include drug name and dose information for the medication.
effectiveTime	nullable EffectiveTime	An interval of time or a point in time during which the administration took place. For administrations like swallowing a tablet, a single date is appropriate.
site	nullable Code	The anatomic site where the medication first entered the body.
route	nullable Code	Represents the route that the medication was administered, for example, orally, intravenously, etc.
source	nullable Source	Source information for the medication administration data.
provenances	Array of Provenance	This describes entities and processes involved in producing and delivering or otherwise influencing a resource (e.g. Medication Administration).
encounterUid	nullable string	The unique id of the encounter or visit related to the medication administration.
partitionRecordRef	nullable PartitionRecordReference	Reference to the partition record containing this medication administration.
patient	nullable PatientReference	Patient resource that this medication administration is related to.

encounter	nullable EncounterReference	Encounter resource that this medication administration is related to.
medicationAdministrationUid	nullable string	The unique identifier for the recorded medication administration.
categories	Array of Code	Indicates the type of medication administration (for example, drug classification like ATC, where meds would be administered, legal category of the medication). FHIR: https://hl7.org/fhir/R5/medicationadministration-definitions.html#MedicationAdministration.category
recorded	nullable string	The date the occurrence of the MedicationAdministration was first captured in the record - potentially significantly after the occurrence of the event. FHIR: https://hl7.org/fhir/R5/medicationadministration-definitions.html#MedicationAdministration.recorded
statusReason	nullable Code	The code indicating why the administration was not performed. FHIR: https://hl7.org/fhir/R5/medicationadministration-definitions.html#MedicationAdministration.statusReason

** MedicationDispense

FullName:

com.cerner.pophealth.program.models.avro.poprecord.MedicationDispense

A structure representing the supply of medication to a patient. Examples include dispensing from an outpatient pharmacy, dispensing patient-specific medications from inpatient pharmacy to ward, as well as issuing a single dose from ward stock to a patient for consumption.

Field name	Type	Description
empiPersonMetadata	nullable EmpiVersionedPersonId	Field contains meta information related to I
processingVersion	nullable string	The processing version, for which pipeline v data was produced. Format yyyy/MM/dd/HI
recordId	nullable RecordId	A structure representing a recordId from wh originated.
medicationDispenseId	nullable string	An id that uniquely identifies this dispense : source system.

uid	string	A unique identifier for the medication dispense partitions of the reference record.
claimUid	nullable string	Optional claim uid for the medication dispense indicates that the medication dispense was the claim in the same population record.
personId	string	An id that uniquely identifies the patient the dispensed is for.
encounterId	nullable string	The identifier of the encounter or visit when dispense was performed.
medications	Array of Ingredient	The medication or drug being dispensed to patient value may not exactly match the provider or ordered medication. May include drug name information for the medication.
authorizingMedicationOrderId	nullable string	Indicates the medication order that is being against.
supportingFact	nullable SupportingFact	A supporting fact that relates entities to the dispense. For example, a claim service line id fact that can be used to infer the medication occurred.
drugReference	nullable ReferenceDrug	A standards-based substance which is used measurement base, as a similar substance to medication. DEPRECATED - The referenceDrug ingredients should be used instead of this
whenHandedOver	nullable string	The date and time the dispensed medication to the patient or their representative. Should extended format, with precision ranging from YYYY-MM-DDThh:mm:ss.SSSZ (e.g. 1997-07-16T19:20:00.000Z), though equivalent ISO also allowed (e.g. YYYYMMDD).
type	nullable Code	Indicates the type of dispensing event that occurred. Examples include: Dispense, Initial Dose, Refill, etc.
status	nullable Code	The code specifying the state of the medication. Examples include: In-progress, On-hold, Cancelled, Entered in error, Stopped.
statusConcepts	Array of OntologyConceptReference	A list of ontological concepts that represent the status as Active, Inactive, etc.
dispensedQuantity	nullable Quantity	The total amount of medication that has been dispensed at the event (e.g. how many pills in the bottle for supply, or how many inhalers dispensed - if patient take two tablets daily for 30 days - then the quantity would be 60 for a 30 day supply). Includes units.
doseQuantity	nullable Quantity	The amount of medication or substance per administration (e.g. how many pills are taken per administration). Note that this specifies the amount the order was taken (e.g. if patient take two tablets daily for 30 days, the doseQuantity is 2) Note that this specifies the amount of the specified medication, not the quantity of

		ingredient.
refillsRemaining	nullable int	Number of refills allowed or remaining after event. Does not include the current dispense.
supplyDuration	nullable Quantity	The number of days the medication amount expected to last. Value is expressed as a time. SupplyDuration is often referred to as daysSupplyDuration.
source	nullable Source	Source information for the dispense data.
mainIngredientCategories	Array of Category	List of category objects the medicationDispense associated to under the main ingredient code.
aliases	Array of Identifier	Identifiers associated with this medicationDispense are defined by business processes. The identifiers used to reference the medicationDispense are remain constant as the medicationDispense changes.
dosageInstructions	Array of Dosage	How the medication should be taken.
shippingInformations	Array of MedicationDispenseShippingInformation	Shipping information pertaining to the delivery of medicationDispense to the destination.
provenances	Array of Provenance	This describes entities and processes involved in creating and delivering or otherwise influencing a record (MedicationDispense).
encounterUid	nullable string	The unique id of the encounter or visit related to medicationDispense.
partitionRecordRef	nullable PartitionRecordReference	Reference to the partition record containing medicationDispense.
patient	nullable PatientReference	Patient resource that this medicationDispense is for.
encounter	nullable EncounterReference	Encounter resource that this medicationDispense is for.
medicationDispenseUid	nullable string	The unique identifier for the recorded medicationDispense.
authorizingMedicationUid	nullable string	A unique identifier to reference a medicationDispense for/from a medicationDispense record. Please note that this value will be same as MedicationDispense.medicationDispenseUid.
recorded	nullable	The date when the dispense activity started or ended. Valued if whenPrepared or whenHandedOver.

	string	FHIR: https://hl7.org/fhir/R5/medicationdefinitions.html#MedicationDispense.rec
notPerformedReason	nullable MedicationDispenseNotPerformedReason	Indicates the reason why a dispense was not performed. FHIR: https://hl7.org/fhir/R5/medicationdefinitions.html#MedicationDispense.notP
categories	Array of Code	Indicates the type of medication dispense (if drug classification like ATC, where meds were administered, legal category of the medication). FHIR: https://hl7.org/fhir/R5/medicationdefinitions.html#MedicationDispense.cate

** MedicationDispenseGroup

FullName:

com.cerner.pophealth.program.models.avro.poprecord.MedicationDispenseGroup

A model representing a group of medication dispenses that are related.

Field name	Type	Description
personId	nullable string	A unique identifier for the person for whom the group was identified.
medicationDispenseGroupId	string	The id of the group. Could be encounterId or other identifier from the source system to group the dispenses.
medicationDispenses	Array of MedicationDispense	The collection of medication dispenses that make up the group.
source	nullable Source	Source information for the medication dispense group.

* MedicationDispenseNotPerformedReason

FullName:

com.cerner.pophealth.program.models.avro.poprecord.MedicationDispenseNotPerformedReason

Backbone element representing the options allowed to represent a reason why the medication dispense was not performed. FHIR:

<https://hl7.org/fhir/R5/references.html#CodeableReference>

Field name	Type	Description
concept	nullable	A codified concept representing the reason why the medication dispense was not performed. FHIR:

Code

<https://hl7.org/fhir/R5/references-definitions.html#CodeableReference.concept>

* * MedicationDispenseShippingInformation

FullName:

com.cerner.pophealth.program.models.avro.poprecord.MedicationDispenseShippingInformation

A backbone element representing the shipping information pertaining to the delivery of the dispensed medication to a patient from an outpatient or retail pharmacy.

Field name	Type	Description
carrier	nullable OrganizationReference	Carrier responsible for the delivery of the medication shipment.
trackingNumber	nullable string	Identifier issued by the carrier that can be used to track the shipment.

** ** MedicationRequestDispenseRequest

FullName:

com.cerner.pophealth.program.models.avro.poprecord.MedicationRequestDispenseRequest

Backbone element representing the specific details for the dispense or supply part of the medication request. FHIR: <https://hl7.org/fhir/R5/medicationrequest-definitions.html#MedicationRequest.dispenseRequest>

Field name	Type	Description
numberOfRepeatsAllowed	nullable int	Number of refills authorized. Should be zero or a positive integer.
quantity	nullable Quantity	Amount of medication requested to be supplied per dispense.
expectedSupplyDuration	nullable Quantity	Identifies the period time over which the supplied product is expected to be used, or the length of time the dispense is expected to last. The unit of the quantity must be an expression of time (e.g. minutes hours days months) FHIR: https://hl7.org/fhir/R5/medicationrequest-definitions.html#MedicationRequest.dispenseRequest.expectedSupplyDuration

** MedicationRequestReason

FullName:

com.cerner.pophealth.program.models.avro.poprecord.MedicationRequestReason

Backbone element representing the options allowed to represent a reason for the medication request. FHIR:

<https://hl7.org/fhir/R5/references.html#CodeableReference>

Field name	Type	Description
concept	nullable Code	A codified concept representing the reason for the medication request. FHIR: https://hl7.org/fhir/R5/references-definitions.html#CodeableReference.concept

** Metadata

FullName: com.cerner.pophealth.program.models.avro.common.Metadata

A reusable component that holds data that describes and gives information about other data.

Field name	Type	Description
createPersonnelId	nullable string	Identifier of the personnel responsible for creation.
updatePersonnelId	nullable string	Identifier of the Personnel responsible for the last update.
createDtTm	nullable string	ISO8601 timestamp indicating the point in time when data was created.
updateDtTm	nullable string	ISO8601 timestamp indicating the point in time when data was last updated.
createSystemAccountId	nullable string	Denotes the identifier of the system account that is responsible for creating data. This value is the consumer key used when making protected OAuth REST service calls.
updateSystemAccountId	nullable string	Denotes identifier of the system account that is responsible for the last update of the data. This value is the consumer key used when making protected OAuth REST service calls.

** Network

FullName: com.cerner.pophealth.program.models.avro.poprecord.Network

A structure representing group of physicians, hospitals and other health care providers that accept a certain health insurance plan.

Field name	Type	Description
networkId	nullable string	A unique identifier for the network.
name	nullable string	The name of the network.

** NumericValue

FullName: com.cerner.pophealth.program.models.avro.poprecord.NumericValue

A structure representing a result value when the ValueType = NUMERIC.

Field name	Type	Description
value	string	The string representation of a BigDecimal number value of the result. This can be a positive or negative whole number or decimal value.
modifier	nullable string	The symbol or characters that modify the result, such as >, <, >=, etc.

** OntologyConceptReference

FullName:
com.cerner.pophealth.program.models.avro.poprecord.OntologyConceptReference

A model representing a basic ontological concept.

Field name	Type	Description
ontologyContextId	string	The unique identifier of the Ontology Context, which is used for this concept.
ontologyConceptAliases	Array of string	The Ontological aliases associated with this concept.

** OrderEntry

FullName: com.cerner.pophealth.program.models.avro.poprecord.OrderEntry

Represents a Order in the order list.

Field name	Type	Description
orderId	string	The identifier of the order.
flag	OrderFlag	Contains workflow information about the order entry.

** OrderFlag

FullName: com.cerner.pophealth.program.models.avro.poprecord.OrderFlag

Contains workflow information about the Order such as Compliance Status, action taken by provider to modify, discontinue, order, continue etc.

Field name	Type	Description
complianceStatus	nullable Code	Indicates the patient's compliance on the order.
action	nullable Code	Action taken by the provider on the order to modify, discontinue, order, continue etc.

** OrderList

FullName: com.cerner.pophealth.program.models.avro.poprecord.OrderList

A list of orders associated with a patient. Example: Order reconciliation list on Admission, Order Compliance list, * etc.

Field name	Type	Description
empiPersonMetadata	nullable EmpiVersionedPersonId	Field contains meta information related to EMPI Person.
processingVersion	nullable string	The processing version, for which pipeline was ran, and data was produced. Format yyyy/MM/dd/HHmm
orderListId	string	Unique identifier for the order list.
uid	string	A unique identifier for the order list.

		This remains consistent and is used to reconcile updates to an existing order list.
recordId	RecordId	A structure representing a recordId from which this is originated.
type	OrderListType	Indicate the type of order list such as Compliance, Reconciliation on Admission, etc.
personId	string	The identifier of the person with the order list.
encounterId	nullable string	The identifier of the encounter associated with the order list.
recordingProvider	nullable ProviderPersonnelLite	The provider that defined the list contents.
recordedDate	nullable string	The date the order list was documented/updated. Should be in ISO-8601 extended format, with precision ranging from YYYY to YYYY-MM-DDThh:mm:ss.SSSZ (e.g. 1997* through 1997-07-16T19:20:00.000Z), though equivalent ISO-8601 basic is also allowed (e.g. YYYYMMDD) Format: YYYY-MM-DDThh:mm:ssZ or YYYY-MM-DDThh:mm:ss.SSSZ
emptyReason	nullable Code	Indicates the reason why the order entries list is empty.
orderEntries	Array of OrderEntry	List of order entries in the list.
source	nullable Source	Source information for the order list.
active	boolean	DEPRECATED: This field is not used in the Pop Record and should be ignored by consumers. The field was incorrectly added and cannot be removed for passivity reasons.
provenances	Array of Provenance	Records that describe entities and processes involved in producing and delivering or otherwise influencing this Order List.

** OrderListType

FullName: com.cerner.pophealth.program.models.avro.poprecord.OrderListType

An Enumeration indicating the type of Order List.

Symbols

COMPLIANCE
RECONCILIATION_ON_ADMISSION
RECONCILIATION_ON_TRANSFER
RECONCILIATION_ON_DISCHARGE
RECONCILIATION_ON_SHORT_TERM_LEAVE
RECONCILIATION_ON_SHORT_TERM_LEAVE_RETURN
_NOT_RECOGNIZED

** Organization

FullName: com.cerner.pophealth.program.models.avro.poprecord.Organization

A model representing an organization. This model is typically used to model an organization as reference data.

Field name	Type	Description
sourceId	string	The ID of the organization from the source system. DEPRECATED - to be replaced by the organizationId. However, for passivity, sourceId still needs to be populated.
organizationId	nullable string	A unique identifier for the organization in the source system.
name	nullable string	The name of the organization.
uid	nullable string	A unique identifier for Organization across the whole reference record.
addresses	Array of Address	The addresses of the organization.
telecoms	Array of Telecom	The telecom addresses of the organization.
aliases	Array of OrganizationId	The list of industry standard identifiers for the organization. For example, the organization's NPI or federal tax ID.
taxonomyCodes	Array of Code	A list of taxonomy codes representing the specialties of the organization.
ministryOrganizationId	nullable string	This is the id of the corresponding Organization in the Personnel Ministry if it exists
source	nullable Source	Source information for the Organization.

active	boolean	An indication whether the entity is active or inactive as determine by the data source. If no indication was provided from the data source, the entity is assumed to be active.
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** OrganizationId

FullName: com.cerner.pophealth.program.models.avro.poprecord.OrganizationId

A model representing an organization Id.

Field name	Type	Description
value	string	The actual value of the organization ID.
type	OrganizationIdType	The type of ID.
assigningAuthority	nullable string	The assigning authority of the ID. It is strongly preferred that the assigning authority be an OID.

** OrganizationIdType

FullName:
com.cerner.pophealth.program.models.avro.poprecord.OrganizationIdType

An enumeration that type of the organization. Possible values include NPI, TAX, EXTERNAL, NABP, `_NOT_RECOGNIZED`, etc.

Symbols
NPI
TAX
EXTERNAL
NABP
<code>_NOT_RECOGNIZED</code>

** OrganizationLite

FullName:
com.cerner.pophealth.program.models.avro.poprecord.OrganizationLite

A lightweight model representing an organization. This model is typically used to model an organization in activity models.

Field name	Type	Description

organizationId	nullable string	A unique identifier for organization from source system. This attribute can be used to identify the organization in reference data from the same source system.
aliases	Array of OrganizationId	The list of industry standard identifiers for the organization. For example, the organization's NPI or federal tax ID. At least one of the following values should be present (i.e "aliases", "name")
name	nullable string	The name of the organization.
ministryOrganizationId	nullable string	This is the id of the corresponding Organization in the Personnel Ministry if it exists
type	nullable Code	The place of service type code.

** OrganizationReference

FullName:

com.cerner.pophealth.program.models.avro.poprecord.OrganizationReference

A backbone element providing the available options to reference an organization resource. At this time, the only option to reference an organization resource is contained.

Field name	Type	Description
contained	nullable OrganizationLite	An in-line contained resource. This reference option is similar to FHIR's contained resource. Use this option whenever there is not enough information to independently identify the referenced resource.

** Participant

FullName: com.cerner.pophealth.program.models.avro.poprecord.Participant

A structure that encapsulates different types of appointment participants, such as provider or resource (e.g. room).

Field name	Type	Description
role	nullable Code	The role of the participant in the appointment. Preferred coding system includes HL7 Standard Code OID: 2.16.840.1.113883.5.90 such as Admitter,

		Attender, Consultant, Receiver, etc.
primaryRole	boolean	DEPRECATED - this attribute is not currently needed for our consumer. Designates if a participant is the primary role in the appointment. The participant is primary if marked true.
resourceDisplay	nullable string	The display of the participant resource (e.g. room, device, etc.)
provider	nullable ProviderPersonnelLite	The provider, associated to the appointment.

** PartitionRecordReference

FullName:

com.cerner.pophealth.program.models.avro.poprecord.PartitionRecordReference

A structure representing a partition record containing a resource. All IDs of a partition record reference are required to uniquely identify a partition record containing the desired resource.

Field name	Type	Description
dataPartitionId	nullable string	An id that uniquely identifies the data partition containing the partition record.
dataSetId	nullable string	An id that uniquely identifies the data set, within the data partition, containing the partition record.
resourceId	nullable string	An id that uniquely identifies the resource contained by the partition record, assigned by the data ingestion service. This identifier uniquely identifies the resource, within the combination of the data partition, data set and partition record type.
partitionRecordTypeId	nullable string	An id that uniquely identifies the type of partition record (e.g. PATIENT_ENCOUNTER, PATIENT_CONDITION).
uri	nullable string	The uri to identify the partition record. Some data ingestion service APIs require URI to identify a partition record, rather than the discrete IDs (i.e. dataPartitionId, dataSetId, partitionRecordTypeId and resourceId).

** PatientReference

FullName:

com.cerner.pophealth.program.models.avro.poprecord.PatientReference

Reference to a patient resource.

Field name	Type	Description
partitionRecordRef	nullable PartitionRecordReference	Reference to a partition record containing the resource.

** PerformedBy

FullName: com.cerner.pophealth.program.models.avro.poprecord.PerformedBy

A structure representing who is responsible for the result.

Field name	Type	Description
function	nullable Code	A code value for the performer's function.
organization	nullable Organization	Contains performer's information such as lab name, address, phone number, and CLIA number.
provider	nullable ProviderLite	Provider-based performer.

** Performer

FullName: com.cerner.pophealth.program.models.avro.poprecord.Performer

A model representing who performed the Immunization event.

Field name	Type	Description
function	nullable Code	Describes the type of performance (e.g. ordering provider, administering provider, etc.).
actor		DEPRECATED - This field leverages

	nullable ProviderLite	ProviderLite, use actingProvider instead Provider who performed the immunization.
actingProvider	nullable ProviderPersonnelLite	Provider who performed the immunization.

** Period

FullName: com.cerner.pophealth.program.models.avro.poprecord.Period

A structure representing a time period defined by a start and end date. A range of time defined between two optional dates. The context of use will specify whether the entire range applies or a value within the period applies. At least one of "startDate" or "endDate" should be included.

Field name	Type	Description
startDate	nullable string	The starting date and time of the period. If the start element is missing, the start of the period is not known. In ISO-8601 extended format, with precision ranging from YYYY to YYYY-MM-DDThh:mm:ss.SSSZ (e.g. 1997 through 1997-07-16T19:20:00.000Z)
endDate	nullable string	The ending date and time of the period. If the end element is missing, it means that the period is ongoing. In ISO-8601 extended format, with precision ranging from YYYY to YYYY-MM-DDThh:mm:ss.SSSZ (e.g. 1997 through 1997-07-16T19:20:00.000Z)

** PersonBenefitCoverage

FullName:
com.cerner.pophealth.program.models.avro.poprecord.PersonBenefitCoverage

A model representing a BenefitCoverage for a person

Field name	Type	Description
empiPersonMetadata	nullable EmpiVersionedPersonId	Field contains meta information related to EMPI Person.
processingVersion	nullable string	The processing version, for which pipeline was ran, and data was produced. Format yyyy/MM/dd/HHmm
recordId	nullable	A structure representing a recordId from which this is originated.

	RecordId	
uid	string	A unique id for personBenefitCoverage.
claimUid	nullable string	Optional claim uid for the person benefit coverage. This id represents the claim on the pop record from which the benefit coverage was extracted.
personId	string	The id of the person, provided by the data source.
benefitCoverage	BenefitCoverage	A benefitCoverage for a person.
source	nullable Source	Source information for troubleshooting purposes.
supportingFact	nullable SupportingFact	A supporting fact that relates entities to the person benefit coverage.

** PersonContact

FullName: com.cerner.pophealth.program.models.avro.poprecord.PersonContact

A structure representing a person's contacts. At least one of the fields of "personIds", "names", "addresses", "telecoms" or "emails" needs to be specified.

Field name	Type	Description
gender	nullable Code	The gender of the person's contact.
names	Array of PersonName	The names of the person's contact.
addresses	Array of Address	The addresses of the person's contact.
telecoms	Array of Telecom	The phone or telecommunication information of the person's contact.
emails	Array of EmailAddress	The email information for the person's contact. These have a type (personal, work...) and an address
relationshipType	nullable Code	The relationship type for person contacts such as 'emergency', 'family', 'friend', etc..
personId	nullable string	An id that uniquely identifies a person in a source system.

** PersonDemographics

FullName:

com.cerner.pophealth.program.models.avro.poprecord.PersonDemographics

A structure representing a person demographics.

Field name	Type	Description
empiPersonMetadata	nullable EmpiVersionedPersonId	Field contains meta information related to EMPI Person.
processingVersion	nullable string	The processing version, for which pipeline was ran, and data was produced. Format yyyy/MM/dd/HHmm
recordId	RecordId	A structure representing a recordId from which this is originated.
personId	nullable string	The id of the person that uniquely identifies this Demographics within the same data partition.
uid	string	a unique identifier for person demographics across the whole reference record.
summaryPersonRecordUid	nullable string	Optional summaryPersonRecord uid for the PersonDemographics. This represents that the PersonDemographics was extracted from the SummaryPersonRecord on the same pop record
birthDate	nullable string	The date of birth, in ISO 8601 format, of the person.
birthDateTime	nullable string	The date and time of birth, in ISO 8601 format, of the person. This field is only populated when the full date/time info is there and the birthDate field will only have date part of the info. If the time is not available then this is null and only birthDate is populated. But there won't be any instance when birthDate will be null and birthDateTime will not be null
gender	nullable	The gender of the person.

	Code	
birthSex	nullable Code	The assigned sex of the person at birth.
languages	Array of Code	The languages of the person.
maritalStatus	nullable Code	The marital status of the person.
racess	Array of Code	The races of the person.
ethnicity	nullable Code	DEPRECATED Use the array 'ethnicities' record instead
ethnicities	Array of Code	The ethnicities of the person.
religion	nullable Code	The religion of the person.
deceased	nullable boolean	This is an indicator of the death of the person.
dateOfDeath	nullable string	Date of death, in ISO 8601 format, of the person.
causeOfDeath	nullable Code	The cause of death of the person.
names	Array of PersonName	The names of the person.
aliases	Array of PersonId	The aliases (i.e. IDs) of the person. Examples are MRN, Member Number, SSN, etc.
addresses	Array of Address	The addresses of the person.
telecoms	Array of Telecom	The phone or telecommunication information of the person.
emailAddresses	Array of EmailAddress	The email addresses of the person.
source	nullable Source	The information related to source.
personContacts	Array of PersonContact	A list of person contacts.
supportingFact	nullable	A supporting fact that relates

	SupportingFact	entities to the person demographics.
provenances	Array of Provenance	This describes entities and processes involved in producing and delivering or otherwise influencing a resource (e.g. Person Demographics).
partitionRecordRef	nullable PartitionRecordReference	Reference to the partition record containing this person demographics.

** PersonId

FullName: com.cerner.pophealth.program.models.avro.poprecord.PersonId

A model representing an ID of a person.

Field name	Type	Description
type	nullable Code	The type of the person ID. Examples are SSN, MRN, etc.
value	string	The value of the ID.
assigningAuthority	string	The assigning authority of the ID. The assigning authority is usually an OID.
computationalValue	nullable string	This represents a unique value in the system and could be used for computational mapping (eg removing non-significant whitespace, dashes, etc)
renderedValue	nullable string	Provides a rendered version of the value intended for human display. For example, a sensitive identifier (e.g. social security number) partially obscured by asterisks; a drivers licence number with dashes inserted.

** PersonName

FullName: com.cerner.pophealth.program.models.avro.poprecord.PersonName

A model containing attributes of a person name, including an optional type. At least one of the following values should be present (i.e "givenNames", "fullName", "familyNames")

Field name	Type	Description
type	nullable	The type of the person's name (e.g. current, maiden, alternate).

	Code	
fullName	nullable string	The fully formatted representation of the person's name.
givenNames	Array of string	A list of given name portions of the person's name. For example, if a person has a first name and a middle name, the first name should be the first item in the list and the middle name should be the second item in the list.
familyNames	Array of string	A list of family (i.e. last) name portions of the person's name. Some persons have multiple family names.
titles	Array of string	A list of titles associated to the person's name.
prefix	nullable string	The prefix portion of the person's name.
suffix	nullable string	The suffix portion of the person's name.
effectivePeriod	nullable Period	The effective period for the person's name.

** PersonProviderRelationship

FullName:

com.cerner.pophealth.program.models.avro.poprecord.PersonProviderRelationship

A model representing a relationship (PPR).

Field name	Type	Description
empiPersonMetadata	nullable EmpiVersionedPersonId	Field contains meta information related to EMPI Person.
processingVersion	nullable string	The processing version, for which pipeline was ran, and data was produced. Format yyyy/MM/dd/HHmm
recordId	RecordId	A structure representing a recordId from which this is originated.
uid	string	a unique identifier for relationship across the whole reference record.
personId	string	The identifier of the person, provided by the data source,

		associated with the procedure.
summaryPersonRecordUid	nullable string	Optional summaryPersonRecord uid for the PersonProviderRelationship. This represents that the PersonProviderRelationship was extracted from the SummaryPersonRecord on the same pop record
providerRelationship	ProviderRelationship	A provider having a relationship with the person, including an optional type (e.g. Primary Care Physician).
source	nullable Source	The information related to source.

** PlanId

FullName: com.cerner.pophealth.program.models.avro.poprecord.PlanId

A model for PlanId.

Field name	Type	Description
value	string	Value of PlanId
type	PlanIdType	DEPRECATED - to be replaced by planIdType. Type of PlanId.
assigningAuthority	nullable string	The assigning authority of the planId.
planIdType	nullable string	A String field for PlanIdType. This field can take one of the following values - EXTERNAL, EDI, HPID, AT_RISK_PLAN_MNEMONIC, HEALTHEINTENT or _NOT_RECOGNIZED

** PlanIdType

FullName: com.cerner.pophealth.program.models.avro.poprecord.PlanIdType

DEPRICATED: This Enum does not support AT_RISK_PLAN_MNEMONIC. The String field planIdType in PlanId should be used instead of PlanIdType enum. An enumeration indicating type of a benefit plan id. e.g. EXTERNAL = Client assigned EDI = Electronic Data Interchange Payer Id, HPID = National Health Plan Identifier

Symbols

EXTERNAL

EDI

HPID

__NOT_RECOGNIZED

** PopulationRecord

FullName:

com.cerner.pophealth.program.models.avro.poprecord.PopulationRecord

PLEASE UPDATE PopHealthPersonRecord.avdl UPON ANY MODIFICATIONS ON PopulationRecord.avdl **

Field name	Type	Description
empiId	string	Identifier for the person. Person's EMPI ID.
empiVersion	nullable long	Identifier for the EMPI system version
processingVersion	nullable string	Identifier for the version of processing (equivalent to the coordinator nominal time) a given PopulationRecord was created in.
empiPersonVersion	nullable long	Identifier for EMPI person version
demographics	Array of PersonDemographics	A structure representing an array of person's demographics.
preferredDemographics	nullable PreferredDemographics	A structure representing person's preferred demographics.
conditions	Array of Condition	A structure representing an array of conditions.
procedures	Array of Procedure	A structure representing an array of procedures.
results	Array of Result	A structure representing an array of results.
encounters	Array of Encounter	A collection of encounters (typically an episode of care).
derivedEncounters	Array of DerivedEncounter	DEPRECATED - A collection of records (i.e. Encounter, Claim, Procedure, etc.) which qualified in the formation of this record. Consumers should use field, inferredEncounters, instead.
inferredEncounters	Array of Encounter	A collection of encounters that are grouped from Claim, Encounter etc., and also

		encounters that does not have either one of these values, start date or end date or code value. It represents the new DerivedEncounter model.
medications	Array of Medication	A collection of medications.
claims	Array of Claim	A collection of claims.
immunizations	Array of Immunization	A collection of immunizations.
riskScores	Array of RiskScore	A collection of RiskScores. Deprecated. Consumers should use the genericRiskScores model.
genericRiskScores	Array of GenericRiskScore	A collection of GenericRiskScores. This model stores both raw and normalized scores.
questionnaires	Array of Questionnaire	A collection of Questionnaires.
allergies	Array of Allergy	A collection of allergies.
carePlans	Array of CarePlan	A collection of careplans
drugs	Array of Drg	A collection of diagnosis-related groups
personProviderRelationships	Array of PersonProviderRelationship	A list of providers having a relationship with the person, including an optional type (e.g. Primary Care Physician). A PersonProviderRelationship does not imply attribution.
personBenefitCoverages	Array of PersonBenefitCoverage	A collection of personBenefitCoverages.
recordIds	Array of RecordId	A list of RecordId identifiers for the individual pop record. This should be interpreted as a set of alternate identifiers for the pop record that can be used to trace/link back to person instances in source systems.
summaryPersonRecords	Array of SummaryPersonRecord	A collection of SummaryPersonRecords.
documentReferences	Array of DocumentReference	A collection of DocumentReference. Can be empty.
radiologyDocumentReferences	Array of RadiologyDocumentReference	A collection of RadiologyDocumentReference. Can be empty.
orderLists	Array of OrderList	A Collection of OrderLists.
advanceDirectives	Array of AdvanceDirective	A collection of AdvanceDirectives.
diagnosticServiceRequests	Array of DiagnosticServiceRequest	A collection of DiagnosticServiceRequests.
appointments	Array of Appointment	A collection of Appointments.
communications	Array of Communication	A collection of Communications.
referralRequests	Array of ReferralRequest	A collection of referral requests.
episodesOfCare	Array of EpisodeOfCare	A collection of EpisodesOfCare.
employments	Array of Employment	A collection of Employments.
subpopulationIds	Array of string	A collection of

		subpopulationIds the person was identified for.
consents	Array of Consent	A collection of Consents.
medicationDispensations	Array of MedicationDispense	Instances of medication being distributed to a patient.
medicationAdministrations	Array of MedicationAdministration	
cmsDrugs	Array of CmsDrg	Instances of CmsDrg's for a patient.
cmsMembersInfo	Array of CmsMemberInfo	A collection of CmsMembersInfo
careTeams	Array of CareTeam	A collection of care teams.
serviceRequests	Array of ServiceRequest	A collection of service requests.
deviceRequests	Array of DeviceRequest	A collection of device requests.
adverseEvents	Array of AdverseEvent	A collection of device requests.
diagnosticReports	Array of DiagnosticReport	DiagnosticReport resources

** PreferredAddress

FullName:

com.cerner.pophealth.program.models.avro.poprecord.PreferredAddress

A structure representing a preferred address of a person.

Field name	Type	Description
address	Address	The address of the person.
uid	string	a unique identifier which points to a person demographics object from where address object is obtained.
source	Source	The information related to source of preferredAddress.
dataPartition	nullable string	The information related to dataPartition of preferredAddress.

** PreferredBirthDate

FullName:

com.cerner.pophealth.program.models.avro.poprecord.PreferredBirthDate

A structure representing a preferred birthDate of a person.

Field name	Type	Description
birthDate	string	The date of birth, in ISO 8601 format, of the person.
uid	string	a unique identifier which points to a person demographics object from where birthDate is obtained.

source	Source	The information related to source of birthDate.
dataPartition	nullable	The information related to dataPartition of birthDate.
	string	

** PreferredBirthSex

FullName:

com.cerner.pophealth.program.models.avro.poprecord.PreferredBirthSex

A structure representing a preferred birth sex of a person.

Field name	Type	Description
birthSex	Code	The birthsex of the person.
uid	string	a unique identifier which points to a person demographics object from where Birthsex object is obtained.
source	Source	The information related to source of preferredBirthSex object.
dataPartition	nullable	The information related to dataPartition of preferredBirthSex.
	string	

** PreferredDeceased

FullName:

com.cerner.pophealth.program.models.avro.poprecord.PreferredDeceased

A structure representing a preferred dateOfDeath and deceased of a person.

Field name	Type	Description
deceased	boolean	This is an indicator of the death of the person.
dateOfDeath	nullable	Date of death, in ISO 8601 format, of the person.
	string	
uid	string	a unique identifier which points to a person demographics object from where dateOfDeath is obtained.
source	Source	The information related to source of preferredDeceased.
dataPartition	nullable	The information related to dataPartition of preferredDeceased.
	string	

** PreferredDemographics

FullName:

com.cerner.pophealth.program.models.avro.poprecord.PreferredDemographics

A structure representing a preferred demographics of a person. At least one of the preferred demographics attributes will be not null.

Field name	Type	Description
empiPersonMetadata	nullable EmpiVersionedPersonId	Field contains meta information related to EMPI Person.
processingVersion	nullable string	The processing version, for which pipeline was ran, and data was produced. Format yyyy/MM/dd/HHmm
recordId	nullable RecordId	RecordId from PersonDemographics, which contributed for creation of this object.
name	nullable PreferredName	The name of the person.
address	nullable PreferredAddress	The address of the person.
birthDate	nullable PreferredBirthDate	The date of birth, in ISO 8601 format, of the person.
gender	nullable PreferredGender	The gender of the person.
deceased	nullable PreferredDeceased	This is an indicator of death and dateOfDeath of the person.
telecom	nullable PreferredTelecom	The phone or telecommunication information of the person.
birthSex	nullable PreferredBirthSex	The birth sex information of the person.

** PreferredGender

FullName:

com.cerner.pophealth.program.models.avro.poprecord.PreferredGender

A structure representing a preferred gender of a person.

Field name	Type	Description
gender	Code	The gender of the person.
uid	string	a unique identifier which points to a person demographics object from where gender is obtained.
source	Source	The information related to source of preferredGender.
dataPartition	nullable string	The information related to dataPartition of preferredGender.

** PreferredName

FullName: com.cerner.pophealth.program.models.avro.poprecord.PreferredName

A structure representing a preferred name of a person.

Field name	Type	Description
name	PersonName	The name of the person.
uid	string	a unique identifier which points to a person demographics object from where name object is obtained.
source	Source	The information related to source of preferredName.
dataPartition	nullable string	The information related to dataPartition of preferredName.

** PreferredTelecom

FullName:

com.cerner.pophealth.program.models.avro.poprecord.PreferredTelecom

A structure representing a preferred telecom of a person.

Field name	Type	Description
telecom	Telecom	The phone or telecommunication information of the person.
uid	string	a unique identifier which points to a person demographics object from where telecom object is obtained.

source	Source	The information related to source of preferredTelecom object.
dataPartition	nullable string	The information related to dataPartition of preferredTelecom.

** PresentOnAdmission

FullName:

com.cerner.pophealth.program.models.avro.poprecord.PresentOnAdmission

An enumeration for Present On Admission Indicators. e.g. N = No, U = Unknown, W = Not Applicable, Y = Yes, `_NOT_VALUED` = No value present

Symbols
N
U
W
Y
<code>_NOT_VALUED</code>
<code>_NOT_RECOGNIZED</code>

** Procedure

FullName: com.cerner.pophealth.program.models.avro.poprecord.Procedure

A resource representing an action that is or was performed on or for a patient, practitioner, device, organization, or location. For example, this can be a physical intervention on a patient like an operation, or less invasive like long term services, counseling, or hypnotherapy. FHIR: <https://hl7.org/fhir/R5/procedure.html>

Field name	Type	Description
empiPersonMetadata	nullable EmpiVersionedPersonId	Field contains meta information related to EMPI Person.
processingVersion	nullable string	The processing version, for which pipeline was ran, and data was produced. Format yyyy/MM/dd/HHmm
recordId	nullable RecordId	A structure representing a recordId from which this is originated.

procedureId	nullable string	An id that uniquely identifies this Procedure for a person within the same data partition.
procedureUid	nullable string	A unique identifier for the recorded procedure.
uid	string	a unique identifier for procedure across the whole reference record.
claimUid	nullable string	Optional claim uid for the procedure. This indicates that the procedure was extracted from the claim in the same population record.
summaryPersonRecordUid	nullable string	Optional summaryPersonRecord uid for the Procedure. This represents that the Procedure was extracted from the SummaryPersonRecord on the same pop record
personId	string	The identifier of the person, provided by the data source, associated with the procedure. This may also represent person EMPI ID.
billingRank	BillingRankType	A enumerated value to identify the significance or priority of a billing procedure. Default to <code>_NOT_RANKED</code> .
encounterId	nullable string	The identifier of the encounter or visit, provided by the data source, associated with the procedure.
encounterUid	nullable string	A unique identifier for the encounter or visit associated with the recorded procedure. This can be used to retrieve encounter specific information from the encounter service.
procedureCode	Code	The code value that identifies the procedure, such as ICD9-CM or CPT4 code.
statusConcepts	Array of OntologyConceptReference	A list of ontological concepts that represent the status, such as Active, Inactive, etc.
modifierCodes	Array of Code	The modifier codes associated with the procedure, provided by the data source. These are typically CPT4 modifiers.
modifierConcepts	Array of Array of OntologyConceptReference	A list of ontological concepts that represent the modifier code. One list for each modifier code in the modifierCodes array.
description	nullable string	The textual description of the procedure, provided by the data source.
serviceStartDate	nullable string	The start date of the procedure provided by the data source, in ISO 8601 format.

serviceEndDate	nullable string	The ending date of the procedure provided by the data source, in ISO 8601 format.
relatedProviders	Array of ProviderRelationship	The providers who performed the procedure, including name, identifier, and relationship to the procedure (for example, Surgeon, Anesthesiologist, Caregiver, etc).
principalProvider	nullable ProviderRelationship	Principal provider such as surgeon in surgical procedure. It is also included in relatedProviders as first Item.
comments	Array of Comment	The comment associated with the procedure.
status	nullable Code	The code value that identifies the state of the procedure (e.g. In Progress, Completed, or Entered In Error)
source	nullable Source	The information related to source.
placeOfService	nullable Code	Place of Service/Facility code. CMS Place Of Service Codes OID: 2.16.840.1.113883.15.5
updateDateTime	nullable string	ISO8601 timestamp indicating the point in time when data was last updated. New data (from metadata) holds a millisecond precision. Existing legacy data will hold a second precision. Format: YYYY-MM-DDThh:mm:ssZ or YYYY-MM-DDThh:mm:ss.SSSZ
updatePersonnelId	nullable string	Identifier of the Personnel responsible for the last update.
immunizationCategories	Array of Category	The list of categories to which the immunization is associated with the Procedure.
conditionCategories	Array of Category	The list of categories to which the condition is associated with the Procedure.
procedureCategories	Array of Category	The list of categories to which the procedure is associated with the Procedure.
supportingFact	nullable SupportingFact	A supporting fact that relates entities to the procedure. For example, a claim service line is a supporting fact that can be used to infer the procedure event occurred.
provenances	Array of Provenance	Records that describe entities and processes involved in producing and delivering or otherwise influencing this procedure.
partitionRecordRef		Reference to the partition record

	nullable PartitionRecordReference	containing this procedure.
patient	nullable PatientReference	Patient resource that this procedure is related to.
encounter	nullable EncounterReference	Encounter resource that this procedure is related to.
reasons	Array of ProcedureReason	Reasons or justifications for the procedure being performed. FHIR: https://hl7.org/fhir/R5/procedure-definitions.html#Procedure.reason
statusReason	nullable Code	The reason for the current state of the procedure. FHIR: https://hl7.org/fhir/R5/procedure-definitions.html#Procedure.statusReason
recorded	nullable string	The date the occurrence of the procedure was first captured in the record regardless of Procedure.status (potentially after the occurrence of the event). FHIR: https://hl7.org/fhir/R5/procedure-definitions.html#Procedure.recorded
bodySites	Array of Code	Anatomical location relevant to the procedure. FHIR: https://hl7.org/fhir/R5/condition-definitions.html#Procedure.bodySite

** ProcedureReason

FullName:

com.cerner.pophealth.program.models.avro.poprecord.ProcedureReason

Backbone element representing the options allowed to represent a reason that the procedure was performed. FHIR:

<https://hl7.org/fhir/R5/references.html#CodeableReference>

Field name	Type	Description
concept	nullable Code	A codified concept representing the reason for the procedure. FHIR: https://hl7.org/fhir/R5/references-definitions.html#CodeableReference.concept

** Provenance

FullName: com.cerner.pophealth.program.models.avro.poprecord.Provenance

A record that describes entities and processes involved in producing and delivering or otherwise influencing a resource (e.g. Allergy, Observation).

Field name	Type	Description
agents	Array of ProvenanceAgent	Actors taking a role in an activity for which it can be assigned some degree of responsibility for the activity taking place.
entities	Array of ProvenanceEntity	Entities used in a provenance activity.
recordedDateTime	nullable string	

** ProvenanceAgent

FullName:

com.cerner.pophealth.program.models.avro.poprecord.ProvenanceAgent

Actor taking a role in an activity.

Field name	Type	Description
type	nullable Code	Participation the agent had with respect to the activity.
who	nullable ProvenanceAgentEntity	Who participated as an agent in a provenance activity.

** ProvenanceAgentEntity

FullName:

com.cerner.pophealth.program.models.avro.poprecord.ProvenanceAgentEntity

Entity who participated as an agent in a provenance activity.

Field name	Type	Description
type	nullable string	Type of entity who participated in the activity. Allowed values: "ORGANIZATION, DEVICE"
organization	nullable OrganizationLite	An organization participating entity.

device	nullable Device	A participating device: "HealtheIntent".
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** ProvenanceEntity

FullName:

com.cerner.pophealth.program.models.avro.poprecord.ProvenanceEntity

An entity used in a provenance activity.

Field name	Type	Description
role	nullable Code	How the entity was used in a provenance activity (e.g. source).
what	nullable ProvenanceEntityIdentity	Identity of the entity used in a provenance activity.

** ProvenanceEntityIdentity

FullName:

com.cerner.pophealth.program.models.avro.poprecord.ProvenanceEntityIdentity

Identity of the entity used in a provenance activity.

Field name	Type	Description
type	nullable string	Type of entity used in a provenance activity. Allowed values: "DOCUMENT_REFERENCE", "CLAIM", "ENCOUNTER"
chargeItemId	nullable string	ID of the charge item entity used in a provenance activity.
documentReferenceId	nullable string	ID of the document reference entity used in a provenance activity.
documentReferenceUid	nullable	An id that uniquely identifies a document reference for a person

	string	across all data partitions.
documentReference	nullable PartitionRecordReference	Reference to the partition record containing this ProvenanceEntityIdentity.
encounterUid	nullable string	An id that uniquely identifies an encounter for a person across all data partitions.
claimUid	nullable string	An id that uniquely identifies a claim for a person across all data partitions.

** Provider

FullName: com.cerner.pophealth.program.models.avro.poprecord.Provider

A model representing a provider. A provider is any person involved in providing patient care (e.g. physician, nurse, etc). At least one of the aliases or name should be present

Field name	Type	Description
providerId	nullable string	A unique identifier for the provider in the source system.
aliases	Array of ProviderId	A list of IDs of the provider provided by the data source.
uid	nullable string	A unique identifier for provider across the whole population record.
name	nullable ProviderName	The name of the provider.
fullName	nullable string	The fully formatted representation of the provider's name.
personnelId	nullable string	The personnel identifier for a provider if one can be determined. The identifier is defined in the personnel-ministry(security) model and cannot be found in the source systems. Optional, can be null.
taxonomyCodes	Array of Code	A list of taxonomy codes representing the qualifications of a provider. This is not necessary the same as specific specialties defined in

		ProviderRole to be performed at a specific location.
active	boolean	An indication whether the provider is active as determine by the data source. If no indication was provided from the data source, the provider is assumed to be active.
addresses	Array of Address	The addresses of the provider.
telecoms	Array of Telecom	The phone or telecommunication information for the provider.
emails	Array of EmailAddress	The email information for the provider. These have a type (personal, work...) and an address
source	nullable Source	Source information for the provider.
middleName	nullable string	The Middle name of the provider.
suffix	nullable string	The suffix portion of the provider's name.
providerRoles	Array of ProviderRole	list of roles the provider is associated with at an organization for a period of time.

** ProviderId

FullName: com.cerner.pophealth.program.models.avro.poprecord.ProviderId

A model representing a provider Id.

Field name	Type	Description
value	string	The value of the code provided by the data source. This is required attribute.
type	ProviderIdType	The type of the provider ID. This is a required attribute.
assigningAuthority	nullable string	The assigning authority of the ID. It is strongly preferred that the assigning authority be an OID.

** ProviderIdType

FullName: com.cerner.pophealth.program.models.avro.poprecord.ProviderIdType

An enumeration indicating type of Provider Identifier. e.g. NPI = National Provider Identifier, DEA = Prescription Number for controlled substance, TAX = tax id, SL =

State License, EXTERNAL = Client assigned, UPIN = Unique Physician Identification Number

Symbols
NPI
DEA
TAX
SL
EXTERNAL
UPIN
_NOT_RECOGNIZED

** ProviderLite

FullName: com.cerner.pophealth.program.models.avro.poprecord.ProviderLite

DEPRECATED - Please use ProviderPersonnelLite. A lightweight provider, consisting of an ID and a full name.

Field name	Type	Description
providerId	nullable string	A unique identifier for provider from source system. This attribute can be used to identify the provider in reference data from the same source system.
aliases	Array of ProviderId	The IDs of the provider.
name	nullable ProviderName	The name of the provider.
fullName	nullable string	The full name of the provider.
middleName	nullable string	The Middle name of the provider.
suffix	nullable string	The suffix portion of the provider's name.

** ProviderName

FullName: com.cerner.pophealth.program.models.avro.poprecord.ProviderName

A model containing attributes of a provider name. At least one of the following values should be present (i.e "givenNames", "familyNames")

Field name	Type	Description
givenNames	Array of string	A list of given name portions of the provider's name. For example, if a person has a first name and a middle name, the first name should be the first item in the list and the middle name should be the second item in the list.
familyNames	Array of string	A list of family (i.e. last) name portions of the provider's name. Some may have multiple family names.
titles	Array of string	A list of titles associated to the provider's name.
prefix	nullable string	The prefix portion of the provider's name.
suffix	nullable string	The suffix portion of the provider's name.
degrees	Array of string	A list of degrees associated to the provider's name.

** ProviderParticipant

FullName:

com.cerner.pophealth.program.models.avro.poprecord.ProviderParticipant

A structure representing a participating provider.

Field name	Type	Description
provider	ProviderLite	DEPRECATED - Use providerPersonnel instead. The provider who participated an activity.
providerPersonnel	nullable ProviderPersonnelLite	The provider personnel who participated in an activity.
role	nullable Code	A code indicating a specific responsibility of the participating provider. Examples include "Primary physician", "Team coordinator", "Caregiver".

** ProviderPersonnelLite

FullName:

com.cerner.pophealth.program.models.avro.poprecord.ProviderPersonnelLite

A lightweight provider, consisting of an ID, full name, optional provider ID, and optional personnel ID. At least one of the following values should be present (i.e "aliases", "fullName", "name")

Field name	Type	Description
aliases	Array of ProviderId	The IDs of the provider.
fullName	nullable string	The full name of the provider.
name	nullable ProviderName	The name of the provider.
personnelId	nullable string	The personnel identifier for a provider if one can be determined. The identifier is defined in the personnel-ministry(security) model and cannot be found in the source systems. Optional, can be null.
middleName	nullable string	The Middle name of the provider.
suffix	nullable string	The suffix portion of the provider's name.
providerId	nullable string	The ID of the provider from record.

** ProviderRelationship

FullName:

com.cerner.pophealth.program.models.avro.poprecord.ProviderRelationship

A provider relationship, consisting of a lightweight provider and a relationship type code.

Field name	Type	Description
providerRelationshipId	nullable string	An id that uniquely identifies this ProviderRelationship for a person within the same data partition.
provider	ProviderPersonnelLite	The provider related to the entity. This attribute is required.

type	nullable Code	The type of relationship the provider has to the related entity.
beginDate	nullable string	The begin date of the relationship to the provider. The date and time will be in the ISO 8601 standard format.
endDate	nullable string	The end date of the relationship to the provider. The date and time will be in the ISO 8601 standard format.

** ProviderRole

FullName: com.cerner.pophealth.program.models.avro.poprecord.ProviderRole

A structure representing the authority of the provider to perform role(s) or service(s) in context of a given organization at its location(s).

Field name	Type	Description
providerRoleId	nullable string	A unique identifier for the provider role in the source system.
organization	nullable OrganizationLite	The Organization where the roles are available.
roles	Array of Code	The roles which the provider may perform.
specialties	Array of Code	A list of specialties of the provider. If a primarySpecialty is specified, it will also be included as part of the list.
primarySpecialty	nullable Code	The primary specialty of the provider.
period	nullable Period	The period during which the provider is authorized to perform in these role(s) at the organization.
locations	Array of LocationLite	The locations at which this provider provides care. If a primaryLocation is specified, it will also be included as part of the list.
primaryLocation	nullable LocationLite	The primary location at which this provider provides care.

** ProviderType

FullName: com.cerner.pophealth.program.models.avro.poprecord.ProviderType

An enumeration for representing what type a TypedProvider represents.

Symbols

PROVIDER

ORGANIZATION

_NOT_RECOGNIZED

** Quantity

FullName: com.cerner.pophealth.program.models.avro.poprecord.Quantity

A structure representing a measured amount. At least one of value or unit will be present.

Field name	Type	Description
value	nullable string	The string representation of a BigDecimal number value of the result. This can be a positive or negative whole number or decimal value.
unit	nullable Code	The codified unit of measure. Values could include, minutes, Mg, lb, etc.

** Question

FullName: com.cerner.pophealth.program.models.avro.poprecord.Question

A structure representing a question. It should have at least one of name or display.

Field name	Type	Description
questionnaireId	string	An id that uniquely identifies the questionnaire in a source system that the Question belongs to.
questionGroupId	nullable string	An id that identifies the question group within the questionnaire in a source system.
questionId	nullable string	An id that identifies the question within a questionnaire in a source system.

name	nullable Code	Name of the question in a source system.
display	nullable string	Display name of the question in a source system. It is either a user-friendly display for the codified name or a free text display in absence of a codified name.
answers	Array of TypedResultValue	The question's answers expressed as TypedResultValue such as numeric, codified, text, or date. Diagnosis, procedures, and conditions would be treated as codified results.
questionUid	nullable string	Universal ID of the Question resource that uniquely identifies it across all resources, regardless of resource type, across all data partitions.

** QuestionGroup

FullName: com.cerner.pophealth.program.models.avro.poprecord.QuestionGroup

A structure representing a group of questions in the questionnaire

Field name	Type	Description
questionnaireId	string	An id that uniquely identifies the questionnaire in a source system that the QuestionGroup belongs to.
questionGroupId	nullable string	An id that identifies the question group within the questionnaire in a source system.
name	nullable Code	Name of the question group in a source system.
display	nullable string	Display name of the question group in a source system. It is either a user-friendly display for the codified name or a free text display in absence of a codified name.
questions	Array of Question	The collection of questions for the questionGroup.

** Questionnaire

FullName: com.cerner.pophealth.program.models.avro.poprecord.Questionnaire

A structure representing a questionnaire.

Field name	Type	Description
empiPersonMetadata	nullable EmpiVersionedPersonId	Field contains meta information related to EMPI Person.
processingVersion	nullable string	The processing version, for which pipeline was ran, and data was produced. Format yyyy/MM/dd/HHmm
recordId	nullable RecordId	A structure representing a recordId from which this is originated.
questionnaireId	string	An id uniquely identifies the questionnaire in a source system.
personId	string	A unique identifier for the person whom the questionnaire was associated with.
encounterId	nullable string	The identifier of the encounter or visit associated with the questionnaire.
uid	string	A unique identifier of the questionnaire across all partitions of the reference record.
name	nullable Code	Name of the questionnaire, such as an OASIS Assessment.
status	nullable Code	Status of the questionnaire, such as draft, published, in progress, completed, amended.
authorType	AuthorType	An enumeration that identifies type of the author who recorded the answers of the questionnaire.
recordedDate	nullable string	The date/time when the questionnaire was recorded from the data source, in ISO 8601 format.
actions	Array of QuestionnaireAction	A list of actions performed on the questionnaire. It is sorted in descending order based on date attribute of the QuestionnaireAction.
questionGroups	Array of QuestionGroup	Collection of grouped questions for the questionnaire.
active	boolean	DEPRECATED: This field is not used in the Pop Record and should be ignored by consumers. The field was incorrectly added and cannot be removed for passivity reasons.
source	nullable	Source information for the questionnaire.

	Source	
provenances	Array of Provenance	This describes entities and processes involved in producing and delivering or otherwise influencing a resource (e.g. Questionnaire).
questionnaireUid	nullable string	Universal ID of the Questionnaire resource that uniquely identifies it across all resources, regardless of resource type, across all data partitions.
encounterUid	nullable string	Universal ID of the Encounter resource that uniquely identifies it across all resources, regardless of resource type, across all data partitions.

** QuestionnaireAction

FullName:

com.cerner.pophealth.program.models.avro.poprecord.QuestionnaireAction

A structure representing an action that can be taken on a questionnaire by an actor. Examples range from the original recording provider or a person reviewing the questionnaire. This record should have at least one of: date or provider.

Field name	Type	Description
questionnaireId	nullable string	An id that uniquely identifies the questionnaire in a source system that the QuestionnaireAction belongs to.
type	nullable Code	Type of action performed on the questionnaire such as create, review, modify, etc. The available types are defined by the HL7 V3 2.16.840.1.113883.5.33 coding system, e.g. LA - sign, AU - review, NU - delete, etc.
date	nullable string	The date the action was taken in ISO 8601 extended format.
actor	nullable ProviderPersonnelLite	The person who took the action on the questionnaire.

** QuestionnaireGroup

FullName:

com.cerner.pophealth.program.models.avro.poprecord.QuestionnaireGroup

A model representing a group of questionnaires that are related.

Field name	Type	Description
personId	nullable string	A unique identifier for the person whom the questionnaire group is associated with.
questionnaireGroupId	string	The id of the group.
questionnaires	Array of Questionnaire	The collection of questionnaires that make up the group.
source	nullable Source	Source information for the questionnaire group.

** RadiologyDocumentReference

FullName:

com.cerner.pophealth.program.models.avro.poprecord.RadiologyDocumentReference

The structure representing a radiology report that was documented for a radiology procedure.

Field name	Type	Description
empiPersonMetadata	nullable EmpiVersionedPersonId	Field contains meta information related to EMPI Person.
processingVersion	nullable string	The processing version, for which pipeline was ran, and data was produced. Format yyyy/MM/dd/HHmm
documentId	string	An id that uniquely identifies radiology document in a source system.
uid	string	A unique identifier of the radiology document across all partitions of the reference record.
recordId	RecordId	A structure representing a recordId from which this is originated.
personId	string	A unique identifier for the person who is associated with the radiology document.
encounterId	nullable string	The identifier of the encounter or visit associated with the radiology document.
title	nullable string	The title or subject of the radiology document.
docStatus	nullable	The status of the radiology document, such as dictated, authenticated,

	Code	nullified, etc, most likely defined by LOINC or HL7 codingSystem. For a complete list see http://hl7.org/implement/standards/fhir/v3/DocumentCompletion/in
actions	Array of DocumentAction	Includes all actions taken on the radiology document including authors, authenticators and reviewers.
lastUpdateDate	nullable string	The last date and time that the radiology document was updated in a clinically significant way. The value should be in valid ISO 8601 extended format.
serviceDate	nullable string	The clinically significant date and time associated with the radiology document. The value should be in valid ISO 8601 extended format. uses this validation: @validationType("ISO_DATE_AND_TIME")
authors	Array of DocumentAction	Authors of the radiology document
authenticators	Array of DocumentAction	Providers or persons who sign, cosign and verify the radiology document
reviewers	Array of DocumentAction	Providers or persons who review the radiology document
radiologyProcedures	Array of RadiologyProcedure	The radiology procedures for this radiology document
source	nullable Source	Source information for the radiology document.
active	boolean	DEPRECATED: This field is not used in the Pop Record and should be ignored by consumers. The field was incorrectly added and cannot be removed for backward compatibility reasons.
content	nullable Attachment	The content of the document
type	nullable Code	The type of radiology document.

** RadiologyProcedure

FullName:

com.cerner.pophealth.program.models.avro.poprecord.RadiologyProcedure

A structure representing a procedure that is linked to a particular radiology document.

Field name	Type	Description
procedureId	nullable string	An id that uniquely identifies this Procedure for a person in a source system.

procedureCode	Code	The code which describes what type of procedure like Colonoscopy or mammogram.
status	nullable Code	The status of the procedure documentation, such as performed, authenticated, etc, most likely defined by LOINC or HL7 codingSystem. For a more complete list see http://hl7.org/implement/standards/fhir/v3/DocumentCompletion/index.html .
name	nullable string	The name of the procedure.
serviceDate	nullable string	The service start date and time associated with the procedure, should be in ISO-8601 extended format. uses this validation <code>@validationType("ISO_DATE_AND_TIME")</code>
actions	Array of DocumentAction	Includes all actions taken on the procedure by persons who performed the procedure.
accession	nullable string	Accession is a number or identifier associated with procedure in the source system. An accession number may be used to group procedure for a single radiology document or group of radiology document on the same person.
documentId	nullable string	An id that uniquely identifies radiology document reference to which this radiology procedure is linked. This field should always be populated. It's marked nullable for passivity.

** Ratio

FullName: com.cerner.pophealth.program.models.avro.poprecord.Ratio

A record representing a ratio between numerator and denominator

Field name	Type	Description
numerator	nullable Quantity	Numerator of the ratio.
denominator	nullable Quantity	Denominator of the ratio.

** RawBenefitPlanLite

FullName:
com.cerner.pophealth.program.models.avro.poprecord.RawBenefitPlanLite

A lightweight Benefit Plan. This record should contain at least one of: sourceId, ids, name, payerName, or benefitType

Field name	Type	Description
sourceId	nullable string	DEPRECATED - to be replaced by the standardBenefitPlanId. The Id of the benefit coverage record provided by the data source.
benefitPlanId	nullable string	An id that uniquely identifies this benefitPlan in a source system.
standardBenefitPlanId	nullable string	The id of the Plan used to join against reference data
ids	Array of RawPlanId	ids for the Health Benefit Payer/Plan. Not necessarily unique to the plan. For example, EDI Payer IDs This attribute would could be populated with EDI Payer Ids, HIPAA National Plan IDs, External IDs
name	nullable string	Name for the Payer/Plan Examples: CIGNA C5 PLAN, UHC CHOICE EPO SELECT, UHC OPTIONS PPO
payerSourceId	nullable string	A higher level payer based Id for plans. Allows a subset of plans to be identified without explicit knowledge of the underlying plan sourceIds.
payerName	nullable string	Name of the Payer organization/entity that administers the Plan.
policyOrGroupNumber	nullable string	DEPRECATED. To be replaced by BenefitPlanClasses. Policy or Group number. Often a health insurance card will display a Policy or Group number. This is the Policy or Group Number from the SBR03 element on 837 claims.
policyOrGroupName	nullable string	DEPRECATED. To be replaced by BenefitPlanClasses. If a Policy or Group number is not available, a Policy or Group name may be provided. This is the Policy or Group Name from the SBR04 element on 837 claims.
benefitType	nullable RawCode	Code representing the Insurance Line/Benefit Type associated with the Benefit Coverage. Examples of Insurance Line/Benefit Type: Health Maintenance Organization, Exclusive Provider Organization, Preferred Provider Organization, Health...
lineOfBusiness	nullable	Used to distinguish sub-plan products or populations within a particular

	string	health plan. 'Line of Business' is pulled from 834 terminology.
benefitPlanClasses	Array of RawHealthPlanClass	Classifications of the coverage for which a number and/or name is provided. For example, may be used to identify policy name, policy number, group name, group number, product name, product id, contract name, or contract id etc.

** RawCode

FullName: com.cerner.pophealth.program.models.avro.poprecord.RawCode

A model representing a code attribute as it was received from the data source.

Field name	Type	Description
id	string	The id of the code provided by the data source. This is required attribute.
codingSystemId	string	The id of the coding system provided by the data source.
display	nullable string	The display of the code provided by the data source.
translations	Array of RawCodeTranslation	A list of translations. Added to support more than one translation.
extensions	Array of RawElementExtension	Extensions to the Code-based element. FHIR: https://hl7.org/fhir/types-definitions.html#Element.extension

** RawCodeTranslation

FullName:

com.cerner.pophealth.program.models.avro.poprecord.RawCodeTranslation

An equivalent code Id and coding system for a concept.

Field name	Type	Description
id	string	The id of the code provided by the data source.
codingSystemId	string	The id of the coding system provided by the data source.
display	nullable string	The display of the code translation provided by the data source.

** RawElementExtension

FullName:

com.cerner.pophealth.program.models.avro.poprecord.RawElementExtension

A special-purpose data type model representing an extension to a model element. The value of an element extension can be represented as different data types, but only one value representation is allowed for a given element extension. FHIR: <https://hl7.org/fhir/R5/extendibility.html#Extension>, <https://hl7.org/fhir/R5/types-definitions.html#Element.extension> Due to limitations (recursive record inclusion) within Avro, there are corresponding limitations to possible data types allowed to represent the value of the extension. This special-purpose data type model is similar to the `com.cerner.pophealth.refrecord.models.standard.Extension` data type model, with the difference being this data model is targeted at aligning with FHIR's element extension (<https://hl7.org/fhir/R5/types-definitions.html#Element.extension>).

Field name	Type	Description
extensionUri	nullable string	Identifies definition and meaning of the extension. FHIR: https://hl7.org/fhir/R5/extendibility-definitions.html#Extension.url
valueCanonical	nullable string	A canonical-based value, consisting of a URI that refers to a resource by its canonical URL. FHIR: https://hl7.org/fhir/R5/extendibility-definitions.html#Extension.value_x_ , https://hl7.org/fhir/R5/datatypes.html#canonical

** RawHealthPlanClass

FullName:

com.cerner.pophealth.program.models.avro.poprecord.RawHealthPlanClass

Classifications of the coverage for which a number and/or name is provided. For example, may be used to identify policy name, policy number, group name, group number etc.

Field name	Type	Description
type	nullable RawCode	Type of classifier, such as policy or group.
value	nullable string	Value associated with the classifier. For example, when type is group, then this is the group number. When type is policy, then this is the policy number. When type is product, then this is the product id.
name	nullable string	A short description for the class. For example, when type is group, then this is the group name. When type is policy, then this is the policy name. When type is product, then this is the product name.

** RawPlanId

FullName: com.cerner.pophealth.program.models.avro.poprecord.RawPlanId

Field name	Type	Description
value	string	Benefit plan id
type	string	Should be one of {EXTERNAL, EDI, HPID} to be standardized in reference record.
assigningAuthority	nullable string	The assigning authority of the planId.

** Reaction

FullName: com.cerner.pophealth.program.models.avro.poprecord.Reaction

A model representing a reaction associated with an allergy. At least one of reactionCode or description should be present.

Field name	Type	Description
reactionCode	nullable Code	The code value representing the reaction when the person is exposed to the allergen substance.
description	nullable string	A textual display name or description of the reaction from the source system.
severity	nullable Code	Represents the severity of the reaction triggered by the allergen.

** ReconciliationAdjustmentType

FullName:
com.cerner.pophealth.program.models.avro.poprecord.ReconciliationAdjustmentType

A value to determine what type of reconciliation needs to be performed for claims.
CANCELLATION - Indicates that previously matched claims needs to be cancelled.
ADJUSTMENT - Indicates that previously matched claims needs to be adjusted.
ORIGINAL - Indicates this is an original claim. NOT RECOGNIZED - No value present

Symbols

CANCELLATION

ADJUSTMENT

ORIGINAL

_NOT_RECOGNIZED

** ReconciliationType

FullName:

com.cerner.pophealth.program.models.avro.poprecord.ReconciliationType

A value to determine what type of reconciliation needs to be performed for claims. REPLACEMENT - using payerReplacementClaimNumber or providerReplacementClaimNumber to find claim to be replaced. MATCHING - using matching logic (e.g. For Institutional, claimId, patientId, statementEndDate) to determine if claims are the same for reconciliation. NO_RECONCILIATION - no reconciliation required. _NOT_RECOGNIZED = value not recognized

Symbols

REPLACEMENT

MATCHING

NO_RECONCILIATION

_NOT_RECOGNIZED

** RecordId

FullName: com.cerner.pophealth.program.models.avro.poprecord.RecordId

A structure representing a RecordId

Field name	Type	Description
dataPartitionId	string	Identifier for the particular source for a consumer
personId	string	Identifier for the person

** Recorder

FullName: com.cerner.pophealth.program.models.avro.poprecord.Recorder

A structure representing the provider recording the condition.

Field name	Type	Description
type	nullable	Type of entity that provided the condition like Provider

	string	
provider	nullable ProviderPersonnelLite	The provider who recorded the condition and takes responsibility for its content.

** ReferenceDrug

FullName: com.cerner.pophealth.program.models.avro.poprecord.ReferenceDrug

A model representing a reference drug.

Field name	Type	Description
drugCode	Code	The code of this drug. Could be an NDC or a code from another coding system.
display	nullable string	The display name of this drug.
dosageForm	nullable Code	The physical form of this drug. e.g. a code representing "tablet" or "lotion"
route	nullable Code	The route this drug should be administered. e.g. a code representing "oral" or "topical"
strength	nullable Strength	The strength of this drug. DEPRECATED - This field is deprecated and replaced with new strength field in ReferenceDrugIngredient model
brandType	BrandType	The BrandType for this Drug
referenceIngredients	Array of ReferenceDrugIngredient	Based on drug reference content, the discrete drug ingredients that comprise the drug.

** ReferenceDrugIngredient

FullName:
com.cerner.pophealth.program.models.avro.poprecord.ReferenceDrugIngredient

A model representing a standardized ReferenceDrugIngredient.

Field name	Type	Description

code	nullable Code	A code representing a drug ingredient
strength	nullable Ratio	The strength of the drug ingredient. For example, 100 mg per tablet. Strength is conveyed via a ratio where 100 mg is the numerator and 1 each is the denominator.

** ReferenceRange

FullName:

com.cerner.pophealth.program.models.avro.poprecord.ReferenceRange

A structure representing the range of numeric result values that are considered normal for the measurement and person. A reference value can also be a text string. "Negative", "None seen", and "Clear" are some examples. When referenceLow is a string value, referenceHigh is expected to be null and referenceRange = referenceLow. At least one of the following ("typedReferenceLowValue", "typedReferenceHighValue" and "display") should be not null.

Field name	Type	Description
typedReferenceLowValue	nullable TypedReferenceValue	The reference low represents the lowest result value that is considered normal for the measurement and person. NOTE: the low value is inclusive in the range by default, but can also be identified as exclusive of the range in CCDs and HL7 transactions.
typedReferenceHighValue	nullable TypedReferenceValue	The reference high represents the highest result value that is considered normal for the measurement and person. NOTE: the high value is inclusive in the range by default, but can also be identified as exclusive of the range in CCDs and HL7 transactions.
referenceLow	nullable NumericValue TextValue	DEPRECATED - typedReferenceLowValue should be used instead. The reference low represents the lowest result value that is considered normal for the measurement and person. NOTE: the low value is inclusive in the range by default, but can also be identified as exclusive of the range in CCDs and HL7 transactions.
referenceHigh	nullable NumericValue TextValue	DEPRECATED - typedReferenceHighValue should be used instead. The reference high represents the highest result value that is considered normal for the measurement and person. NOTE: the high value is inclusive in the range by default, but can also be identified as exclusive of the range in CCDs and HL7 transactions.

display	nullable string	The reference range is a textual representation of the combined low and high reference values. Some sources will only send the range as a text value and others may send discrete low and high values that can be combined to create a textual range. The range is typically displayed in applications as a text string. Examples: If referenceLow = 10 and referenceHigh = 20, then the referenceRange would be 10 - 20. If referenceLow = 10 and referenceHigh = null, then the referenceRange is >=10. If referenceLow = null and referenceHigh = 20, then the referenceRange is <=20. If referenceLow = Negative and referenceHigh = null, then the referenceRange is Negative.
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** ReferenceValueType

FullName:
com.cerner.pophealth.program.models.avro.poprecord.ReferenceValueType

An enumeration that identifies the kind of value reported for the TypedReferenceValue

Symbols
NUMERIC
TEXT
_NOT_RECOGNIZED

** ReferralRequest

FullName:
com.cerner.pophealth.program.models.avro.poprecord.ReferralRequest

A structure representing a referral for treatment or care. Referrals are used to send details about a request for referral service or transfer of a patient to the care of another provider.

Field name	Type	Description
empiPersonMetadata	nullable EmpiVersionedPersonId	Field contains meta information related to EMPI Person.
processingVersion	nullable string	The processing version, for which pipeline was ran, and data was produced. Format yyyy/MM/dd/HHmm

recordId	nullable RecordId	A structure representing a recordId from which this is originated.
referralRequestId	string	An id that uniquely identifies the referral request in a source system.
personId	string	A unique identifier for the person for whom the referral was made.
uid	string	A unique id for a referral request across the person reference record.
patientIds	Array of PersonId	Additional identifiers for the patient that this referral is associated with. e.g. MI = Member Identification Number, SSN = Social Security Number
patientName	nullable PersonName	Name of the patient
patientBirthDate	nullable string	Patient date of birth. Should be in ISO-8601 extended format, with date-only precision ranging from YYYY to YYYY-MM-DD (e.g. 1997 through 1997-07-16), though equivalent ISO-8601 basic is also allowed (e.g. YYYYMMDD)
patientGender	nullable Code	Patient gender code.
patientAddress	nullable Address	Patient address.
patientTelecoms	Array of Telecom	The phone or telecommunication information for the patient.
principalDiagnosis	nullable InfoCode	Principal diagnosis represented in InfoCode containing diagnosis code and date of diagnosis.
admittingDiagnosis	nullable InfoCode	Admitting diagnosis represented in InfoCode containing diagnosis code and date of diagnosis.
otherDiagnoses	Array of InfoCode	Other diagnoses represented in InfoCode containing diagnosis code and date of diagnosis.
estimatedDateOfBirth	nullable string	Estimated date of birth. In ISO-8601 extended format, with precision ranging from YYYY to YYYY-MM-DD (e.g. 1997 through 1997-07-16)
requester	nullable Communicator	The provider, organization, or system who/which initiated the referral request.

sentDate	nullable string	The date the referral is sent, made, or generated. In ISO-8601 extended format, with precision ranging from YYYY to YYYY-MM-DDThh:mm:ss.SSSZ (e.g. 1997 through 1997-07-16T19:20:00.000Z)
referralReason	nullable Code	The reason the patient was referred for treatment or care. Example include, care coordination, complex care management, social worker consult, etc.
source	nullable Source	Source information for the referral request.
referralTo	nullable Provider	The Provider to whom the patient was referred for treatment or care.
provenances	Array of Provenance	This describes entities and processes involved in producing and delivering or otherwise influencing a resource (e.g. Referral Request).
referralRequestUid	nullable string	A unique id for a referral request across poprecord entities.

** RelatedClaim

FullName: com.cerner.pophealth.program.models.avro.poprecord.RelatedClaim

A record which represents a related claim. In standardizer, both the fields should be filled.

Field name	Type	Description
relationshipType	nullable string	Indicates a type of relationship. Relationship should be one of type BPCI, CJR or INTERIM_BILLING
groupId	nullable string	Indicates an identifier for the related claim

** RelatedPerson

FullName: com.cerner.pophealth.program.models.avro.poprecord.RelatedPerson

Includes information about an individual involved in the patient's encounter other than the patient. Individual is a family member and has no formal responsibility in the care process.

Field name	Type	Description
relatedPersonId	nullable string	The identifier of the related person.
personNames	Array of PersonName	The names of the related person.
aliases	Array of PersonId	The aliases (i.e. IDs) of the related person. Examples are MRN, Member Number, SSN, etc.
gender	nullable Code	The gender of the related person.
addresses	Array of Address	The address of the related person.
telecoms	Array of Telecom	The phone or telecommunication information of the related person.
emails	Array of EmailAddress	The email information of the related person. These have a type (personal, work...) and an address.
relationshipType	nullable Code	This identifies the relationship between related person and patient.
patientToRelatedPersonRelationshipType	nullable Code	The inverse relationship type, which describes patient role towards the related person.

** Result

FullName: com.cerner.pophealth.program.models.avro.poprecord.Result

A structure representing a result. Both normalizedValue and originalValue cannot be null. At least, one of these two will be non-null. We are currently populating the normalizedValue only and not populating the originalValue at all. This will be addressed in PHPROGRAM-359

Field name	Type	Description
empiPersonMetadata	nullable	Field contains meta information related to EMPI Person.

	EmpiVersionedPersonId	
processingVersion	nullable string	The processing version, for which pipeline was ran, and data was produced. Format yyyy/MM/dd/HHmm
resultId	nullable string	An id that uniquely identifies this Result for a person within the same data partition.
resultUid	nullable string	A unique identifier for the recorded result.
recordId	nullable RecordId	A structure representing a recordId from which this is originated.
uid	string	a unique identifier for result across the whole reference record.
accession	nullable string	Accession is a number or identifier associated with laboratory results in the source system. An accession number may be used to group results for a single lab order or group of orders on the same person, and also uniquely identifies the specimen used for laboratory testing.
specimenType	nullable Code	The type of specimen on which the result was performed. DEPRECATED - replaced by specimen.specimenType
specimen	nullable Specimen	The specimen on which the result was performed.
measurementMethod	nullable Code	The method used to perform the measurement.
personId	string	A unique identifier for the person from whom the measurement was taken or from whom the lab specimen was collected. This may also represent person EMPI ID.
encounterId	nullable string	The identifier of the encounter or visit associated with the result, provided by the data source.
encounterUid	nullable string	A unique identifier for the encounter or visit associated with the recorded result. This can be used to retrieve encounter specific information from the encounter service.
summaryPersonRecordUid	nullable	Optional summaryPersonRecord uid for the Result. This represents that the Result was

	string	extracted from the SummaryPersonRecord on the same pop record
displayName	string	The text name of the result from the source system that is associated with the result value. For example, "Height", "Weight", "Glucose", "Cholesterol", etc. Reasons this is needed in addition to the code value display name: 1. For proprietary codes, we may not have access to the code display value in the source system. 2. If we are getting LOINC codes, the LOINC display name could be very different from the measurement display in the source system. For example, WBC (white blood cells) is a common Lab result. The LOINC code for this measurement is called "Leukocytes".
resultCode	Code	A code value and its attributes that identifies the test or measurement, for example an event code or LOINC code.
statusConcepts	Array of OntologyConceptReference	A list of ontological concepts that represent the status, such as Active, Inactive, etc.
ontologicalCategoryAliases	Array of string	The aliases of the top level concept of an Ontological hierarchy useful for categorization.
type	ResultValueType	Deprecated - this element cannot be relied on. For a single-component Result, if it has a value, the type can be determine from the inspection which of the type-specific child elements of the Result.typedValue element is valued. For a multi-component Result, this element is irrelevant. The type of the result value, such as numeric, codified, text, or date.
serviceDate	nullable string	The clinically significant date and time associated with the result. For lab results, this is the specimen collection time; for Vitals, this is the time the measurement was taken. The date and time will be in the ISO 8601 standard format.
servicePeriod	nullable Period	An effective period when the observation/measurement was made. Should be in ISO-8601 extended format, with precision ranging from YYYY to YYYY-MM-DDThh:mm:ss.SSSZ (e.g. 1997-07-16T19:20:00.000Z)
interpretation	nullable Code	Indicates whether the result is high, low, critical, etc. In Millennium, this is from code set 52. NOTE: CCD and other sources may only send a string value.
comments	Array of Comment	The comments associated with the result. This includes but is not limited to result text, comments or interpretive data, along with the personnel name and date/time the comment was added.
status	nullable Code	The status of the result, such as authorized, canceled, modified, etc.
actions	Array of ResultAction	Deprecated: Actor-based information should be conveyed in the Result.performers element. Actions take on the result.
lastUpdateDate	nullable string	Deprecated: The clinically relevant date/time or period should be conveyed in Result.serviceDate or Result.servicePeriod respectively. The date/time the current version was issued and made available to providers should be conveyed in Result.issued This

		Result.lastUpdateDate element is ambiguous as to what it represents, nor does it align with any FHIR element. The last date and time that the result was updated in a clinically significant way. The date and time will be in the ISO 8601 standard format.
source	nullable Source	The information related to source.
originalValue	nullable ResultValue	Original value of the Result. It will be populated only when it is different from the normalized values.
normalizedValue	nullable ResultValue	Normalized value of the Result. It will not be populated when normalization on the source value is not supported.
updateDateTime	nullable string	ISO8601 timestamp indicating the point in time when data was last updated. New data (from metadata) holds a millisecond precision. Existing legacy data will hold a second precision. Format: YYYY-MM-DDThh:mm:ssZ or YYYY-MM-DDThh:mm:ss.SSSZ
updatePersonnelId	nullable string	Identifier of the Personnel responsible for the last update.
conditionCategories	Array of Category	The list of categories to which the condition is associated with for the Result. The field is no longer populated, follow JIRA: https://jira2.cerner.com/browse/PHPROGRAM-3388 for details.
vitalSignCategories	Array of Category	The list of vital signs that is associated with the Result.
resultCategories	Array of Category	The list of categories to which the result is associated with the Result.
recorderType	ResultRecorderType	The type of result recorder such as self, provider, device, unknown, not valued, etc.
supportingFact	nullable SupportingFact	A supporting fact that relates entities to the result. For example, a claim service line is a supporting fact that can be used to infer the result event occurred.
referralRequestId	nullable string	This will be non-null for all Results extracted from ReferralRequests, for all others it will be null.
device	nullable Device	The device that recorded, measured, or transmitted the result value.
aliases	Array of Identifier	A list of unique identifiers to identify an associated object or entity within a given system.
requester		DEPRECATED - This field leverages

	nullable ProviderLite	ProviderLite, use requestingProvider instead The provider who made the request.
requestingProvider	nullable ProviderPersonnelLite	The provider who made the request.
issuedDate	nullable string	The date and time when the results were made available to providers. The value should be in valid ISO 8601 extended format.
provenances	Array of Provenance	Records that describe entities and processes involved in producing and delivering or otherwise influencing this result.
performers	Array of PerformedBy	A list of performers responsible for the result.
referralRequestUid	nullable string	A unique id for the referral request linked to the result.
partitionRecordRef	nullable PartitionRecordReference	Reference to the partition record containing this result.
patient	nullable PatientReference	Patient resource that this result is related to.
encounter	nullable EncounterReference	Encounter resource that this result is related to.
components	Array of ResultComponent	Some observations have multiple component observations. These component observations are expressed as separate code value pairs that share the same attributes. Examples include systolic and diastolic component observations for blood pressure measurement and multiple component observations for genetics observations.
episodeOfCareId	nullable string	The episode of care that establishes the context for this result. For example, the pregnancy context for an estimated due date observation.
extensions	Array of ResultExtension	Extensions to the resource model. FHIR: https://hl7.org/fhir/R5/domainresource-definitions.html#DomainResource.extension
categories	Array of Code	Classifies the general type of observation being made. FHIR: https://hl7.org/fhir/R5/observation-definitions.html#Observation.category
partOf	Array of ResultPartOf	References to resources (e.g. Procedure) for which the Observation is part of. FHIR: https://hl7.org/fhir/R5/communication-definitions.html#Observation.partOf

** ResultAction

FullName: com.cerner.pophealth.program.models.avro.poprecord.ResultAction

A structure representing an action that can be taken on a result, such as perform or verify (authenticate). The PERFORM action happens when a Lab result is produced from a lab instrument or testing system, or when a Vitals measurement is taken. The AUTHENTICATE action happens when the result is published or made available for clinical decisions.

Field name	Type	Description
action	ResultActionType	The action that was taken on the result. It has a default value of <code>_NOT_VALUED</code> which indicates no value present.
actionDate	nullable string	The date and time that the action was taken in ISO 8601 format.
actor	nullable ProviderPersonnelLite	The person who took the action, such as a laboratory technologist, nurse, or clinician. In the case of results performed or verified by an automated system, this can be SYSTEM.

** ResultActionType

FullName:
com.cerner.pophealth.program.models.avro.poprecord.ResultActionType

An enumeration that identifies actions that can be taken on a result.

Symbols

PERFORM

AUTHENTICATE

ORDER

`_NOT_VALUED`

`_NOT_RECOGNIZED`

** ResultComponent

FullName:
com.cerner.pophealth.program.models.avro.poprecord.ResultComponent

A structure that represents component results. A component will have a result associated with result code, interpretation, original result value, and normalized result value.

Field name	Type	Description
resultCode	nullable Code	Describes what was observed. A code that identifies the test or measurement.
originalValue	nullable ResultValue	Original value of the ResultComponent.
normalizedValue	nullable ResultValue	Normalized value of the ResultComponent. It will not be populated when normalization on the source value is not supported.
interpretation	nullable Code	A categorical assessment of an observation value. For example, high, low, normal.

** ResultExtension

FullName:

com.cerner.pophealth.program.models.avro.poprecord.ResultExtension

A special-purpose data type model representing an extension to the Result resource model. The value of an extension can be represented as different data types, but only one value representation is allowed for a given extension. FHIR: <https://hl7.org/fhir/R5/extensibility.html#Extension>, <https://hl7.org/fhir/R5/domainresource-definitions.html#DomainResource.extension> Due to limitations (recursive record inclusion) within Avro, there are corresponding limitations to possible data types allowed to represent the value of the extension.

Field name	Type	Description
extensionUri	nullable string	Identifies definition and meaning of the extension. FHIR: https://hl7.org/fhir/R5/extensibility-definitions.html#Extension.url
valueCode	nullable Code	A Code-based value of the extension. FHIR: https://hl7.org/fhir/R5/extensibility-definitions.html#Extension.value_x

** ResultPartOf

FullName: com.cerner.pophealth.program.models.avro.poprecord.ResultPartOf

Backbone element representing the options allowed to represent a resource (e.g.

Procedure) for which the Observation is part of. FHIR:
<https://hl7.org/fhir/R5/observation-definitions.html#Observation.partOf>

Field name	Type	Description
procedureId	nullable string	An ID of a Procedure resource. FHIR: https://hl7.org/fhir/R5/resource-definitions.html#Resource.id

** ResultRecorderType

FullName:

com.cerner.pophealth.program.models.avro.poprecord.ResultRecorderType

An enumeration that indicates the type of result recorder. Currently, it is used by Cerner wellness plan, but it can be extended for other result types.

Symbols

SELF

PROVIDER

DEVICE

UNKNOWN

_NOT_VALUED

_NOT_RECOGNIZED

** ResultReference

FullName:

com.cerner.pophealth.program.models.avro.poprecord.ResultReference

A backbone element providing the available options to reference a Result resource.

Field name	Type	Description
contained	nullable ContainedResult	Use this option to include an in-line (contained) Result resource within the referencing resource. This reference option is similar to FHIR's contained resource. Use this option whenever there is not enough information to independently identify the referenced resource.
resultId	nullable string	Use this option to reference a Result resource by its resource ID, when it exists within the same standardized data partition as the referencing resource. This reference option is similar to FHIR's literal reference. Use this option whenever the identity of the referenced resource within the standardized data partition is known.

** ResultValue

FullName: com.cerner.pophealth.program.models.avro.poprecord.ResultValue

A structure representing a resultValue

Field name	Type	Description
typedValue	nullable TypedResultValue	The result value that represents either a numeric, codified, text, or date value.
value	nullable NumericValue CodifiedValues TextValue DateValue	DEPRECATED - typedValue should be used instead. The result value expressed as numeric, codified, text, or date.
unitOfMeasure	nullable Code	DEPRECATED - replaced by unitOfMeasure in typedValue so it can be used by multiple entities like questionnaires. The codified unit of measure associated with the result value, such as mg/dL, lbs, seconds, etc.
referenceRange	nullable ReferenceRange	The reference range associated with the result.

** ResultValueType

FullName:
com.cerner.pophealth.program.models.avro.poprecord.ResultValueType

DEPRECATED - Values populated in TypedResultValue should be used instead of relying on ResultValueType. An enumeration that identifies the kind of value reported for the result.

Symbols

NUMERIC

CODIFIED

TEXT

DATE

_NOT_RECOGNIZED

_NOT_VALUED

*** RiskScore

FullName: com.cerner.pophealth.program.models.avro.poprecord.RiskScore

DEPRECATED: Consumers should use GenericRiskScore. A structure representing a risk score for a patient, such as a readmission risk score. This model will be used for both the current risk score and historical risk scores calculated over time.

Field name	Type	Description
recordId	nullable RecordId	A structure representing a recordId from which this is originated.
riskScoreId	string	An id that uniquely identifies risk score in a source system. Note: For some risk score types, such as Readmission risk scores, each change to the score yields a new identifier.
personId	string	The identifier of the person, provided by the data source, associated with the risk score.
encounterId	nullable string	The identifier of the encounter or visit associated with the risk score.
type	RiskScoreType	The type of the risk score. Default value is "Readmission"
value	string	The numeric value of the risk score. This can be a decimal value for risk, which is represented as a string.
interpretation	nullable Code	Indicates whether the risk score value is very high, high, moderate, low, or very low.
recordedDate	nullable string	The date/time when the risk score was created/recorded, as provided by the data source, in ISO 8601 format.
typeCode	nullable Code	Indicates the Risk Score type code.
medicarePaymentPeriod	nullable Period	The Medicare payment period associated with the risk score. This period is relevant for risk scores used to risk adjust payments made by CMS to health plans. e.g., Risk Adjustment Factor (RAF) risk scores used to risk adjust monthly CMS payments to Medicare Advantage plans will pertain to a particular payment period.
effectivePeriod	nullable Period	Indicate the period of time of the person to which the riskScore applies. Should be in ISO-8601 extended format, with precision ranging from YYYY to YYYY-MM-DDThh:mm:ss.SSSZ (e.g. 1997

		through 1997-07-16T19:20:00.000Z)
method	nullable Code	Evaluation mechanism such as MARA, Verisk, etc.
source	Source	Source information for the risk score.
riskScoreType	nullable string	Identifies the type of risk score. Populated by converting RiskScoreType Enum from ref-record model into String type. It can only have READMISSION, BMI, CHOLESTEROL, BLOOD_PRESSURE, EXERCISE, BLOOD_GLUCOSE, DRUG_ALCOHOL, EMOTIONAL, NUTRITIONAL, PREVENTIVE_HEALTH, SAFETY, TOBACCO, MARA_TOTAL, HRA, ACUITY, _NOT_RECOGNIZED
supportingFacts	Array of SupportingFact	A list of supporting facts that relate Questionnaire, Questionnaire Group, etc.
provenances	Array of Provenance	This describes entities and processes involved in producing and delivering or otherwise influencing a resource (e.g. Risk Score).

** RiskScoreGroup

FullName:

com.cerner.pophealth.program.models.avro.poprecord.RiskScoreGroup

A model representing a group of risk scores that are related.

Field name	Type	Description
personId	nullable string	A unique identifier for the person for whom the risk score group was identified for.
riskScoreGroupId	string	The id of the group.
riskScores	Array of RiskScore	The collection of risk scores that make up the group.
source	nullable Source	Source information for the risk score group.

** RiskScoreType

FullName: com.cerner.pophealth.program.models.avro.poprecord.RiskScoreType

An enumeration that identifies the type of the risk score

Symbols

READMISSION
BMI
CHOLESTEROL
BLOOD_PRESSURE
EXERCISE
BLOOD_GLUCOSE
DRUG_ALCOHOL
EMOTIONAL
NUTRITIONAL
PREVENTIVE_HEALTH
SAFETY
TOBACCO
MARA_TOTAL
_NOT_RECOGNIZED

**** Service**

FullName: com.cerner.pophealth.program.models.avro.poprecord.Service

At least one of the following values should be present (i.e "serviceAdjudicatedRevenueCode", "serviceBilledRevenueCode", "serviceAdjudicatedProcedure", "serviceBilledProcedure", "drug")

Field name	Type	Description
lineNumber	int	The number that the Payer uses to identify a specific Service line on a given Claim. Many claims will have multiple Service lines (payerLineNumbers) for the same Claim (payerClaimId). This is a non negative value.
serviceAdjudicatedRevenueCode	nullable Code	Revenue Codes are used for billing on Institutional Claim Service lines. serviceAdjRevenueCode is the Revenue Code that the Payer used to Adjudicate the Claim Service line. The Billed vs. Adjudicated fields are included to support scenarios where the Payer uses a Revenue Code or Procedure Code different from what was Billed to Adjudicate a Service line. Typically Payer Claim extracts will only include the Adjudicated Revenue and/or Procedure Codes. As a result, the Billed fields will typically be null. Typically expressed in the NUBC Revenue Code standard. NUBC Revenue Codes OID: 2.16.840.1.113883.6.301.3
serviceBilledRevenueCode	nullable Code	Revenue code billed by the service provider. It could be adjudicated by payer. Typically expressed in the NUBC Revenue Code standard.

serviceAdjudicatedProcedure	nullable ClaimProcedure	The Procedure Code that the Payer used to Adjudicate the claim. Typically we will only receive the Adjudicated Values in Payer extracts. Only the procedureCode and modifiers on these instances of ClaimProcedure will be populated. The date element of the serviceAdjProcedureCode will be null. Typically expressed in the HCPCS (Level 1 CPT-4 & Level 2 values are possible) standard. CPT-4 Codes are typically 5 digits. A small number of 'temp' CPT codes may have an alpha ('T') in the 5th position. OID: 2.16.840.1.113883.6.12 - Examples: 99201, HCPCS Level 2 have an alpha character in the 1st position followed by 4 numeric. OID: 2.16.840.1.113883.6.285
serviceBilledProcedure	nullable ClaimProcedure	The Procedure Code that the Provider submitted/billed for on the claim. Only the procedureCode and modifiers on these instances of ClaimProcedure will be populated. The date element of the serviceBilledProcedureCode will be null. Typically expressed in the HCPCS (Level 1 CPT-4 & Level 2 values are possible) standard. CPT-4 Codes OID: 2.16.840.1.113883.6.12 Level 2 HCPCS OID: 2.16.840.1.113883.6.285
serviceProvider	nullable Provider Organization	DEPRECATED: Use `typedServiceProvider` field instead. Revenue code billed by the service provider. It could be adjudicated by payer. Typically expressed in the NUBC Revenue Code standard.
serviceBilledServiceType	nullable Code	The service type billed by the provider for the claim service.
serviceAdjudicatedServiceType	nullable Code	The service type the payer assigned to the claim service for adjudication.
typedServiceProvider	nullable TypedProvider	Rendering TypedProvider responsible for the Service line. The Provider that the Service line should be attributed to. Need to add rules for determining who to attribute the service to if no Service level Rendering Provider information is associated with the Service line. e.g. Inst. Claim level Attending. All available Rendering Provider Ids should be included in this array. The NPI of the Rendering Provider is the most likely Provider Id to be included in the source.
serviceOperatingProvider	nullable ProviderPersonnelLite	The individual with primary responsibility for performing the surgical procedure(s). Must be populated when the Operating Provider at the service level is different than the one specified at the header level

serviceOtherOperatingProvider	nullable ProviderPersonnelLite	The individual performing a secondary surgical procedure or assisting the Operating Physician. Must be populated when the Other Operating Provider at the service level is different than the one specified at the header level
serviceReferringProvider	nullable ProviderPersonnelLite	Must be populated when this service line involves a referral and the referring provider differs from that reported at the claim level.
serviceOrderingProvider	nullable Provider	Must be populated when the service or supply was ordered by a provider who is different than the rendering provider for the service line.
serviceSupervisingProvider	nullable ProviderPersonnelLite	Must be populated when the rendering provider is supervised by a physician and the supervising physician is different than that listed at the claim level.
serviceDiagnoses	Array of Code	DEPRECATED: Use `serviceClaimDiagnoses` instead. Professional Claims may have multiple Diagnosis codes (EDI currently supports up to 4) associated with a given Service line. Primary diagnosis - 1st element of the serviceDiagnosisCode array is understood to be the Primary diagnosis for the service line. Do CONSUMERS of the Claim other than stdClaim need to extract Service level Diagnosis? i.e. stdProblem (or stdCondition?) could just pull the claim level Diagnosis. Typically expressed in the ICD9 or ICD10 standard. ICD9 Diagnosis Codes OID: 2.16.840.1.113883.6.103 - Examples: ICD10 Diagnosis Codes OID: 2.16.840.1.113883.6.90
serviceClaimDiagnoses	Array of ClaimDiagnosis	Service level diagnosis presented in ClaimDiagnosis containing diagnosis code and an optional present on admission code. Diagnosis code is typically expressed in the ICD9 or ICD10 standard. Professional Claims may have multiple Diagnosis codes (EDI currently supports up to 4) associated with a given Service line. Primary diagnosis - 1st element of the array is understood to be the Primary diagnosis for the service line. ICD9 Diagnosis Codes OID: 2.16.840.1.113883.6.103 ICD10 Diagnosis Codes OID: 2.16.840.1.113883.6.90
serviceFromDate	nullable string	The Service line start date. ISO 8601 Date Format Only, YYYY-MM-DD.
serviceToDate	nullable string	The Service line end date. If no end date is provided by the source, populate serviceToDate with the same date as serviceFromDate. ISO 8601 Date Format Only, YYYY-MM-DD.

isStatisticalIndicator	nullable boolean	Indicates if actual financial payment occurred for this service. For example, if this service line was for a captiated service and no real payment was made, this attribute would be true.
servicePlaceOfService	nullable Code	Place of Service/Facility code. CMS Place Of Service Codes OID: 2.16.840.1.113883.15.5
serviceBilledAmount	nullable string	Monetary amount billed for the service by the provider This is a string representation of BigDecimal number.
serviceBilledUnit	nullable string	DEPRECATED - use serviceBilledQuantity instead Unit of service billed by the provider This is a string representation of BigDecimal number.
serviceBilledDays	nullable string	DEPRECATED - use serviceBilledQuantity instead Days of service billed by the provider This is a string representation of BigDecimal number.
servicePaidAmount	nullable string	This is a string representation of BigDecimal number.
serviceAdjustments	Array of ServiceAdjustment	Service line level payment adjustments. These are equivalent to 835 CAS segment contents. If the source uses explicit fields e.g. coPayAmount, deductibleAmount, & coInsuranceAmount convert to the following adjustmentReasons CoPay Amount adjustmentReason = 3, DeductibleAmount adjustmentReason = 1, CoInsurance adjustmentReason = 2, Rejected Amount adjustmentReason = A1
serviceAdjudicatedUnit	nullable string	DEPRECATED - use serviceAdjudicatedQuantity instead Unit of service adjudicated by the payer This is a string representation of BigDecimal number.
serviceAdjudicatedQuantity	nullable Quantity	Quantity of service adjudicated by the payer such as units or days of service. It has both value and unit
serviceAdjudicatedDays	nullable string	DEPRECATED - use serviceAdjudicatedQuantity instead Days of service adjudicated by the payer This is a string representation of BigDecimal number.
drug	nullable Drug	Drug reported at claim service line

serviceFacilityLocation	nullable Organization	The organization (or organizational provider) provided to identify the Service Location. Must be an organization external to the organization represented by the Billing Provider.
billedServiceMinutes	nullable int	DEPRECATED - use serviceBilledQuantity instead The number of service minutes that the patient was billed. It should be Non Negative.
serviceBilledQuantity	nullable Quantity	Quantity of service billed by the provider such as units or days of service. It has both value and unit.
adjudicatedServiceMinutes	nullable int	The number of service minutes it took for adjudication. It should be Non Negative.
adjudicatedServiceAllowedAmount	nullable string	The maximum reimbursement the member's health policy allows for a specific service. This is the string representation of a decimal value
servicePaidDate	nullable string	The date that a service is paid. Should be in ISO-8601 extended format, with date-only precision ranging from YYYY to YYYY-MM-DD (e.g. 1997 through 1997-07-16), though equivalent ISO-8601 basic is also allowed (e.g. YYYYMMDD)
serviceStatus	nullable string	The status of a Service, such as Approved, Rejected, Denied. If present, should match one of {A, D, R} A = Approved, D = Denied, R = Rejected
pharmacyServiceType	nullable Code	The type of service (e.g. mail order pharmacy services, specialty care pharmacy services) being performed by a pharmacy. Currently this is only expected on Pharmacy claims (formType = 'Rx'). Possible standard codes for NCPDP Pharmacy Service type includes codeId = 1 (Community/Retail Pharmacy Services), 2 (Compounding Pharmacy Services), 3 (Home Infusion Therapy Provider Services), 4 (Institutional Pharmacy Services), 5 (Long Term Care Pharmacy Services), 6 (Mail Order Pharmacy Services) 7 (Managed Care Organization Pharmacy Services), 8 (Specialty Care Pharmacy Services), 99 (Other) codingSystemId = urn:cerner:codingsystem:ncdp:147-U7

** ServiceAdjustment

FullName:

com.cerner.pophealth.program.models.avro.poprecord.ServiceAdjustment

Payment adjustment for various reasons.

Field name	Type	Description
adjustmentReason	nullable Code	Adjustment reason defined in code source 139 of 837 standards.
adjustmentAmount	string	Adjustments DECREASE the payment when the adjustment amount is POSITIVE and INCREASE the payment when the adjustment amount is NEGATIVE. This is a string representation of BigDecimal number.
adjustmentQuantity	nullable string	Adjustment quantity a string representation of BigDecimal number. Represents an adjustment in the units of service. Positive number decreases paid units, and a negative value increases paid units.

**

ServiceRequest**FullName:** com.cerner.pophealth.program.models.avro.poprecord.ServiceRequest

ServiceRequest is a record of an order or request for a service to be performed that would result in a procedure, result, diagnostic request. Record represents the higher-level authorization that triggers creation of requests or tasks. Includes non pharmacy order request for a procedure, diagnostic, referral, consult, or other service to be planned, proposed, or completed as distinguished by the "intent" for the person. ServiceRequest could be used to request information as part of training or counseling - i.e. when the process will involve verification of the patient's comprehension or an attempt to change the patient's mental state. ServiceRequest is not intended for tracking events or tasks for "administrative" actions like requesting and tracking things to be done to a record, or keeping track of a checklist of steps such to be performed as part of a fulfilment process. Examples include: diagnostic tests (e.g., ECG 12 Lead or Study Order, Mammogram, xrays) procedures (e.g., colonoscopy) laboratory order for tests (e.g., hypertension)

Field name	Type	Description
empiPersonMetadata	nullable EmpiVersionedPersonId	Field contains meta information related to EMPI Person.
processingVersion	nullable string	The processing version, for which pipeline was ran, and data was produced. Format yyyy/MM/dd/HHmm
recordId	nullable RecordId	A structure representing a recordId from which this is originated.

serviceRequestId	nullable string	An id that uniquely identifies this ServiceRequest for a person within the same data partition.
uid	string	A unique id for a service request across the person reference record.
personId	string	The identifier of the person associated with the service request as provided by the data source that uniquely identifies the person within the data partition it was published to.
encounterId	nullable string	The identifier of the encounter or visit associated with the service request as provided by the data source that uniquely identifies the encounter within the data partition it was published to.
intent	nullable Code	Whether the ServiceRequest is a proposal, plan, or order.
code	nullable Code	A code that identifies a particular ServiceRequest, for example, procedure, diagnostic investigation, or panel of investigations that have been requested.
displayName	nullable string	The displayName can represent a non-codified service being requested or it can convey a localized or annotated description of the 'code' element. If both code and displayName are present, they are expected to be consistent with each other. For example, if a CBC (complete blood count) is the service being requested, then both the code and the displayName should describe the CBC.
status	nullable Code	A code that identifies the current status of the ServiceRequest, for example, Active, Complete, Discontinued, or On Hold. This element is a modifier element.
category	nullable Code	The categorization of the order conveyed by the source system, for example, procedure, radiology. This is not a concept code (where group of codes from various terminologies that have similar semantic meaning) inferred via concept ontologies.
authoredOn	nullable string	When the request transitioned to being actionable In ISO-8601 extended format, with precision ranging from YYYY to YYYY-MM-DDThh:mm:ss.SSSZ (e.g. 1997 through 1997-07-16T19:20:00.000Z)
occurrence	nullable ServiceRequestOccurrence	The date/time at which the requested service should occur.
requester	nullable ServiceRequestRequester	The individual who initiated the request and has responsibility for its activation.
performer	nullable	The desired performer for doing the requested

	ServiceRequestPerformer	service. For example, the surgeon, dermatopathologist, endoscopist, etc
reasons	Array of ServiceRequestReason	The explanation or justifications for why this service is being requested.
source	nullable Source	Represents information about the service request as it pertains to the source system it originated from.
doNotPerform	nullable boolean	If true, indicates that the service/procedure should NOT be performed. For example, used to indicate 'do not ambulate', 'do not elevate head of bed', 'do not take blood pressure'. This element can negate the specified action. FHIR: https://hl7.org/fhir/R5/servicerequest-definitions.html#ServiceRequest.doNotPerform
extensions	Array of ServiceRequestExtension	Extensions to the resource model. FHIR: https://hl7.org/fhir/extensions/extensions-ServiceRequest.html

** ServiceRequestExtension

FullName:

com.cerner.pophealth.program.models.avro.poprecord.ServiceRequestExtension

A special-purpose data type model representing an extension to the ServiceRequest resource model. The value of an extension can be represented as different data types, but only one value representation is allowed for a given extension. FHIR: <https://hl7.org/fhir/R5/extensibility.html#Extension>, <https://hl7.org/fhir/R5/domainresource-definitions.html#DomainResource.extension> Due to limitations (recursive record inclusion) within Avro, there are coresponding limitations to possible data types allowed to represent the value of the extension.

Field name	Type	Description
extensionUri	nullable string	Identifies definition and meaning of the extension. FHIR: https://hl7.org/fhir/R5/extensibility-definitions.html#Extension.url
valueCode	nullable Code	A Code-based value of the extension. FHIR: https://hl7.org/fhir/R5/extensibility-definitions.html#Extension.value_x

** ServiceRequestOccurrence

FullName:

com.cerner.pophealth.program.models.avro.poprecord.ServiceRequestOccurrence

A model representing occurrence of a specific ServiceRequest. Resource representing a request for service such as procedure, diagnostic investigations,

treatments, or operations to be performed.

Field name	Type	Description
dateTime	nullable string	The point in time at which the requested service should occur, for example, take vital signs at noon.
period	nullable Period	Date and time associated with the service request when a service has a duration, for example, surgery from 8-10AM, physical therapy from 8AM until noon.

** ServiceRequestPerformer

FullName:

com.cerner.pophealth.program.models.avro.poprecord.ServiceRequestPerformer

A model representing performer of a specific ServiceRequest

Field name	Type	Description
provider	nullable ProviderPersonnelLite	The desired performer for doing the requested service. For example, the surgeon, dermatopathologist, endoscopist, etc.

** ServiceRequestReason

FullName:

com.cerner.pophealth.program.models.avro.poprecord.ServiceRequestReason

An explanation or justification for why this service is being requested in coded or textual form. The displayName can represent a non-codified reason or it can convey a localized or annotated description of the code element. If both code and displayName are present, they are expected to be consistent with each other. For example, if headache is the reason for the service request, then both the code and the displayName should describe the headache.

Field name	Type	Description
code	nullable Code	A code that identifies the medical necessity for the service being requested.
displayName	nullable string	A textual description that identifies the medical necessity for the service being requested.

** ServiceRequestReference

FullName:

com.cerner.pophealth.program.models.avro.poprecord.ServiceRequestReference

A backbone element providing the available options to reference a ServiceRequest resource.

Field name	Type	Description
contained	nullable ContainedServiceRequest	Use this option to include an in-line (contained) ServiceRequest resource within the referencing resource. This reference option is similar to FHIR's contained resource. Use this option whenever there is not enough information to independently identify the referenced resource.
serviceRequestId	nullable string	Use this option to reference a ServiceRequest resource by its resource ID, when it exists within the same standardized data partition as the referencing resource. This reference option is similar to FHIR's literal reference. Use this option whenever the identity of the referenced resource within the standardized data partition is known.

** ServiceRequestRequester

FullName:

com.cerner.pophealth.program.models.avro.poprecord.ServiceRequestRequester

A choice data type providing a choice of resource references representing the requester of a service. Only one resource choice can be populated.

Field name	Type	Description
provider	nullable ProviderPersonnelLite	The individual who initiated the request and has responsibility for its activation.

** Slot

FullName: com.cerner.pophealth.program.models.avro.poprecord.Slot

A structure representing a slot, which is a slot of time on a schedule that may be available for booking appointments. They do not provide any information about appointments that are available, just the time, and optionally what the time can be used for. These are effectively spaces of free/busy time. At least one of the following values should be present ("display", "participant", "startDate",

"endDate")

Field name	Type	Description
slotId	nullable string	An id that uniquely identifies this appointment slot for a provider in a source system.
display	nullable string	Display name of the slot
participant	nullable Participant	Which participant the slot is for (e.g. the provider or the room/resource)
freeBusyType	FreeBusyType	The free/busy status for this appointment. When an appointment is assigned with a slot, the slot is marked as BUSY. Examples include Busy, Free, Unavailable, Tentative
startDate	nullable string	Date/Time that the slot is to begin In ISO-8601 extended format, with precision ranging from YYYY to YYYY-MM-DDThh:mm:ss.SSSZ (e.g. 1997 through 1997-07-16T19:20:00.000Z)
endDate	nullable string	Date/Time that the slot is to conclude In ISO-8601 extended format, with precision ranging from YYYY to YYYY-MM-DDThh:mm:ss.SSSZ (e.g. 1997 through 1997-07-16T19:20:00.000Z)

** Source

FullName: com.cerner.pophealth.program.models.avro.poprecord.Source

A structure representing information about the concept as it pertains to the source system it originated from.

Field name	Type	Description
id	nullable string	ID uniquely identifies an entity in the source system.
type	SourceType	Source type of the source system (enrollments, claims etc).
version	nullable string	Version information of an entity in the source system.
rawEntityLocators	Array of SourceLocator	Entity keys of the normalized raw entities (written to the data sink).

normalizedEntityLocator	nullable SourceLocator	Entity key of the normalized raw entities (written by data acquisition)
dataPartitionId	nullable string	Identifier for data partition.
contributingOrganization	nullable OrganizationLite	Contributing organization to identify the owner of the record

** SourceDataType

FullName:

com.cerner.pophealth.program.models.avro.poprecord.SourceDataType

The originating Source of the record. Used for easier troubleshooting.

Symbols

CLAIM

ENCOUNTER

_NOT_RECOGNIZED

** SourceLocator

FullName: com.cerner.pophealth.program.models.avro.poprecord.SourceLocator

A structure representing traceability information.

Field name	Type	Description
entityKey	string	entityKey of source system file Format: /source:string/type:string/name:string/snapshot:string or /source:string/type:string/name:string/append:string.
version	long	Version information of the file.
hdfsPath	nullable string	Location of the file represented by an HDFS path.

** SourceType

FullName: com.cerner.pophealth.program.models.avro.poprecord.SourceType

An enumeration that identifies the types of data sources.

Symbols
CLAIM
EMR
ENROLLMENT
BILLING
OTHER
_NOT_VALUED
MANUAL_APP_ENTRY
_NOT_RECOGNIZED
FORCED_REGISTRY

** Specimen

FullName: com.cerner.pophealth.program.models.avro.poprecord.Specimen

Resource representing a material sample used for diagnostic and environmental testing. This version of the Specimen resource is currently only used when the Specimen resource is referenced from another resource, but the Specimen resource does not have its own identity within the standardized data partition, but it is desired to preserve some information about the Specimen in-line (contained) within the referencing resource. A separate version will likely need to be defined when the full Specimen resource, with identity, is needed. FHIR:

<https://hl7.org/fhir/R5/specimen.html>

Field name	Type	Description
specimenType	nullable Code	Identifies the type of specimen, for example the code for blood or urine specimen.
collectionDate	nullable string	The date the specimen was collected. The value should be in valid ISO 8601 extended format.
receivedDate	nullable string	The date the lab received the specimen for processing. The value should be in valid ISO 8601 extended format.
display	nullable string	Plain text representation of the specimen type.
bodySite	nullable	Anatomical location from which the specimen was collected.

** SpecimenReference

FullName:

com.cerner.pophealth.program.models.avro.poprecord.SpecimenReference

A backbone element providing the available options to reference a Specimen resource.

Field name	Type	Description
contained	nullable Specimen	Use this option to include an in-line (contained) Specimen resource within the referencing resource. This reference option is similar to FHIR's contained resource. Use this option whenever there is not enough information to independently identify the referenced resource.

** StandardCode

FullName: com.cerner.pophealth.program.models.avro.poprecord.StandardCode

A standard code, consisting of a code ID and coding system ID.

Field name	Type	Description
id	string	The id of the standard code.
codingSystemId	string	The id of the coding system the standard code came from.
primaryDisplay	nullable string	The primary display of the standard code provided by the data source.

** StandardizedBenefitPlanLite

FullName:

com.cerner.pophealth.program.models.avro.poprecord.StandardizedBenefitPlanLite

A standardized BenefitPlanLite that contains both raw and standard benefit plan

Field name	Type	Description
raw	RawBenefitPlanLite	Raw BenefitPlanLite comes from activity data (e.g. claims, enrollments, etc.) of source system.
standard	nullable	BenefitPlanLite that is from a reference source that

[BenefitPlanLite](#)

matches key attributes (e.g. source identifier or PlanId, etc.) of the raw.

** StatusPeriod

FullName: com.cerner.pophealth.program.models.avro.poprecord.StatusPeriod

A structure representing the status of an entity during a period of time.

Field name	Type	Description
status	Code	The status of an entity at a particular time. Possible statuses may include New, Assigned, Enrolled, Active, Closed, etc.
beginDate	nullable string	The start of the time period in which the status was effective. In ISO-8601 extended format, with precision ranging from YYYY to YYYY-MM-DDThh:mm:ss.SSSZ (e.g. 1997 through 1997-07-16T19:20:00.000Z)
endDate	nullable string	The end of the time period in which the status was effective. In ISO-8601 extended format, with precision ranging from YYYY to YYYY-MM-DDThh:mm:ss.SSSZ (e.g. 1997 through 1997-07-16T19:20:00.000Z)

** Strength

FullName: com.cerner.pophealth.program.models.avro.poprecord.Strength

Field name	Type	Description
unit	Code	
value	string	

** Subscriber

FullName: com.cerner.pophealth.program.models.avro.poprecord.Subscriber

A record describing a person whose name is listed in a health insurance policy (represented by benefitPlan) considered to have full or shared responsibility for payment of the claim, or who has a unique member identification number with the health insurance policy. This Subscriber model represents the combination of an insured member and the health insurance policy/plan that insures them. At least one of the following values should be present (i.e "name", "memberId", "benefitPlan")

Field name	Type	Description
name	nullable	Name for the subscriber, in

	PersonName	cases where the patient is uniquely identifiable to the health plan, the patientName and subscriberName will be one in the same. Otherwise, the patientName and subscriberName will be different.
memberId	nullable string	The unique identifier for a member for the subscriber.
benefitPlan	nullable BenefitPlanLite	The payer/plan information for this subscriber.
planRank	nullable int	A sequence value to represent subscriber's insurance carrier's level of responsibility. This is a non negative value Examples: 1 for primary, 2 for secondary, 3 for tertiary, etc.)
patientsRelationshipToSubscriber	nullable Code	The relationship of the patient to this subscriber. For x12 EDI 837 transactions, this is the individual relationship code value from the Loop 2320 Other Subscriber Information SBR02 element. If the patient is uniquely identifiable to the payer/health plan (e.g. the patient has their own member ID), this relationship will be self (18 = Self). Examples of other supported relationships of the patient to the subscriber are: 01 = Spouse, 19 = Child, 20 = Employee, 21 = Unknown, 39 = Organ Donor, 53 = Life Partner

** SummaryPersonRecord

FullName:

com.cerner.pophealth.program.models.avro.poprecord.SummaryPersonRecord

A structure representing summary or snapshot of person's medical records. For instance, this model can be used to represent a CCD.

Field name	Type	Description
empiPersonMetadata	nullable EmpiVersionedPersonId	Field contains meta information related to EMPI Person.
processingVersion	nullable string	The processing version, for which pipeline was ran, and data was produced. Format

		yyyy/MM/dd/HHmm
recordId	nullable RecordId	A structure representing a recordId from which this is originated. recordId is made nullable for passivity reasons.
summaryPersonRecordId	string	An id that uniquely identifies this SummaryPersonRecord in a source system.
uid	string	a unique id for SummaryPersonRecord across the whole reference record.
personId	string	The id of the person, provided by a source system.
demographics	PersonDemographics	A structure representing a person's demographics.
allergies	Array of Allergy	A collection of allergies.
conditions	Array of Condition	A collection of conditions.
procedures	Array of Procedure	A collection of procedures.
results	Array of Result	A collection of results.
encounters	Array of Encounter	A collection of encounters.
medications	Array of Medication	A collection of medications.
immunizations	Array of Immunization	A collection of immunizations.
personProviderRelationships	Array of PersonProviderRelationship	A collection of person provider relationships.
source	Source	Source information for the SummaryPersonRecord.

** SupportingFact

FullName: com.cerner.pophealth.program.models.avro.poprecord.SupportingFact

A structure representing a supporting fact, which is a means to organize facts that relate various entities (e.g. Questionnaire, Questionnaire Group, Claims, etc.) by providing related identifications. For instance, HRA questions and related risk scores will need to be organized and made available for reference within the application.

Field name	Type	Description
supportingFactId	string	An id that uniquely identifies this supporting fact in the source system. For example, if Questionnaire Group is the supporting fact, this is the identifier for Questionnaire Group. If claim is the supporting fact, this is the claim id. If a service line within a claim is the supporting fact, this is the service line number.

type	string	Type of data such as QUESTIONNAIRE, QUESTIONNAIREGROUP, QUESTION, CONDITION, CLAIM, SERVICELINE, REFERRALREQUEST, SUMMARYPERSONRECORD, PERSON_BENEFIT_COVERAGE, PERSON_PROVIDER_RELATIONSHIP
entityId	nullable string	An id that uniquely identifies top level parent entity of the supporting fact from source system. For instance, if Questionnaire Group is the supporting fact, this is the identifier for Questionnaire. If claim is the supporting fact, this is the claim id. If a service line within a claim is the supporting fact, this is the claim id.
entityUid	nullable string	This is an optional field A unique id that identifies a supporting fact across all data partitions.

** System

FullName: com.cerner.pophealth.program.models.avro.poprecord.System

A structure representing a system, program, or algorithm. At least one of the following fields should be set: systemId, name

Field name	Type	Description
systemId	nullable string	An id that uniquely identifies the system in a source system.
name	nullable string	The name of the system.

** Telecom

FullName: com.cerner.pophealth.program.models.avro.poprecord.Telecom

A model containing attributes of a tele-communication, including an optional type. Typically this is a land-line or mobile phone number.

Field name	Type	Description
type	nullable Code	The type of the telecom (e.g. home, business, mobile).
number	string	The number of the telecom. No restrictions or assumptions are made about the value of this attribute. For example, "123-456-7890". This attribute is required.

extension	nullable string	The extension portion of the telecom. For example, "x1234".
countryCode	nullable string	The country code portion of the telecom. For example, "1" represents the USA.
updateDateTime	nullable string	ISO8601 timestamp indicating the point in time when data was last updated. Format: YYYY-MM-DDThh:mm:ss.SSSZ
updatePersonnelId	nullable string	Identifier of the Personnel responsible for the last update.
effectivePeriod	nullable Period	The effective period for the telecom.

** TextValue

FullName: com.cerner.pophealth.program.models.avro.poprecord.TextValue

A structure representing a result value when the ValueType = TEXT.

Field name	Type	Description
value	string	The textual result value.

** TimeValue

FullName: com.cerner.pophealth.program.models.avro.poprecord.TimeValue

A structure representing a timevalue.

Field name	Type	Description
value	string	A time during the day, in the format hh:mm:ss. There is no date specified. Seconds must be provided due to schema type constraints but may be zero-filled and may be ignored at receiver discretion. The time '24:00' SHALL NOT be used. A time zone SHALL NOT be present.

** Timing

FullName: com.cerner.pophealth.program.models.avro.poprecord.Timing

A structure representing a timing of an activity.

Field name	Type	Description
date	nullable string	The date of an activity. Should be in ISO-8601 extended format, with precision ranging from YYYY to YYYY-MM-DDThh:mm:ss.SSSZ (e.g. 1997 through 1997-07-16T19:20:00.000Z), though equivalent ISO-8601 basic is also allowed (e.g. YYYYMMDD).
descriptiveDate	nullable DescriptiveDate	A descriptive date of an activity.

** TimingUnitType

FullName:

com.cerner.pophealth.program.models.avro.poprecord.TimingUnitType

An enumeration representing time units.

Symbols
MINUTE
HOUR
DAY
WEEK
MONTH
YEAR
_NOT_VALUED
_NOT_RECOGNIZED

* TranslatedManualClinicalDataOutcome

FullName:

com.cerner.pophealth.program.models.avro.poprecord.TranslatedManualClinicalDataOutcome

This outcome represents the wrapper that holds manual clinical data after translated into population record format.

Field name	Type	Description
conditions	Array of Condition	A collection of manual clinical condition data. Can be empty.
procedures	Array of Procedure	A collection of manual clinical procedure data. Can be empty.

results	Array of Result	A collection of manual clinical result data. Can be empty.
medications	Array of Medication	A collection of manual clinical medication data. Can be empty.
immunizations	Array of Immunization	A collection of manual clinical immunization data. Can be empty.
allergies	Array of Allergy	A collection of manual clinical data entered for allergies. Can be empty.
empiId	string	The empi-id associated with the Clinical Data
manualDemographic	nullable PersonDemographics	PersonDemographics containing Manual demographic information. (Such as address, telecom etc)

** TypedActivityValue

FullName:

com.cerner.pophealth.program.models.avro.poprecord.TypedActivityValue

A structure that encapsulates different types of activities expressed as codes, text, or appointments initially. In future, this can be expanded to support other types of activities, such as procedures, medication orders, etc. Only one value will be non-null.

Field name	Type	Description
codifiedValues	nullable CodifiedValues	An array of activity values for type of CODIFIED.
textValue	nullable TextValue	An activity value for type of TEXT.
appointmentValue	nullable CarePlanAppointment	A result value for type of APPOINTMENT.

** TypedProvider

FullName: com.cerner.pophealth.program.models.avro.poprecord.TypedProvider

Represents either a person (PROVIDER) or organization entity (ORGANIZATION). Only one of `provider` or `organization` needs to be specified.

Field name	Type	Description

type	ProviderType	Represents what value this TypedProvider is
provider	nullable Provider	Represents a single person as the provider
organization	nullable Organization	Represents an organization entity as the provider

** TypedReconciliationInfo

FullName:

com.cerner.pophealth.program.models.avro.poprecord.TypedReconciliationInfo

Indicates the type of reconciliation that needs to be performed on the claims
Currently only CMS reconciliation information is available.

Field name	Type	Description
cmsAcoCclfReconciliationInfo	nullable CmsAcoCclfReconciliationInfo	Indicates information on how claims from CMS need to be reconciled

** TypedReferenceValue

FullName:

com.cerner.pophealth.program.models.avro.poprecord.TypedReferenceValue

A structure representing a reference of one type NUMERIC or TEXT Value can either be numericValue or textValue.

Field name	Type	Description
type	ReferenceValueType	The reference value type.
numericValue	nullable NumericValue	A reference value for type of NUMERIC.
textValue	nullable TextValue	A reference value for type of TEXT.

** TypedResultValue

FullName:

com.cerner.pophealth.program.models.avro.poprecord.TypedResultValue

A structure that encapsulates different types of result values expressed as numeric, codified, text, or date. Only one value will be non-null. This structure is designed to facilitate data mapping and HIVE queries. Only one of the following("numericValue", "codifiedValues", "textValue", "dateValue") can be present.

Field name	Type	Description
type	ResultValueType	The result value type.
numericValue	nullable NumericValue	A result value for type of NUMERIC.
codifiedValues	nullable CodifiedValues	A result value for type of CODIFIED.
textValue	nullable TextValue	A result value for type of TEXT.
dateValue	nullable DateValue	A result value for type of DATE.
timeValue	nullable TimeValue	A result value for type of TIME.
attachmentValue	nullable Attachment	The content of the result and format referenced.
unitOfMeasure	nullable Code	The codified unit of measure associated with the result value, such as mg/dL, lbs, seconds, etc.