

SummitEHR – FHIR API Guide

Revision History

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1 Introduction

Fast Healthcare Interoperability Resources (FHIR) is a modern healthcare data standard developed by Health Level Seven International (HL7) to streamline the secure and seamless exchange of electronic health information. Built on widely used web technologies, FHIR enables healthcare systems, applications, and devices to share structured clinical and administrative data in a consistent, efficient, and interoperable manner.

By leveraging standardized APIs and flexible data formats, FHIR improves care coordination, enhances interoperability, and supports innovation in digital health.

1.1 Document Purpose

The purpose of this document is to outline the details of FHIR APIs that are used in the context of our SummitEHR product.

1.2 FHIR in Azure Health Data Services

The FHIR service in Azure Health Data Services enables rapid exchange of health data using the Fast Healthcare Interoperability Resources (FHIR) data standard. As part of a managed Platform-as-a-Service (PaaS), the FHIR service makes it easy for anyone working with health data to securely store and exchange Protected Health Information (PHI) in the cloud.

The FHIR service offers:

- Managed FHIR-compliant server, provisioned in the cloud in minutes
- Enterprise-grade FHIR API endpoint for FHIR data access and storage
- High performance, low latency
- Secure management of Protected Health Information (PHI) in a compliant cloud environment
- SMART on FHIR for mobile and web clients
- Controlled access to FHIR data at scale with Microsoft Entra Role-Based Access Control (RBAC)
- Audit log tracking for access, creation, and modification events within the FHIR service data store

The FHIR service allows you to quickly create and deploy a FHIR server to the cloud for ingesting, persisting, and querying FHIR data. The Azure services that power the FHIR service are designed for high performance, no matter how much data you're working with.

The FHIR API in the FHIR service enables any FHIR-compliant system to securely connect and interact with FHIR data. As a PaaS offering, Microsoft takes on the operations, maintenance, updates, and compliance requirements for the FHIR service so you can free up your own operational and development resources.

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1.3 API in Healthcare

An Application Programming Interface (API) is a set of rules that help different software programs talk to each other.

In healthcare, APIs are very important because they make it easy to share patient information, run data analysis, and more using a format that's standard and simple to use over and over again.

1.4 FHIR APIs

FHIR APIs help different healthcare software systems share and access data. For example, a patient portal app can show patients their medical information by pulling it from the Electronic Health Record (EHR) using FHIR APIs.

SummitEHR uses Representational State Transfer (REST) to send and receive data through its APIs. REST is a standard way to move data over the internet using HTTP, and when it's used like this, it's called a "RESTful" exchange.

FHIR APIs can be built into an EHR system or used by other apps. When making a request with SummitEHR's FHIR API, you tell it what kind of data you want—like one patient's info, a list of their medications and care plans, or even a large set of data for many patients. These requests are carefully structured to get only the needed information, so instead of downloading a patient's entire medical record, you can ask for just one specific part.

1.5 SMART FHIR

In the SMART (Substitutable Medical Applications, Reusable Technologies) on FHIR system, there are two main ways to start (or "launch") an app, one from inside the EHR system and one from outside it, i.e.:

- **EHR Launch**
  This happens when the app is opened from within the EHR system while a user is already logged in.

- **Standalone Launch**
  This happens when the app is opened from outside the EHR system. For example, when a user taps the app on their phone or tablet.

1.6 OAuth 2.0

Our SummitEHR uses OAuth 2.0, which is an authorization mechanism that lets a third-party app get limited access to a service, like a website or server, without needing to know the user's password. It works by getting permission from the user or by letting the app access data on its own. In SummitEHR's use of

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FHIR APIs, OAuth 2.0 helps keep data safe by creating access tokens, so the system doesn't need to store or use usernames and passwords to get to certain information.

1.7 Symmetric (Private Key JWT) Authentication

Our SummitEHR uses Symmetric Authentication, which is a way to verify a client by using a special key pair, i.e., one public and one private. It's the preferred method in SMART apps (as long as the client can keep the private key safe) because it doesn't require sharing a secret password.

In this authentication, the client shares its public key with the SummitEHR FHIR Authorization Server when registering. This public key is sent in a specific format called a JSON Web Key (JWK), inside a set called a JWKS.



***Grant types**: Your Redirect URI is eligible for the Authorization Code Flow with PKCE.*

When the client wants to get an access token, it uses its private key to sign a secure message (a JWT). The authorization server then uses the client's public key to check and decode that message, making sure it's valid before allowing access. The private key must always be kept safe and secure. For more details, browse this link.

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2 Token Introspection

Token introspection lets SummitEHR check with the OAuth 2.0 authorization server to see if a token is still active (valid) and to get extra details about the token.

Token introspection can be performed using online tools like jwt.io. With the help of these tools, an access token can be decoded, and its expiry, audience, issuer and other relevant information can be viewed. The first step in the token validation is to verify that the token was issued by the correct identity provider and that it hasn't been modified. The FHIR server is configured to use a specific identity provider known as the Authority. The FHIR server retrieves information about the identity provider from the /.well-known/openid-configuration endpoint.

Here's an example of a well-known configuration request:

```
GET https://login.microsoftonline.com/{{tenantId}}/.well-known/openid-configuration    HTTP/1.1

tenantId: 9adb9e94-f549-49ae-a5c9-af04473e67c7
```

The abovementioned tenant ID is only for sandbox/testing purposes and will differ in production. The abovementioned tenant ID is only for sandbox environment and will differ in production.

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3 SummitEHR Resources

3.1 AllergyIntolerance

The AllergyIntolerance resource is used to retrieve information about a patient's allergies or adverse reactions. It must follow the US Core AllergyIntolerance Profile (version 3.1.1: STU3).

If a patient has No Known Allergies (NKA) or No Known Drug Allergies (NKDA), this will be indicated using specific predefined codes.

Schema

Element Name	Data Type	Card	Description
id	string	0..1	AllergyIntolerance resource entry id
meta	Meta	0..1	Metadata (profile & last updated date/time) about the resource
text	Narrative	0..1	Text summary of the resource, for human interpretation
clinicalStatus	CodeableConcept	0..1	The clinical status of the allergy intolerance
verificationStatus	CodeableConcept	0..1	Assertion about the certainty associated with the potential risk of a reaction to the identified substance
type	code	0..1	Identification of the underlying physiological mechanism for the reaction risk.
category	code	0..*	Category of the identified substance
criticality	code	0..1	Estimate of the potential harm of the reaction due to the identified substance
code	CodeableConcept	1..1	Code that identifies the allergy or intolerance
patient	Reference (US Core Patient Profile)	1..1	The person for whom the allergy is recorded
recordedDate	dateTime	0..1	The recordedDate represents when this particular AllergyIntolerance record was created in the system, which is often a system-generated date.
reaction	string	0..1	Text representation of adverse reaction linked to exposure to the substance

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Supported Operations

Search Parameter Name	Sample Query	Expected Output
Id	Example: GET {{fhirurl}}/AllergyIntolerance/AllergyIntoleranceC	The system will return the allergy resource related to the specified resource id.
Patient	Example: GET {{fhirurl}}/AllergyIntolerance?patient=Patient/PatientA	The system will return allergies associated with the specified patient.
Patient & clinical status	Example: GET {{fhirurl}}/AllergyIntolerance?patient=Patient/PatientA&clinical-status=active	The system will return the allergy resource related to the specified clinical status in the query parameter.
Category	Example: GET {{fhirurl}}/AllergyIntolerance?category=medication	The system will return the allergy resource related to the specified category.

Sample Request

Headers	GET
Accept: application/json+fhir Authorization: <OAuth2 Bearer Token>	{{fhirurl}}/AllergyIntolerance/AllergyIntoleranceC

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Sample Response

The data elements, such as resource IDs, in the JSON response may be encrypted. The sample output shown in the API documentation is provided for illustration only.


```
{
                "resourceType": "AllergyIntolerance",
                "id": "AllergyIntoleranceC",
                "meta": {
                    "extension": [
                        {
                            "url": "http://hl7.org/fhir/StructureDefinition/instance-
name",
                            "valueString": "AllergyIntolerance Example"
                        },
                        {
                            "url": "http://hl7.org/fhir/StructureDefinition/instance-
description",
                            "valueMarkdown": "This is a allergyintolerance example for
the *US Core AllergyIntolerance Profile*."
                        }
                    ],
                    "versionId": "1",
                    "lastUpdated": "2025-01-15T13:14:01.311+00:00",
                    "profile": [
                        "http://hl7.org/fhir/us/core/StructureDefinition/us-core-
allergyintolerance"
                    ]
                },
                "text": {
                    "status": "generated",
                    "div": "<div
xmlns=\"http://www.w3.org/1999/xhtml\"><p><b>Generated Narrative</b></p><div
style=\"display: inline-block; background-color: #d9e0e7; padding: 6px; margin: 4px;
border: 1px solid #8da1b4; border-radius: 5px; line-height: 60%\"><p style=\"margin-
bottom: 0px\">Resource \"example\" </p><p style=\"margin-bottom: 0px\">Profile: <a
href=\"StructureDefinition-us-core-allergyintolerance.html\">US Core
AllergyIntolerance Profile</a></p></div><p><b>clinicalStatus</b>: Active <span
style=\"background: LightGoldenRodYellow; margin: 4px; border: 1px solid khaki\"> (<a
href=\"http://terminology.hl7.org/3.1.0/CodeSystem-allergyintolerance-
clinical.html\">AllergyIntolerance Clinical Status
Codes</a>#active)</span></p><p><b>verificationStatus</b>: Confirmed <span
style=\"background: LightGoldenRodYellow; margin: 4px; border: 1px solid khaki\"> (<a
href=\"http://terminology.hl7.org/3.1.0/CodeSystem-allergyintolerance-
verification.html\">AllergyIntolerance Verification
Status</a>#confirmed)</span></p><p><b>category</b>:
medication</p><p><b>criticality</b>: high</p><p><b>code</b>: sulfonamide antibacterial
```


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```
<span style=\"background: LightGoldenRodYellow; margin: 4px; border: 1px solid
khaki\"> (<a href=\"https://browser.ihtsdotools.org/\">SNOMED CT</a>#763875007
\"Product containing sulfonamide (product)\")</span></p><p><b>patient</b>: <a
href=\"Patient-example.html\">Patient/example: Amy V. Shaw</a> \"
SHAW\"</p><h3>Reactions</h3><table class=\"grid\"><tr><td>-
</td><td><b>Manifestation</b></td><td><b>Severity</b></td></tr><tr><td>*</td><td>skin
rash <span style=\"background: LightGoldenRodYellow; margin: 4px; border: 1px solid
khaki\"> (<a href=\"https://browser.ihtsdotools.org/\">SNOMED
CT</a>#271807003)</span></td><td>mild</td></tr></table></div>"
                },
                "clinicalStatus": {
                    "coding": [
                        {
                            "system":
"http://terminology.hl7.org/CodeSystem/allergyintolerance-clinical",
                            "code": "active"
                        }
                    ]
                },
                "verificationStatus": {
                    "coding": [
                        {
                            "system":
"http://terminology.hl7.org/CodeSystem/allergyintolerance-verification",
                            "code": "confirmed"
                        }
                    ]
                },
                "category": [
                    "medication"
                ],
                "criticality": "high",
                "code": {
                    "coding": [
                        {
                            "system": "http://snomed.info/sct",
                            "code": "763875007",
                            "display": "Product containing sulfonamide (product)"
                        }
                    ],
                    "text": "sulfonamide antibacterial"
                },
                "patient": {
                    "reference": "Patient/PatientC",
                    "display": "Amy V. Shaw"
                },
```


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```
        "reaction": [
            {
                "manifestation": [
                    {
                        "coding": [
                            {
                                "system": "http://snomed.info/sct",
                                "code": "271807003",
                                "display": "skin rash"
                            }
                        ],
                        "text": "skin rash"
                    }
                ],
                "severity": "mild"
            }
        ]
    }
```


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Error Codes

If an error occurs, the system will return one of the following error codes.

Code	Severity	Description	Example
400	error	Bad request	Invalid Parameters passed in the request or there is a Data Access Layer exception due to documentation.
401	error	Unauthorized	Invalid or expired Access Token.
403	error	Forbidden	Valid Access Token is present but requested scope is not authorized.
404	error	Not found	Unknown resource type or Requested resource is not found
408	error	Request time out	Request timed out because there is a communication issue with EMR or the response received from EMR was passed the acceptable threshold (possible reason could be the amount of data system is trying to return).
500	error	Internal Server error	There is an internal error processing the request.

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3.2 CarePlan

The CarePlan resource is used to retrieve a patient's care plan. It must follow the US Core CarePlan Profile (version 3.1.1: STU3) standard.

Care Plans are utilized across various areas of healthcare and can vary widely in scope. They may range from simple reminders such as a general practitioner noting when a patient is due for a tetanus shot to complex, comprehensive plans for oncology patients that include elements like diet, chemotherapy, radiation, lab tests, and counseling, often with detailed timing, preconditions, and goals.

Care Plans can also be applied in veterinary medicine or clinical research to outline care for a group or herd of animals.

Schema

Element Name	Data Type	Card	Description
id	string	0..1	External Ids for this plan, i.e. Care Plan resource entry id
meta	Meta	0..1	Metadata(profile and last updated date/time) about the resource
text	Narrative	0..1	Text summary of the resource, for human interpretation
status	code	1..1	Current status of the care plan
intent	code	1..1	Indicates the level of authority associated with the care plan
category	(Slice Definition)	1..*	Identifies the type of care plan
subject	Reference (US Core Patient Profile)	1..1	Who the care plan is for
encounter	Reference (Encounter)	0..1	The Encounter during which this CarePlan was created or to which the creation of this record is tightly associated.
period	Period	0..1	Indicates when the plan did (or is intended to) come into effect and end.
careTeam	Reference (CareTeam)	0..*	Identifies all people and organizations who are expected to be involved in the care envisioned by this plan.

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activity		0..*	Identifies a planned action to occur as part of the plan. For example, a medication to be used, lab tests to perform, self-monitoring, education, etc.

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Supported Operations

Search Parameter Name	Sample Query	Expected Output
Id	Example: GET {{fhirurl}}/CarePlan/CarePlanC	The system will return the care plan related to the specified resource id.
Patient	Example: GET {{fhirurl}}/CarePlan?patient=Patient/PatientA	The system will return care plan related to the specified patient.
Status	Example: GET {{fhirurl}}/CarePlan?status=completed	The system will return all the care plans with the completed status
CareTeam	Example: GET {{fhirurl}}/CarePlan?care-team=CareTeam/CareTeamC	The system will return all the care plans related to the specified careTeam.

Sample Request

Headers	GET
Accept: application/json+fhir Authorization: <OAuth2 Bearer Token>	{{fhirurl}}/CarePlan/CarePlanC

Sample Response

The data elements, such as resource IDs, in the JSON response may be encrypted. The sample output shown in the API documentation is provided for illustration only.


```
{
                "resourceType": "CarePlan",
                "id": "CarePlanC",
                "meta": {
                    "extension": [
                        {
                            "url": "http://hl7.org/fhir/StructureDefinition/instance-
name",
                            "valueString": "Colonoscopy Example"
```


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```
                        },
                        {
                            "url": "http://hl7.org/fhir/StructureDefinition/instance-
description",
                            "valueMarkdown": "This is a colonoscopy example for the
*US Core CarePlan Profile*."
                        }
                    ],
                    "versionId": "1",
                    "lastUpdated": "2025-01-15T13:14:02.483+00:00",
                    "profile": [
                        "http://hl7.org/fhir/us/core/StructureDefinition/us-core-
careplan"
                    ]
                },
                "text": {
                    "status": "additional",
                    "div": "<div
xmlns=\"http://www.w3.org/1999/xhtml\">\n&#9;&#9;&#9;<strong>Assessment</strong>\n&#9;
&#9;&#9;<ol>\n&#9;&#9;&#9;&#9;<li>Recurrent GI bleed of unknown etiology; hypotension
perhaps secondary to this but as likely secondary to
polypharmacy.</li>\n&#9;&#9;&#9;&#9;<li>Acute on chronic anemia secondary to
#1.</li>\n&#9;&#9;&#9;&#9;<li>Azotemia, acute renal failure with volume loss secondary
to #1.</li>\n&#9;&#9;&#9;&#9;<li>Hyperkalemia secondary to #3 and on ACE and K+
supplement.</li>\n&#9;&#9;&#9;&#9;<li>Other chronic diagnoses as noted above,
currently
stable.</li>\n&#9;&#9;&#9;</ol>\n&#9;&#9;&#9;<table>\n&#9;&#9;&#9;&#9;<thead>\n&#9;&#9
;&#9;&#9;&#9;<tr>\n&#9;&#9;&#9;&#9;&#9;&#9;<th>Planned
Activity</th>\n&#9;&#9;&#9;&#9;&#9;&#9;<th>Planned
Date</th>\n&#9;&#9;&#9;&#9;&#9;</tr>\n&#9;&#9;&#9;&#9;</thead>\n&#9;&#9;&#9;&#9;<tbody
>\n&#9;&#9;&#9;&#9;&#9;<tr>\n&#9;&#9;&#9;&#9;&#9;&#9;<td>Colonoscopy</td>\n&#9;&#9;&#9
;&#9;&#9;<td>April 21,
2000</td>\n&#9;&#9;&#9;&#9;&#9;</tr>\n&#9;&#9;&#9;&#9;</tbody>\n&#9;&#9;&#9;</table>\n
&#9;&#9;</div>"
                },
                "status": "active",
                "intent": "order",
                "category": [
                    {
                        "coding": [
                            {
                                "system":
"http://hl7.org/fhir/us/core/CodeSystem/careplan-category",
                                "code": "assess-plan"
                            }
                        ]
```


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```
            }
        ],
        "subject": {
            "reference": "Patient/PatientC",
            "display": "Amy Shaw"
        }
    }
```


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Error Codes

If an error occurs, the system will return one of the following error codes.

Code	Severity	Description	Example
400	error	Bad request	Invalid Parameters passed in the request or there is a Data Access Layer exception due to documentation.
401	error	Unauthorized	Invalid or expired Access Token.
403	error	Forbidden	Valid Access Token is present but requested scope is not authorized.
404	error	Not found	Unknown resource type or Requested resource is not found
408	error	Request time out	Request timed out because there is a communication issue with EMR or the response received from EMR was passed the acceptable threshold (possible reason could be the amount of data system is trying to return).
500	error	Internal Server error	There is an internal error processing the request.

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3.3 CareTeam

The CareTeam resource is used to retrieve information about the care team members involved in a patient's care. It must follow the US Core CareTeam Profile (version 3.1.1: STU3) standard.

The CareTeam encompasses all individuals, teams, and organizations involved in planning and coordinating care for a single patient or a group such as a couple in therapy or a support group. A CareTeam may also be assigned at the organizational level without a specific patient context, as in the case of a code blue team or an emergency response team.

Membership is not limited to healthcare practitioners; it can include family members, guardians, the patient themselves, and other caregivers.

Schema

Element Name	Data Type	Card	Description
id	string	0..1	Care Team resource entry id
meta	Meta	0..1	Metadata (profile and last updated date/time) about the resource
text	Narrative	0..1	Text summary of the resource, for human interpretation
status	code	0..1	Current status of the Care Team
subject	Reference (US Core Patient Profile)	1..1	The patient this care team is for
encounter	Reference (Encounter)	0..1	The Encounter during which this CareTeam was created or to which the creation of this record is tightly associated.
period	Period	0..1	Indicates when the team did (or is intended to) come into effect and end.
participant	BackboneElement	1..*	Members of the care team
reasonCode	CodeableConcept	0..*	Describes why the care team exists.
managingOrganization	Reference (Organization)	0..*	The organization responsible for the care team.

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Supported Operations

Search Parameter Name	Sample Query	Expected Output
Id	Example: GET {{fhirurl}}/CareTeam/CareTeamC	The system will return the CareTeam resource related to the specified resource id.
Patient	Example: GET {{fhirurl}}/CareTeam?patient=Patient/PatientA	The system will return CareTeams associated with the specified patient.
Encounter	Example: GET {{fhirurl}}/CareTeam?encounter=Encounter/PatientA	The system will return all the CareTeam resource related to the specified encounter.
Status	Example: GET {{fhirurl}}/CareTeam?status=active	The system will return all the CareTeams having the Active status.

Sample Request

Headers	GET
Accept: application/json+fhir Authorization: <OAuth2 Bearer Token>	{{fhirurl}}/CareTeam/CareTeamC

Sample Response

The data elements, such as resource IDs, in the JSON response may be encrypted. The sample output shown in the API documentation is provided for illustration only.


```
{
                "resourceType": "CareTeam",
                "id": "CareTeamC",
                "meta": {
                    "versionId": "1",
                    "lastUpdated": "2025-01-15T13:14:02.545+00:00",
                    "profile": [
                        "http://hl7.org/fhir/us/core/StructureDefinition/us-core-
careteam"
```


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```
                ]
            },
            "text": {
                "status": "generated",
                "div": "<div
xmlns=\"http://www.w3.org/1999/xhtml\"><p><b>Generated Narrative</b></p><p><b>id</b>:
example</p><p><b>meta</b>: </p><p><b>status</b>: active</p><p><b>name</b>: US-Core
example CareTeam</p><p><b>subject</b>: <a href=\"Patient-example.html\">Amy V. Shaw.
Generated Summary: id: example; Medical Record Number: 1032702 (USUAL); active; Amy V.
Shaw , Amy V. Baxter ; ph: 555-555-5555(HOME), amy.shaw@example.com; gender: female;
birthDate: 1987-02-20</a></p><blockquote><p><b>participant</b></p><p><b>role</b>:
<span title=\"Codes: {http://nucc.org/provider-taxonomy 207RC0000X}\">Cardiovascular
Disease</span></p><p><b>member</b>: <a href=\"Practitioner-practitioner-
1.html\">Ronald Bone, MD. Generated Summary: id: practitioner-1; id: 9941339108, id:
25456; Ronald Bone
</a></p></blockquote><blockquote><p><b>participant</b></p><p><b>role</b>: <span
title=\"Codes: {http://nucc.org/provider-taxonomy 208D00000X}\">General
Practice</span></p><p><b>member</b>: <a href=\"Practitioner-practitioner-
2.html\">Kathy Fielding, MD. Generated Summary: id: practitioner-2; id: 1245319599,
id: 456789; Fielding Kathy ;
Kathy.Fielding@direct.ExampleMedicalPractice.net(WORK)</a></p></blockquote><blockquote
><p><b>participant</b></p><p><b>role</b>: <span title=\"Codes: {http://snomed.info/sct
116154003}\">Patient (person)</span></p><p><b>member</b>: <a href=\"Patient-
example.html\">Amy V. Shaw. Generated Summary: id: example; Medical Record Number:
1032702 (USUAL); active; Amy V. Shaw , Amy V. Baxter ; ph: 555-555-5555(HOME),
amy.shaw@example.com; gender: female; birthDate: 1987-02-
20</a></p></blockquote></div>"
            },
            "status": "active",
            "name": "US-Core example CareTeam",
            "subject": {
                "reference": "Patient/PatientC",
                "display": "Amy V. Shaw"
            },
            "participant": [
                {
                    "role": [
                        {
                            "coding": [
                                {
                                    "system": "http://snomed.info/sct",
                                    "code": "116154003",
                                    "display": "Patient"
                                }
                            ],
                            "text": "Patient"
```


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```
                        }
                    ],
                    "member": {
                        "reference": "Patient/PatientC",
                        "display": "Mr. Patient C"
                    }
                },
                {
                    "role": [
                        {
                            "coding": [
                                {
                                    "system": "http://snomed.info/sct",
                                    "code": "223366009",
                                    "display": "Healthcare professional
(occupation)"
                                }
                            ],
                            "text": "Healthcare professional (occupation)"
                        }
                    ],
                    "member": {
                        "reference": "Practitioner/PractitionerC1",
                        "display": "Dr. Practitioner C1"
                    }
                }
            ]
        }
```


Error Codes

If an error occurs, the system will return one of the following error codes.

Code	Severity	Description	Example
400	error	Bad request	Invalid Parameters passed in the request or there is a Data Access Layer exception due to documentation.
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404	error	Not found	Unknown resource type or Requested resource is not found
408	error	Request time out	Request timed out because there is a communication issue with EMR or the response received from EMR was passed the acceptable threshold (possible reason could be the amount of data system is trying to return).
500	error	Internal Server error	There is an internal error processing the request.

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3.4 Condition

Condition is one of the event resources in the FHIR workflow specification.

A condition can be a clinical condition, problem, diagnosis, or other event, situation, issue, or clinical concept that has risen to a level of concern.

Schema

Element Name	Data Type	Card	Description
id	string	0..1	Logical id of this artifact, i.e. entry id of condition resource
meta	Meta	0..1	Metadata (profile and last updated date/time) about the resource
text	Narrative	0..1	Text summary of the resource, for human interpretation
clinicalStatus	CodeableConcept	0..1	Current clinical status of the condition
verificationStatus	CodeableConcept	0..1	Current verification status of the condition
category	CodeableConcept	1..*	Code that identifies the type of condition
code	CodeableConcept	1..1	Identification of the condition, problem, or diagnosis
subject	Reference(US Core Patient Profile)	1..1	Patient who has the condition
encounter	Reference (Encounter)	0..1	The Encounter during which this Condition was created or to which the creation of this record is tightly associated.
onsetDateTime	dateTime	0..1	Estimated or actual date or date-time the condition began, in the opinion of the clinician.
abatementDateTime	dateTime	0..1	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" - Conditions are never really resolved, but they can abate.
recordedDate	dateTime	0..1	The recordedDate represents when this particular Condition record was created in the system, which is often a system-generated date.

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Supported Operations

Search Parameter Name	Sample Query	Expected Output
Id	Example: GET {{fhirurl}}/Condition/ConditionC1	The system will return the Condition resources related to the specified resource id.
Patient Id	Example: GET {{fhirurl}}/Condition?patient=Patient/PatientA	The system will return Conditions associated with the specified patient.
Encounter	Example: GET {{fhirurl}}/Condition?encounter=Encounter/EncounterC	The system will return all the Condition resources related to the specified encounter.
Category	Example: GET {{fhirurl}}/ Condition?category=encounter-diagnosis	The system will return all the Conditions related to the specified category.

Sample Request

Headers	GET
Accept: application/json+fhir Authorization: <OAuth2 Bearer Token>	{{fhirurl}}/Condition/ConditionC1

Sample Response

The data elements, such as resource IDs, in the JSON response may be encrypted. The sample output shown in the API documentation is provided for illustration only.


```
{
                "resourceType": "Condition",
                "id": "ConditionC1",
                "meta": {
                    "extension": [
                        {
```


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```
                            "url": "http://hl7.org/fhir/StructureDefinition/instance-
name",
                            "valueString": "SDOH Problem/Health Concern Example"
                        },
                        {
                            "url": "http://hl7.org/fhir/StructureDefinition/instance-
description",
                            "valueMarkdown": "This example of a US Core Condition
Problems and Health Concerns Profile illustrates its use to capture information about
a patient's SDOH Problem/Health Concern."
                        }
                    ],
                    "versionId": "1",
                    "lastUpdated": "2025-01-15T13:14:02.592+00:00",
                    "profile": [
                        "http://hl7.org/fhir/us/core//StructureDefinition/us-core-
condition-problems-health-concerns"
                    ]
                },
                "text": {
                    "status": "extensions",
                    "div": "<div
xmlns=\"http://www.w3.org/1999/xhtml\"><p><b>Generated Narrative</b></p><div
style=\"display: inline-block; background-color: #d9e0e7; padding: 6px; margin: 4px;
border: 1px solid #8da1b4; border-radius: 5px; line-height: 60%\"><p style=\"margin-
bottom: 0px\">Resource \"condition-SDOH-example\" </p><p style=\"margin-bottom:
0px\">Profile: <a href=\"StructureDefinition-us-core-condition-problems-health-
concerns.html\">US Core Condition Problems and Health Concerns
Profile</a></p></div><p><b>assertedDate</b>: 2016-08-10</p><p><b>clinicalStatus</b>:
Active <span style=\"background: LightGoldenRodYellow; margin: 4px; border: 1px solid
khaki\"> (<a href=\"http://terminology.hl7.org/3.1.0/CodeSystem-condition-
clinical.html\">Condition Clinical Status
Codes</a>#active)</span></p><p><b>verificationStatus</b>: Confirmed <span
style=\"background: LightGoldenRodYellow; margin: 4px; border: 1px solid khaki\"> (<a
href=\"http://terminology.hl7.org/3.1.0/CodeSystem-condition-ver-
status.html\">ConditionVerificationStatus</a>#confirmed)</span></p><p><b>category</b>:
Problem List Item <span style=\"background: LightGoldenRodYellow; margin: 4px; border:
1px solid khaki\"> (<a href=\"http://terminology.hl7.org/3.1.0/CodeSystem-condition-
category.html\">Condition Category Codes</a>#problem-list-item)</span>, Social
Determinants Of Health <span style=\"background: LightGoldenRodYellow; margin: 4px;
border: 1px solid khaki\"> (<a href=\"CodeSystem-us-core-tags.html\">US Core Tags
CodeSystem</a>#sdoh \"SDOH\")</span></p><p><b>code</b>: Nutrition impaired due to
limited access to healthful foods (finding) <span style=\"background:
LightGoldenRodYellow; margin: 4px; border: 1px solid khaki\"> (<a
href=\"https://browser.ihtsdotools.org/\">SNOMED
CT</a>#445281000124101)</span></p><p><b>subject</b>: <a href=\"Patient-
```


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```
example.html\">Patient/example: Amy V. Shaw</a> \" SHAW\"</p><p><b>recordedDate</b>:
2016-08-10 07:15:07-0800</p></div>"
                },
                "extension": [
                    {
                        "url": "http://hl7.org/fhir/StructureDefinition/condition-
assertedDate",
                        "valueDateTime": "2016-08-10"
                    }
                ],
                "clinicalStatus": {
                    "coding": [
                        {
                            "system":
"http://terminology.hl7.org/CodeSystem/condition-clinical",
                            "code": "active",
                            "display": "Active"
                        }
                    ],
                    "text": "Active"
                },
                "verificationStatus": {
                    "coding": [
                        {
                            "system":
"http://terminology.hl7.org/CodeSystem/condition-ver-status",
                            "code": "confirmed",
                            "display": "Confirmed"
                        }
                    ],
                    "text": "Confirmed"
                },
                "category": [
                    {
                        "coding": [
                            {
                                "system":
"http://terminology.hl7.org/CodeSystem/condition-category",
                                "code": "problem-list-item",
                                "display": "Problem List Item"
                            }
                        ],
                        "text": "Problem List Item"
                    },
                    {
                        "coding": [
```


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```
                            {
                                "system": "http://hl7.org/fhir/us/core/CodeSystem/us-
core-tags",
                                "code": "sdoh",
                                "display": "SDOH"
                            }
                        ],
                        "text": "Social Determinants Of Health"
                    }
                ],
                "code": {
                    "coding": [
                        {
                            "system": "http://snomed.info/sct",
                            "code": "445281000124101",
                            "display": "Nutrition impaired due to limited access to
healthful foods (finding)"
                        }
                    ],
                    "text": "Nutrition impaired due to limited access to healthful
foods (finding)"
                },
                "subject": {
                    "reference": "Patient/PatientC",
                    "display": "Amy V. Shaw"
                },
                "recordedDate": "2016-08-10T07:15:07-08:00"
            }
```


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Error Codes

If an error occurs, the system will return one of the following error codes.

Code	Severity	Description	Example
400	error	Bad request	Invalid Parameters passed in the request or there is a Data Access Layer exception due to documentation.
401	error	Unauthorized	Invalid or expired Access Token.
403	error	Forbidden	Valid Access Token is present but requested scope is not authorized.
404	error	Not found	Unknown resource type or Requested resource is not found
408	error	Request time out	Request timed out because there is a communication issue with EMR or the response received from EMR was passed the acceptable threshold (possible reason could be the amount of data system is trying to return).
500	error	Internal Server error	There is an internal error processing the request.

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3.5 Device

The Device resource is used to retrieve information about implantable devices linked to a patient. It must adhere to the US Core Implantable Device Profile (v3.1.1: STU3).

It serves as an administrative tool for tracking individual instances of a device and their associated locations. It is referenced by other resources to document which device was used to perform actions like procedures or observations, as well as for prescribing and dispensing devices for patient use or ordering supplies. Additionally, it is used to record and transmit Unique Device Identifier (UDI) information for devices, such as patient implants.

Schema

Element Name	Data Type	Card	Description
id	string	0..1	Implantable Device resource entry id
meta	Meta	0..1	Metadata(profile and last updated date/time) about the resource
text	Narrative	0..1	Text summary of the resource, for human interpretation
udiCarrier	BackboneElement	0..1	Unique Device Identifier (UDI) Barcode string that identifies this device
status	code	0..1	Current device status
distinctidentifier	string	0..1	The distinct identification string
manufactureDate	dateTime	0..1	Date when the device was manufactured
expirationDate	dateTime	0..1	Date and time of expiry of this device (if applicable)
lotNumber	string	0..1	Lot number of this device's manufacture
serialNumber	string	0..1	Serial number assigned by the manufacturer
deviceName	BackboneElement	0..*	The name of the device as given by the manufacturer
type	CodeableConcept	1..1	Code that identifies the kind or type of device
patient	Reference(US Core Patient Profile)	1..1	Patient to whom Device is affixed

Supported Operations

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Search Parameter Name	Sample Query	Expected Output
Id	Example: GET {{fhirurl}}/Device/DeviceC	The system will return the device related to the specified resource id.
Patient	Example: GET {{fhirurl}}/Device?patient=Patient/PatientA	The system will return all the Devices associated with the specified patient.
Status	Example: GET {{fhirurl}}/Device?status=active	The system will return all the Devices having the Active status.
Type	Example: GET {{fhirurl}}/ Device?type=705643001	The system will return all the Devices related to the specified type.

Sample Request

Headers	GET
Accept: application/json+fhir Authorization: <OAuth2 Bearer Token>	{{fhirurl}}/Device/DeviceC

Sample Response

The data elements, such as resource IDs, in the JSON response may be encrypted. The sample output shown in the API documentation is provided for illustration only.


```
{
                "resourceType": "Device",
                "id": "DeviceC",
                "meta": {
                    "extension": [
                        {
                            "url": "http://hl7.org/fhir/StructureDefinition/instance-
name",
                            "valueString": "Device Defib Example"
                        },
                        {
                            "url": "http://hl7.org/fhir/StructureDefinition/instance-
description",
```


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```
                            "valueMarkdown": "This is a Device defib example for the
*US Core Implantable Device Profile*."
                        }
                    ],
                    "versionId": "1",
                    "lastUpdated": "2025-01-15T13:14:03.108+00:00",
                    "profile": [
                        "http://hl7.org/fhir/us/core/StructureDefinition/us-core-
implantable-device"
                    ]
                },
                "text": {
                    "status": "generated",
                    "div": "<div
xmlns=\"http://www.w3.org/1999/xhtml\"><p><b>Generated Narrative</b></p><div
style=\"display: inline-block; background-color: #d9e0e7; padding: 6px; margin: 4px;
border: 1px solid #8da1b4; border-radius: 5px; line-height: 60%\"><p style=\"margin-
bottom: 0px\">Resource \"udi-2\" </p><p style=\"margin-bottom: 0px\">Profile: <a
href=\"StructureDefinition-us-core-implantable-device.html\">US Core Implantable
Device Profile</a></p></div><h3>UdiCarriers</h3><table class=\"grid\"><tr><td>-
</td><td><b>DeviceIdentifier</b></td><td><b>CarrierHRF</b></td><td><b>EntryType</b></t
d></tr><tr><td>*</td><td>99863313444316</td><td>(01)99863313444316(17)220101(10)M320(2
1)AC221</td><td>rfid</td></tr></table><p><b>status</b>:
active</p><p><b>manufacturer</b>: ACME Biomedical</p><p><b>expirationDate</b>: 2022-
01-01</p><p><b>lotNumber</b>: M320</p><p><b>serialNumber</b>:
AC221</p><h3>DeviceNames</h3><table class=\"grid\"><tr><td>-
</td><td><b>Name</b></td><td><b>Type</b></td></tr><tr><td>*</td><td>ACME Defibrillator
Analyzer, with Transcutaneous Pacemaker Input</td><td>udi-label-
name</td></tr></table><p><b>modelNumber</b>: 1.0</p><p><b>type</b>: Implant <span
style=\"background: LightGoldenRodYellow; margin: 4px; border: 1px solid khaki\"> (<a
href=\"https://browser.ihtsdotools.org/\">SNOMED CT</a>#19257004 \"Defibrillator,
device\")</span></p><p><b>patient</b>: <a href=\"Patient-
example.html\">Patient/example: Amy Shaw</a> \" SHAW\"</p></div>"
                },
                "udiCarrier": [
                    {
                        "deviceIdentifier": "99863313444316",
                        "carrierHRF": "(01)99863313444316(17)220101(10)M320(21)AC221",
                        "entryType": "rfid"
                    }
                ],
                "status": "active",
                "distinctIdentifier": "ABCDevice",
                "manufacturer": "ACME Biomedical",
                "manufactureDate": "2021-01-01",
                "expirationDate": "2022-01-01",
```


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```
                "lotNumber": "M320",
                "serialNumber": "AC221",
                "deviceName": [
                    {
                        "name": "ACME Defibrillator Analyzer, with Transcutaneous
Pacemaker Input",
                        "type": "udi-label-name"
                    }
                ],
                "modelNumber": "1.0",
                "type": {
                    "coding": [
                        {
                            "system": "http://snomed.info/sct",
                            "code": "19257004",
                            "display": "Defibrillator, device"
                        }
                    ],
                    "text": "Implant"
                },
                "patient": {
                    "reference": "Patient/PatientC",
                    "display": "Amy Shaw"
                }
            }
```


Error Codes

If an error occurs, the system will return one of the following error codes.

Code	Severity	Description	Example
400	error	Bad request	Invalid Parameters passed in the request or there is a Data Access Layer exception due to documentation.
401	error	Unauthorized	Invalid or expired Access Token.
403	error	Forbidden	Valid Access Token is present but requested scope is not authorized.
404	error	Not found	Unknown resource type or Requested resource is not found
408	error	Request time out	Request timed out because there is a communication issue with EMR or the response received from EMR was passed the acceptable threshold (possible reason

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			could be the amount of data system is trying to return).
500	error	Internal Server error	There is an internal error processing the request.

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3.6 DiagnosticReport

This resource is an event resource from a FHIR workflow perspective. A diagnostic report contains information typically provided by a diagnostic service once investigations are complete.

This may include atomic results, text reports, images, and codes. The exact mix depends on the type of diagnostic procedure and the specific outcomes of the investigation. In FHIR, the report can be shared through various methods, including Documents, RESTful APIs, or a Messaging framework.

Schema

Element Name	Data Type	Card	Description
id	string	0..1	Diagnostic Report for Lab resource entry id.
meta	Meta	0..1	Metadata(profile and last updated date/time) about the resource
text	Narrative	0..1	Text summary of the resource, for human interpretation
status	code	1..1	Current status of the Diagnostic Report for Lab
category	CodeableConcept	1..*	Category the Diagnostic Report belongs to
code	CodeableConcept	1..1	Code that identifies the lab order
subject	Reference(US Core Patient Profile)	1..1	Patient reference this lab was ordered for
encounter	Reference(Encounter)	0..1	Encounter reference when test ordered
effectiveDateTime	dateTime	1..1	Specimen Collection Datetime or Period
issued	instant	1..1	DateTime this version was made
performer	Reference(Practitioner | PractitionerRole | Organization | (CareTeam)	0..*	Responsible Diagnostic Service
result	Reference(US Core Laboratory Result Observation Profile)	0..*	Observations made during the lab

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Supported Operations

Search Parameter Name	Sample Query	Expected Output
Id	Example: GET {{fhirurl}}/DiagnosticReport/DiagnosticReportLabC	The system will return the Diagnostic report related to the specified resource id.
Patient	Example: GET {{fhirurl}}/ DiagnosticReport?patient=Patient/ PatientA	The system will return diagnostic reports associated with the specified patient.
Encounter	Example: GET {{fhirurl}}/ DiagnosticReport?encounter=Encounter/EncounterC	The system will return all the Diagnostic reports related to the specified encounter.
Performer	Example: GET {{fhirurl}}/DiagnosticReport?performer=Practitioner/PractitionerC1	The system will return all the Diagnostic reports related to the specified practitioner/ performer.

Sample Request

Headers	GET
Accept: application/json+fhir Authorization: <OAuth2 Bearer Token>	{{fhirurl}}/DiagnosticReport/DiagnosticReportLabC

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Sample Response

The data elements, such as resource IDs, in the JSON response may be encrypted. The sample output shown in the API documentation is provided for illustration only.


```
{
                "resourceType": "DiagnosticReport",
                "id": "DiagnosticReportLabC",
                "meta": {
                    "extension": [
                        {
                            "url": "http://hl7.org/fhir/StructureDefinition/instance-
name",
                            "valueString": "CBC Example"
                        },
                        {
                            "url": "http://hl7.org/fhir/StructureDefinition/instance-
description",
                            "valueMarkdown": "This is a CBC example for the *US Core
DiagnosticReport Lab Profile*."
                        }
                    ],
                    "versionId": "1",
                    "lastUpdated": "2025-01-15T13:14:02.686+00:00",
                    "profile": [
                        "http://hl7.org/fhir/us/core/StructureDefinition/us-core-
diagnosticreport-lab"
                    ]
                },
                "text": {
                    "status": "generated",
                    "div": "<div xmlns=\"http://www.w3.org/1999/xhtml\"><h2><span
title=\"Codes: {http://loinc.org 58410-2}\">CBC panel - Blood by Automated
count</span> (<span title=\"Codes: {http://terminology.hl7.org/CodeSystem/v2-0074
LAB}\">Laboratory</span>) </h2><table class=\"grid\"><tr><td>Subject</td><td><b>Amy V.
Baxter </b> female, DoB: 1987-02-20 ( Medical Record Number: 1032702
(USUAL))</td></tr><tr><td>When For</td><td>2005-07-
05</td></tr><tr><td>Reported</td><td>2005-07-06
11:45:33+1100</td></tr></table><p><b>Report Details</b></p><table
class=\"grid\"><tr><td><b>Code</b></td><td><b>Value</b></td><td><b>Reference
Range</b></td><td><b>When For</b></td></tr><tr><td><a href=\"Observation-
neutrophils.html\"><span title=\"Codes: {http://loinc.org 770-8}\">Neutrophils
%</span></a></td><td>40.0 %</td><td><span title=\"Codes:
{http://terminology.hl7.org/CodeSystem/referencerange-meaning normal}\">Normal
Range</span>: 37.0 % - 67.0 %</td><td>2005-07-05</td></tr><tr><td><a
href=\"Observation-mchc.html\"><span title=\"Codes: {http://loinc.org 786-4}\">MCHC
RBC Auto-mCnc</span></a></td><td>34.7 g/dL</td><td><span title=\"Codes:
```


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```
{http://terminology.hl7.org/CodeSystem/referencerange-meaning normal}\">Normal
Range</span>: 30.0 g/dL - 34.0 g/dL</td><td>2005-07-05</td></tr><tr><td><a
href=\"Observation-hemoglobin.html\"><span title=\"Codes: {http://loinc.org 718-
7}\">Hgb Bld-mCnc</span></a></td><td>17.0 g/dL</td><td><span title=\"Codes:
{http://terminology.hl7.org/CodeSystem/referencerange-meaning normal}\">Normal
Range</span>: 16.5 g/dL - 21.5 g/dL</td><td>2005-07-05</td></tr><tr><td><a
href=\"Observation-erythrocytes.html\"><span title=\"Codes: {http://loinc.org 789-
8}\">RBC # Bld Auto</span></a></td><td>4.58 10*6/uL</td><td><span title=\"Codes:
{http://terminology.hl7.org/CodeSystem/referencerange-meaning normal}\">Normal
Range</span>: 4.1 10*6/uL - 6.1 10*6/uL</td><td>2005-07-05</td></tr></table></div>"
                },
                "status": "final",
                "category": [
                    {
                        "coding": [
                            {
                                "system": "http://terminology.hl7.org/CodeSystem/v2-
0074",
                                "code": "LAB",
                                "display": "Laboratory"
                            },
                            {
                                "system": "http://snomed.info/sct",
                                "code": "LP29708-2"
                            },
                            {
                                "system": "http://snomed.info/sct",
                                "code": "LP7839-6"
                            }
                        ]
                    }
                ],
                "code": {
                    "coding": [
                        {
                            "system": "http://loinc.org",
                            "code": "58410-2",
                            "display": "CBC panel - Blood by Automated count"
                        }
                    ]
                },
                "subject": {
                    "reference": "Patient/PatientC",
                    "display": "Amy Shaw"
                },
                "encounter": {
```


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```
            "reference": "Organization/OrganizationC",
            "display": "Example Organization"
        },
        "effectiveDateTime": "2005-07-05",
        "issued": "2005-07-06T11:45:33+11:00",
        "performer": [
            {
                "reference": "Organization/OrganizationC",
                "display": "Example Organization"
            }
        ],
        "result": [
            {
                "reference": "Observation/neutrophils",
                "display": "NEUTROPHILS"
            },
            {
                "reference": "Observation/mchc",
                "display": "MCHC"
            },
            {
                "reference": "Observation/ObservationHemoglobinC",
                "display": "HEMOGLOBIN"
            },
            {
                "reference": "Observation/erythrocytes",
                "display": "ERYTHROCYTES"
            }
        ]
    }
```


Error Codes

If an error occurs, the system will return one of the following error codes.

Code	Severity	Description	Example
400	error	Bad request	Invalid Parameters passed in the request or there is a Data Access Layer exception due to documentation.
401	error	Unauthorized	Invalid or expired Access Token.
403	error	Forbidden	Valid Access Token is present but requested scope is not authorized.

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404	error	Not found	Unknown resource type or Requested resource is not found
408	error	Request time out	Request timed out because there is a communication issue with EMR or the response received from EMR was passed the acceptable threshold (possible reason could be the amount of data system is trying to return).
500	error	Internal Server error	There is an internal error processing the request.

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3.7 DocumentReference

The DocumentReference resource is used to index documents, clinical notes, and other binary objects, making them accessible to a healthcare system. A document consists of a sequence of bytes that is identifiable, provides its own context (such as subject and author information for display), and supports versioning and updates.

The DocumentReference resource can be used with any document format that has a recognized mime type and conforms to this definition.

Schema

Element Name	Data Type	Card	Description
id	string	0..1	Document Reference resource entry id.
meta	Meta	0..1	Metadata(profile and last updated date/time) about the resource
text	Narrative	0..1	Text summary of the resource, for human interpretation
Identifier	Identifier	0..*	Other identifiers for the document
status	code	1..1	Current status of this document reference
type	CodeableConcept	1..1	Code that identifies the kind of document (LOINC if possible)
category	CodeableConcept	1..*	Code that identifies the category of document
subject	Reference(US Core Patient Profile)	1..1	Who/what is the subject of the document
date	instant	0..1	When this document reference was created
author	Reference(US Core Practitioner Profile | US Core Organization	0..*	Practitioner reference who authored the document
custodian	Reference(US Core Organization Profile)	0..1	Organization which maintains the document
description	string	0..1	Human-readable description
content	BackboneElement	1..*	Document referenced
context	BackboneElement	0..1	Encounter reference when this document was created

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Supported Operations

Search Parameter Name	Sample Query	Expected Output
Id	Example: GET {{fhirurl}}/DocumentReference/DocumentReferenceC	The system will return the Document reference related to the specified resource id.
Patient	Example: GET {{fhirurl}}/DocumentReference?patient=Patient/PatientA	The system will return all the Document References associated with the specified patient.
Encounter	Example: GET {{fhirurl}}/DocumentReference?encounter=Encounter/EncounterC	The system will return all the Document References related to the specified encounter.
Author	Example: GET {{fhirurl}}/DocumentReference?author=Practitioner/PractitionerC1	The system will return all the Document references related to the specified practitioner/ author.

Sample Request

Headers	GET
Accept: application/json+fhir Authorization: <OAuth2 Bearer Token>	{{fhirurl}}/DocumentReference/DocumentReferenceC

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Sample Response

The data elements, such as resource IDs, in the JSON response may be encrypted. The sample output shown in the API documentation is provided for illustration only.


```
{
                "resourceType": "DocumentReference",
                "id": "DocumentReferenceA",
                "meta": {
                    "versionId": "1",
                    "lastUpdated": "2025-01-15T13:14:04.389+00:00",
                    "profile": [
                        "http://hl7.org/fhir/us/core/StructureDefinition/us-core-
documentreference"
                    ]
                },
                "text": {
                    "status": "generated",
                    "div": "<div
xmlns=\"http://www.w3.org/1999/xhtml\"><p><b>Generated Narrative</b></p><p><b>id</b>:
episode-summary</p><p><b>meta</b>: </p><p><b>identifier</b>: id:
urn:oid:2.16.840.1.113883.19.5.99999.1</p><p><b>status</b>: current</p><p><b>type</b>:
<span title=\"Codes: {http://loinc.org 34133-9}\">CCD
Document</span></p><p><b>category</b>: <span title=\"Codes:
{http://hl7.org/fhir/us/core/CodeSystem/us-core-documentreference-category clinical-
note}\">Clinical Note</span></p><p><b>subject</b>: <a href=\"Patient-
example.html\">Amy Shaw. Generated Summary: id: example; Medical Record Number:
1032702 (USUAL); active; Amy V. Shaw , Amy V. Baxter ; ph: 555-555-5555(HOME),
amy.shaw@example.com; gender: female; birthDate: 1987-02-20</a></p><p><b>date</b>:
10/03/2016 2:29:46 AM</p><p><b>author</b>: <a href=\"Practitioner-practitioner-
1.html\">Ronald Bone, MD. Generated Summary: id: practitioner-1; id: 9941339108, id:
25456; Ronald Bone </a></p><p><b>description</b>: Pulmonology clinic acute
visit</p><h3>Contents</h3><table class=\"grid\"><tr><td>-
</td><td><b>Attachment</b></td><td><b>Format</b></td></tr><tr><td>*</td><td></td><td><
span title=\"{urn:oid:1.3.6.1.4.1.19376.1.2.3 urn:hl7-org:sdwg:ccda-
structuredBody:2.1}\">Documents following C-CDA constraints using a structured
body</span></td></tr></table><h3>Contexts</h3><table class=\"grid\"><tr><td>-
</td><td><b>Period</b></td></tr><tr><td>*</td><td>23/12/2004 8:00:00 AM --&gt;
23/12/2004 8:01:00 AM</td></tr></table></div>"
                },
                "identifier": [
                    {
                        "system": "urn:ietf:rfc:3986",
                        "value": "urn:oid:2.16.840.1.113883.19.5.99999.1"
                    }
                ],
                "status": "current",
```


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```
                "type": {
                    "coding": [
                        {
                            "system": "http://loinc.org",
                            "code": "34133-9",
                            "display": "Summary of episode note"
                        },
                        {
                            "system": "http://loinc.org",
                            "code": "11488-4"
                        },
                        {
                            "system": "http://loinc.org",
                            "code": "18842-5"
                        },
                        {
                            "system": "http://loinc.org",
                            "code": "34117-2"
                        },
                        {
                            "system": "http://loinc.org",
                            "code": "28570-0"
                        },
                        {
                            "system": "http://loinc.org",
                            "code": "11506-3"
                        }
                    ],
                    "text": "CCD Document"
                },
                "category": [
                    {
                        "coding": [
                            {
                                "system": "http://hl7.org/fhir/us/core/CodeSystem/us-
core-documentreference-category",
                                "code": "clinical-note",
                                "display": "Clinical Note"
                            }
                        ],
                        "text": "Clinical Note"
                    }
                ],
                "subject": {
                    "reference": "Patient/PatientA",
                    "display": "Amy Shaw"
```


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```
                },
                "date": "2016-03-09T15:29:46+00:00",
                "author": [
                    {
                        "reference": "Practitioner/PractitionerA2",
                        "display": "Ronald Bone, MD"
                    }
                ],
                "custodian": {
                    "reference": "Organization/OrganizationA",
                    "display": "Example Organization"
                },
                "description": "Pulmonology clinic acute visit",
                "content": [
                    {
                        "attachment": {
                            "contentType": "text/plain",
                            "url": "/Binary/1-note",
                            "title": "Uri where the data can be found:
[base]/Binary/1-note"
                        },
                        "format": {
                            "system": "urn:oid:1.3.6.1.4.1.19376.1.2.3",
                            "code": "urn:hl7-org:sdwg:ccda-structuredBody:2.1",
                            "display": "Documents following C-CDA constraints using a
structured body"
                        }
                    }
                ],
                "context": {
                    "encounter": [
                        {
                            "reference": "Encounter/EncounterA",
                            "display": "Example Encounter"
                        }
                    ],
                    "period": {
                        "start": "2004-12-23T08:00:00+11:00",
                        "end": "2004-12-23T08:01:00+11:00"
                    }
                }
            }
```


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Error Codes

If an error occurs, the system will return one of the following error codes.

Code	Severity	Description	Example
400	error	Bad request	Invalid Parameters passed in the request or there is a Data Access Layer exception due to documentation.
401	error	Unauthorized	Invalid or expired Access Token.
403	error	Forbidden	Valid Access Token is present but requested scope is not authorized.
404	error	Not found	Unknown resource type or Requested resource is not found
408	error	Request time out	Request timed out because there is a communication issue with EMR or the response received from EMR was passed the acceptable threshold (possible reason could be the amount of data system is trying to return).
500	error	Internal Server error	There is an internal error processing the request.

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3.8 Encounter

The Encounter resource is used to retrieve encounters related to a patient. It must comply with the US Core Encounter Profile (v3.1.1: STU3).

A patient encounter is further defined by the setting in which it occurs, such as ambulatory, emergency, home health, inpatient, or virtual environments. An Encounter represents the full lifecycle of care from pre-admission and the actual encounter (in the case of ambulatory care) to admission, stay, and discharge (for inpatient care). Throughout the encounter, the patient may transition between different practitioners and locations.

Schema

Element Name	Data Type	Card.	Description & Constraints
id	string	0..1	Encounter resource entry ID
meta	Meta	0..1	Metadata (profile and last updated date/time) about the resource
text	Narrative	0..1	Text summary of the resource, for human interpretation
identifier	Identifier	0..1	Identifier(s) by which this encounter is known.
status	code	1..1	The current status of the encounter
statusHistory	BackboneElement	0..*	List of past encounter statuses
class	Coding	1..1	Classification of patient encounter
type	CodeableConcept	1..*	Code that defines the type of encounter
subject	Reference (US Core Patient Profile)	1..1	The person this encounter was associated to
participant	BackboneElement	0..*	List of participants involved in the encounter
period	Period	0..1	The start and end time of the encounter
location	BackboneElement	0..*	List of locations where the patient has been during this encounter.
serviceProvider	Reference (Organization)	0..1	The organization that is primarily responsible for this Encounter's services. This MAY be the same as the organization on the Patient record, however it could be different, such as if the actor performing the services was from an external organization (which may be billed seperately) for an external consultation. Refer to the example

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			bundle showing an abbreviated set of Encounters for a colonoscopy.

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Supported Operations

Search Parameter Name	Sample Query	Expected Output
Id	Example: GET {{fhirurl}}/Encounter/EncounterC	The system will return the Encounter related to the specified resource id.
Patient Id	Example: GET {{fhirurl}}/Encounter?patient=Patient/PatientA	The system will return all the Encounters associated with the specified patient.
Patient and Status	Example: GET {{fhirurl}}/Encounter?patient=Patient/PatientA&status=finished	The system will return all the Encounters associated with the specified patient and having the “Finished” status.
Participant	Example: GET {{fhirurl}}/Encounter?participant=Practitioner/PractitionerC1	The system will return all the Encounters related to the specified practitioner/ participant.

Sample Request

Headers	GET
Accept: application/json+fhir Authorization: <OAuth2 Bearer Token>	{{fhirurl}}/Encounter/EncounterC

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Sample Response

The data elements, such as resource IDs, in the JSON response may be encrypted. The sample output shown in the API documentation is provided for illustration only.


```
{
                "resourceType": "Encounter",
                "id": "EncounterC",
                "meta": {
                    "extension": [
                        {
                            "url": "http://hl7.org/fhir/StructureDefinition/instance-
name",
                            "valueString": "Encounter 1036 Example"
                        },
                        {
                            "url": "http://hl7.org/fhir/StructureDefinition/instance-
description",
                            "valueMarkdown": "This is a encounter 1036 example for the
*Encounter Profile*."
                        }
                    ],
                    "versionId": "1",
                    "lastUpdated": "2025-01-15T13:14:02.873+00:00",
                    "profile": [
                        "http://hl7.org/fhir/us/core/StructureDefinition/us-core-
encounter"
                    ]
                },
                "text": {
                    "status": "generated",
                    "div": "<div
xmlns=\"http://www.w3.org/1999/xhtml\"><p><b>Generated Narrative</b></p><div
style=\"display: inline-block; background-color: #d9e0e7; padding: 6px; margin: 4px;
border: 1px solid #8da1b4; border-radius: 5px; line-height: 60%\"><p style=\"margin-
bottom: 0px\">Resource \"1036\" </p><p style=\"margin-bottom: 0px\">Profile: <a
href=\"StructureDefinition-us-core-encounter.html\">US Core Encounter
Profile</a></p></div><p><b>status</b>: in-progress</p><p><b>class</b>: inpatient
encounter (Details: http://terminology.hl7.org/CodeSystem/v3-ActCode code IMP =
'inpatient encounter', stated as 'inpatient encounter')</p><p><b>type</b>: Unknown
(qualifier value) <span style=\"background: LightGoldenRodYellow; margin: 4px; border:
1px solid khaki\"> (<a href=\"https://browser.ihtsdotools.org/\">SNOMED
CT</a>#261665006)</span></p><p><b>subject</b>: <a href=\"Patient-
example.html\">Patient/example</a> \" SHAW\"</p><h3>Hospitalizations</h3><table
class=\"grid\"><tr><td>-
</td><td><b>DischargeDisposition</b></td></tr><tr><td>*</td><td>Discharged to Home
<span style=\"background: LightGoldenRodYellow; margin: 4px; border: 1px solid
```


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```
khaki\"> (patient-discharge#01)</span></td></tr></table><h3>Locations</h3><table
class=\"grid\"><tr><td>-</td><td><b>Location</b></td></tr><tr><td>*</td><td><a
href=\"Location-hospital.html\">Location/hospital: Holy Family Hospital</a> \"Holy
Family Hospital\"</td></tr></table></div>"
                },
                "identifier": [
                    {
                        "use": "temp",
                        "system": "http://hl7.org/fhir/sid/us-ssn",
                        "value": "Encounter_Roel_20130404"
                    }
                ],
                "status": "in-progress",
                "statusHistory": [
                    {
                        "status": "arrived",
                        "period": {
                            "start": "2013-03-08"
                        }
                    }
                ],
                "class": {
                    "system": "http://terminology.hl7.org/CodeSystem/v3-ActCode",
                    "code": "IMP",
                    "display": "inpatient encounter"
                },
                "type": [
                    {
                        "coding": [
                            {
                                "system": "http://snomed.info/sct",
                                "code": "261665006",
                                "display": "Unknown (qualifier value)"
                            }
                        ],
                        "text": "Unknown (qualifier value)"
                    }
                ],
                "subject": {
                    "reference": "Patient/PatientC",
                    "type": "Patient"
                },
                "participant": [
                    {
                        "type": [
                            {
```


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```
                                "coding": [
                                    {
                                        "system":
"http://terminology.hl7.org/CodeSystem/v3-ParticipationType",
                                        "code": "ADM",
                                        "display": "admitter"
                                    }
                                ]
                            }
                        ],
                        "period": {
                            "start": "2013-03-11",
                            "end": "2013-03-20"
                        },
                        "individual": {
                            "reference": "Patient/PatientC"
                        }
                    }
                ],
                "period": {
                    "start": "2013-03-11",
                    "end": "2013-03-20"
                },
                "reasonCode": [
                    {
                        "text": "The patient had fever peaks over the last couple of
days. He is worried about these peaks."
                    }
                ],
                "hospitalization": {
                    "dischargeDisposition": {
                        "coding": [
                            {
                                "system": "http://www.nubc.org/patient-discharge",
                                "code": "01",
                                "display": "Discharged to Home"
                            }
                        ]
                    }
                },
                "location": [
                    {
                        "location": {
                            "reference": "Location/LocationC",
                            "display": "Holy Family Hospital"
                        }
```


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```
                }
            ]
        }
```

Error Codes

If an error occurs, the system will return one of the following error codes.

Code	Severity	Description	Example
400	error	Bad request	Invalid Parameters passed in the request or there is a Data Access Layer exception due to documentation.
401	error	Unauthorized	Invalid or expired Access Token.
403	error	Forbidden	Valid Access Token is present but requested scope is not authorized.
404	error	Not found	Unknown resource type or Requested resource is not found
408	error	Request time out	Request timed out because there is a communication issue with EMR or the response received from EMR was passed the acceptable threshold (possible reason could be the amount of data system is trying to return).
500	error	Internal Server error	There is an internal error processing the request.

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3.9 Goal

The Goal resource is utilized to retrieve goals linked to a patient and must adhere to the US Core Goal Profile (version 3.1.1: STU3).

In healthcare service delivery, a Goal typically represents a desired health state that a patient (or their family/group) aims to achieve either over a period of time or at a specific point. This target state may be reached through healthcare interventions or through natural recovery over time.

Schema

Element Name	Data Type	Card.	Description & Constraints
id	string	0..1	Goal resource entry ID
meta	Meta	0..1	Metadata (profile and last updated date/time) about the resource
text	Narrative	0..1	Text summary of the resource, for human interpretation
lifecycleStatus	code	1..1	The current status of the goal
achievementStatus	CodeableConcept	0..1	Describes the progression, or lack thereof, towards the goal against the target.
description	CodeableConcept	1..1	Code or text that identifies the goal
subject	Reference (US Core Patient Profile)	1..1	Who this goal is intended for
startDate	date	0..1	The date or event after which the goal should begin being pursued.
statusDate	date	0..1	Identifies when the current status. I.e. When initially created, when achieved, when cancelled, etc.
statusReason	string	0..1	Captures the reason for the current status.
expressedBy	Reference (Patient | Practitioner | PractitionerRole | RelatedPerson)	0..1	Indicates whose goal this is - patient goal, practitioner goal, etc.
addresses	Reference (Condition | Observation | MedicationStatement | NutritionOrder |	0..*	The identified conditions and other health record elements that are intended to be addressed by the goal.

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	ServiceRequest | RiskAssessment)		
outcomeCode	CodeableConcept	0..*	Identifies the change (or lack of change) at the point when the status of the goal is assessed.
outcomeReference	Reference (Observation)	0..*	Details of what's changed (or not changed).
target	BackboneElement	0..*	Target outcome for the goal

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Supported Operations

Search Parameter Name	Sample Query	Expected Output
Id	Example: GET {{fhirurl}}/Goal/GoalC	The system will return the Goal resources related to the specified resource id.
Patient Id	Example: GET {{fhirurl}}/Goal?patient=Patient/PatientA	The system will return all the Goals associated with the specified patient.
Achievement Status	Example: GET {{fhirurl}}/Goal?achievement-status=achieved	The system will return all the Goals that have been accomplished/ achieved.
Lifecycle Status	Example: GET {{fhirurl}}/Goal?lifecycle-status=completed	The system will return all the Goals whose lifecycle is completed.
Expressed By	Example: GET {{fhirurl}}/Goal?expressed-by=Practitioner/PractitionerC1	The system will return all the Goals related to the specified practitioner.

Sample Request

Headers	GET
Accept: application/json+fhir Authorization: <OAuth2 Bearer Token>	{{fhirurl}}/Goal/GoalC

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Sample Response

The data elements, such as resource IDs, in the JSON response may be encrypted. The sample output shown in the API documentation is provided for illustration only.


```
{
                "resourceType": "Goal",
                "id": "c9229ae3-bf78-4799-8d81-0fe656b9aeb9",
                "meta": {
                    "versionId": "1",
                    "lastUpdated": "2025-01-08T13:20:17.181+00:00"
                },
                "lifecycleStatus": "completed",
                "achievementStatus": {
                    "coding": [
                        {
                            "system": "http://terminology.hl7.org/CodeSystem/goal-
achievement",
                            "code": "achieved",
                            "display": "Achieved"
                        }
                    ],
                    "text": "Achieved"
                },
                "description": {
                    "text": "Stop smoking"
                },
                "subject": {
                    "reference": "Patient/c7c9a418-a987-4af8-a7d6-45214854fa18",
                    "display": "Mr. Daniel12 Test12"
                },
                "startDate": "2015-07-22",
                "statusDate": "2016-07-22",
                "statusReason": "Treatment in Progress",
                "expressedBy": {
                    "reference": "Practitioner/PQC00000018",
                    "display": "Dr. Austin18 Test18"
                },
                "addresses": [
                    {
                        "reference": "Condition/6d1831a6-7982-473c-ba80-e25ddec8328f"
                    }
                ],
                "outcomeCode": [
                    {
                        "coding": [
                            {
```


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```
                            "system": "http://snomed.info/sct",
                            "code": "8517006",
                            "display": "Ex-smoker (finding)"
                        }
                    ],
                    "text": "Former smoker"
                }
            ],
            "outcomeReference": [
                {
                    "reference": "Observation/78a4d339-bf28-4816-8441-
3d9f2df274b5"
                }
            ]
        }
```


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Error Codes

If an error occurs, the system will return one of the following error codes.

Code	Severity	Description	Example
400	error	Bad request	Invalid Parameters passed in the request or there is a Data Access Layer exception due to documentation.
401	error	Unauthorized	Invalid or expired Access Token.
403	error	Forbidden	Valid Access Token is present but requested scope is not authorized.
404	error	Not found	Unknown resource type or Requested resource is not found
408	error	Request time out	Request timed out because there is a communication issue with EMR or the response received from EMR was passed the acceptable threshold (possible reason could be the amount of data system is trying to return).
500	error	Internal Server error	There is an internal error processing the request.

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3.10 Immunization

The Immunization resource is used to retrieve immunization records linked to a patient. It must comply with the US Core Immunization Profile (version 3.1.1: STU3).

The Immunization resource is designed to document both current and past vaccine administrations to patients across all healthcare disciplines, care settings, and regions. It applies to the immunization of both humans and animals but excludes the administration of non-vaccine agents, even if they claim to have immunological effects. Although "immunization" and "vaccination" are not clinically identical terms, they are used interchangeably within the context of FHIR resources.

Schema

Element Name	Data Type	Card.	Description & Constraints
id	string	0..1	Immunization resource entry id
meta	Meta	0..1	Metadata (profile and last updated date/time) about the resource
text	Narrative	0..1	Text summary of the resource, for human interpretation
status	code	1..1	The current status of the immunization event
vaccineCode	CodeableConcept	1..1	Code that identifies the vaccine
patient	Reference (US Core Patient Profile)	1..1	The person the immunization is recorded for
occurrenceDateTime	dateTime	1..1	Vaccine administration date
primarySource	boolean	1..1	Indicates context the data was recorded in
location	Reference (Location)	0..1	The service delivery location where the vaccine administration occurred.

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Supported Operations

Search Parameter Name	Sample Query	Expected Output
Id	Example: GET {{fhirurl}}/Immunization/ImmunizationC	The system will return the Immunization related to the specified resource id.
Patient	Example: GET {{fhirurl}}/Immunization?patient=Patient/PatientA	The system will return all Immunizations associated with the specified patient.
Encounter	Example: GET {{fhirurl}}/Immunization?encounter=Encounter/EncounterC	The system will return all the Immunization resources related to the specified encounter.
Status	Example: GET {{fhirurl}}/Immunization?status=completed	The system will return all the Immunizations having the “Completed” status.

Sample Request

Headers	GET
Accept: application/json+fhir Authorization: <OAuth2 Bearer Token>	{{fhirurl}}/Immunization/ImmunizationC

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Sample Response

The data elements, such as resource IDs, in the JSON response may be encrypted. The sample output shown in the API documentation is provided for illustration only.


```
{
                "resourceType": "Immunization",
                "id": "4dae29e7-8c3d-4be8-9eee-77dccf14987e",
                "meta": {
                    "versionId": "1",
                    "lastUpdated": "2025-01-07T06:42:12.728+00:00"
                },
                "identifier": [
                    {
                        "system":
"https://qa.wmi360.com/EHR/api/main/api/v1/encounters/getallimmunization?PatientID=153
97",
                        "value": "10860"
                    }
                ],
                "status": "completed",
                "vaccineCode": {
                    "coding": [
                        {
                            "system": "http://hl7.org/fhir/sid/cvx",
                            "code": "212",
                            "display": "COVID-19 vaccine, vector-nr, rS-Ad26, PF, 0.5
mL (59676-0580-05 - Janssen)"
                        }
                    ],
                    "text": "COVID-19 vaccine, vector-nr, rS-Ad26, PF, 0.5 mL (59676-
0580-05 - Janssen)"
                },
                "patient": {
                    "reference": "Patient/15397"
                },
                "occurrenceDateTime": "2025-01-06T06:51:14.484+00:00",
                "recorded": "2025-01-06T00:51:26.8206693-06:00",
                "primarySource": true,
                "location": {
                    "reference": "Location/9683",
                    "display": "EMR Practice 87825 Loc 1"
                },
            }
```


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Error Codes

If an error occurs, the system will return one of the following error codes.

Code	Severity	Description	Example
400	error	Bad request	Invalid Parameters passed in the request or there is a Data Access Layer exception due to documentation.
401	error	Unauthorized	Invalid or expired Access Token.
403	error	Forbidden	Valid Access Token is present but requested scope is not authorized.
404	error	Not found	Unknown resource type or Requested resource is not found
408	error	Request time out	Request timed out because there is a communication issue with EMR or the response received from EMR was passed the acceptable threshold (possible reason could be the amount of data system is trying to return).
500	error	Internal Server error	There is an internal error processing the request.

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3.11 Location

The Location resource is used to retrieve locations associated with a practitioner and must conform to the US Core Location Profile (version 3.1.1: STU3).

A Location encompasses both incidental sites, places used for healthcare without prior designation or authorization and dedicated, formally appointed facilities. These locations can be private or public, mobile or fixed, and may range in scale from small freezers to entire hospital buildings or parking structures.

Schema

Element Name	Data Type	Card.	Description & Constraints
id	string	0..1	Location resource entry id
identifier	Identifier	0..*	Tax id number of facility
text	Narrative	0..1	Text summary of the resource, for human interpretation
meta	Meta	0..1	Metadata (profile) about the resource
text	Narrative	0..1	Text summary of the resource, for human interpretation
status	code	0..1	Current status of the location
name	string	1..1	Name of the location
telecom	ContactPoint	0..*	Contact details like phone, email, and fax
address	Address	0..1	Address of the location
position	BackboneElement	0..1	The absolute geographic location
managingOrganization	Reference (US Core Organization Profile)	0..1	Organization responsible for provisioning and upkeep

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Supported Operations

Search Parameter Name	Sample Query	Expected Output
Id	Example: GET {{fhirurl}}/Location/LocationC	The system will return the Location based on the specified resource id.
Name	Example: GET {{fhirurl}}/Location?name=MOUND	The system will return Location resource entries whenever the specified string in the query parameter is found within the organization name.
Address	Example: GET {{fhirurl}}/Location?address=CAMBRIDGE	The system will return Location resource entries whenever the specified string in the query parameter is present in either address line 1, address line 2, city, or state.
Status	Example: GET {{fhirurl}}/Location?status=active	The system will return all the Locations related to the specified status.

Sample Request

Headers	GET
Accept: application/json+fhir Authorization: <OAuth2 Bearer Token>	{{fhirurl}}/Location/LocationC

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Sample Response

The data elements, such as resource IDs, in the JSON response may be encrypted. The sample output shown in the API documentation is provided for illustration only.


```
{
                "resourceType": "Location",
                "id": "LocationC",
                "meta": {
                    "versionId": "1",
                    "lastUpdated": "2025-01-15T13:14:03.17+00:00"
                },
                "text": {
                    "status": "generated",
                    "div": "<div xmlns=\"http://www.w3.org/1999/xhtml\">Burgers UMC,
South Wing, second floor</div>"
                },
                "identifier": [
                    {
                        "value": "B1-S.F2"
                    }
                ],
                "status": "active",
                "name": "South Wing, second floor",
                "alias": [
                    "BU MC, SW, F2",
                    "Burgers University Medical Center, South Wing, second floor"
                ],
                "description": "Second floor of the Old South Wing, formerly in use by
Psychiatry",
                "mode": "instance",
                "telecom": [
                    {
                        "system": "phone",
                        "value": "2328",
                        "use": "work"
                    },
                    {
                        "system": "fax",
                        "value": "2329",
                        "use": "work"
                    },
                    {
                        "system": "email",
                        "value": "second wing admissions"
                    },
                    {
```


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```
                    "system": "url",
                    "value": "http://sampleorg.com/southwing",
                    "use": "work"
                }
            ],
            "address": {
                "use": "work",
                "line": [
                    "Galapagosweg 91, Building C"
                ],
                "city": "Den Burg",
                "postalCode": "9105 PZ",
                "country": "NLD"
            },
            "physicalType": {
                "coding": [
                    {
                        "system": "http://terminology.hl7.org/CodeSystem/location-
physical-type",
                        "code": "wi",
                        "display": "Wing"
                    }
                ]
            },
            "position": {
                "longitude": -83.6945691,
                "latitude": 42.25475478,
                "altitude": 0
            },
            "managingOrganization": {
                "reference": "Organization/OrganizationC"
            }
        }
```


Error Codes

If an error occurs, the system will return one of the following error codes.

Code	Severity	Description	Example
400	error	Bad request	Invalid Parameters passed in the request or there is a Data Access Layer exception due to documentation.
401	error	Unauthorized	Invalid or expired Access Token.

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403	error	Forbidden	Valid Access Token is present but requested scope is not authorized.
404	error	Not found	Unknown resource type or Requested resource is not found
408	error	Request time out	Request timed out because there is a communication issue with EMR or the response received from EMR was passed the acceptable threshold (possible reason could be the amount of data system is trying to return).
500	error	Internal Server error	There is an internal error processing the request.

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3.12 Medication

The Medication resource is used to retrieve the medication associated with the medication request for a patient. The resource must comply with the US Core Medication Profile (version 3.1.1: STU3).

This resource is primarily used to identify and define a medication for the purposes of prescribing, dispensing, and administering it, as well as for documenting statements about its use.

Schema

Element Name	Data Type	Card.	Description & Constraints
id	string	0..1	Medication resource entry id.
meta	Meta	0..1	Metadata (profile and last updated date/time) about the resource
code	CodeableConcept	1..1	RxNorm/NDC code for the medication
status	Code	0..1	active | inactive | entered-in-error

Supported Operations

Search Parameter Name	Sample Query	Expected Output
Id	Example: GET {{fhirurl}}/Medication/44483f0c-8050-436b-b69f-ffd8d136664d	The system will return the specific medication related to the specified resource id.
Status	Example: GET {{fhirurl}}/Medication?status=active	The system will return all medications related to the specified status.

Sample Request

Headers	GET
Accept: application/json+fhir Authorization: <OAuth2 Bearer Token>	{{fhirurl}}/Medication/44483f0c-8050-436b-b69f-ffd8d136664d

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Sample Response

The data elements, such as resource IDs, in the JSON response may be encrypted. The sample output shown in the API documentation is provided for illustration only.


```
{
                "resourceType": "Medication",
                "id": "44483f0c-8050-436b-b69f-ffd8d136664d",
                "meta": {
                    "versionId": "1",
                    "lastUpdated": "2025-02-27T13:36:00.768+00:00",
                    "profile": [
                        "http://hl7.org/fhir/us/core/StructureDefinition/us-core-
medication"
                    ]
                },
                "code": {
                    "coding": [
                        {
                            "system": "http://www.nlm.nih.gov/research/umls/rxnorm",
                            "code": "1187314",
                            "display": "Tylenol PM Pill"
                        }
                    ],
                    "text": "Tylenol PM Pill"
                },
                "status": "active"
            }
```


Error Codes

If an error occurs, the system will return one of the following error codes.

Code	Severity	Description	Example
400	error	Bad request	Invalid Parameters passed in the request or there is a Data Access Layer exception due to documentation.
401	error	Unauthorized	Invalid or expired Access Token.
403	error	Forbidden	Valid Access Token is present but requested scope is not authorized.
404	error	Not found	Unknown resource type or Requested resource is not found

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408	error	Request time out	Request timed out because there is a communication issue with EMR or the response received from EMR was passed the acceptable threshold (possible reason could be the amount of data system is trying to return).
500	error	Internal Server error	There is an internal error processing the request.

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3.13 MedicationRequest

The MedicationRequest resource is used to retrieve medications prescribed or requested for a patient and must comply to the US Core Medication Request Profile (version 3.1.1: STU3).

This resource encompasses all types of medication orders for a patient, including inpatient and community prescriptions, regardless of whether the prescriber or a pharmacy fills them. It also covers orders for over-the-counter medications (such as aspirin), total parenteral nutrition, and diet/vitamin supplements. Additionally, it can be used to support orders for medication-related devices.

Schema

Element Name	Data Type	Card.	Description & Constraints
id	string	0..1	Medication Request resource entry id
meta	Meta	0..1	Metadata (profile and last updated date/time) about the resource
text	Narrative	0..1	Text summary of the resource, for human interpretation
Identifier	Identifier	0..*	External ids for this request
status	code	1..1	Current status of medication request
intent	code	1..1	Kind of medication request
medicationCodeableConcept	Reference (US Core Medication Profile)	1..1	Medication to be taken
subject	Reference (US Core Patient Profile)	1..1	Who or group this medication request is for
encounter	Reference (Encounter)	0..1	Encounter reference this medication request is created as part of
authoredOn	dateTime	1..1	When request was initially authored
requester	Reference (US Core Practitioner Profile	US Core Organization Profile	US Core Patient Profile)
dosageInstruction	Dosage	0..*	How the medication should be taken

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Supported Operations

Search Parameter Name	Sample Query	Expected Output
id	Example: GET {{fhirurl}}/MedicationRequest/MedicationRequestC	The system will return the Medication Request related to the specified resource id.
Patient	Example: GET {{fhirurl}}/MedicationRequest?patient=Patient/PatientA	The system will return all the Medication Requests associated with the specified patient.
Patient, Code and Date	Example: GET {{fhirurl}}/MedicationRequest?patient=Patient/PatientA&code=834061&date=2015-01-15	The system will return all Medication requests associated with a specific patient, code, and date provided in the query.
Encounter	Example: GET {{fhirurl}}/MedicationRequest?encounter=Encounter/EncounterC	The system will return all the Medication requests related to the specified encounter.
Status	Example: GET {{fhirurl}}/MedicationRequest?status=stopped	The system will return all medication requests with the specified status.

Sample Request

Headers	GET
Accept: application/json+fhir Authorization: <OAuth2 Bearer Token>	{{fhirurl}}/MedicationRequest/MedicationRequestC

Sample Response

The data elements, such as resource IDs, in the JSON response may be encrypted. The sample output shown in the API documentation is provided for illustration only.

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```
{
                "resourceType": "MedicationRequest",
                "id": "MedicationRequestC",
                "meta": {
                    "extension": [
                        {
                            "url": "http://hl7.org/fhir/StructureDefinition/instance-
name",
                            "valueString": "Self Tylenol Example"
                        },
                        {
                            "url": "http://hl7.org/fhir/StructureDefinition/instance-
description",
                            "valueMarkdown": "This is a self tylenol example for the
*MedicationRequest Profile*."
                        }
                    ],
                    "versionId": "1",
                    "lastUpdated": "2025-01-15T13:14:03.233+00:00",
                    "profile": [
                        "http://hl7.org/fhir/us/core/StructureDefinition/us-core-
medicationrequest"
                    ]
                },
                "text": {
                    "status": "generated",
                    "div": "<div
xmlns=\"http://www.w3.org/1999/xhtml\"><p><b>Generated Narrative</b></p><div
style=\"display: inline-block; background-color: #d9e0e7; padding: 6px; margin: 4px;
border: 1px solid #8da1b4; border-radius: 5px; line-height: 60%\"><p style=\"margin-
bottom: 0px\">Resource \"self-tylenol\" </p><p style=\"margin-bottom: 0px\">Profile:
<a href=\"StructureDefinition-us-core-medicationrequest.html\">US Core
MedicationRequest Profile</a></p></div><p><b>identifier</b>: id: 12345689
(OFFICIAL)</p><p><b>status</b>: active</p><p><b>intent</b>:
plan</p><p><b>reported</b>: true</p><p><b>medication</b>: Tylenol PM Pill <span
style=\"background: LightGoldenRodYellow; margin: 4px; border: 1px solid khaki\"> (<a
href=\"http://terminology.hl7.org/3.1.0/CodeSystem-v3-
rxNorm.html\">RxNorm</a>#1187314)</span></p><p><b>subject</b>: <a href=\"Patient-
example.html\">Patient/example: Amy V. Shaw</a> \" SHAW\"</p><p><b>encounter</b>: <a
href=\"Encounter-example-1.html\">Encounter/example-1: Office
Visit</a></p><p><b>authoredOn</b>: 2019-06-24</p><p><b>requester</b>: <a
href=\"Patient-example.html\">Patient/example: **self-prescribed**</a> \"
SHAW\"</p></div>"
                },
                "identifier": [
                    {
```


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```
                "use": "official",
                "system": "http://acme.org/prescriptions",
                "value": "12345689"
            }
        ],
        "status": "active",
        "intent": "plan",
        "reportedBoolean": true,
        "medicationCodeableConcept": {
            "coding": [
                {
                    "system": "http://www.nlm.nih.gov/research/umls/rxnorm",
                    "code": "1187314",
                    "display": "Tylenol PM Pill"
                }
            ],
            "text": "Tylenol PM Pill"
        },
        "subject": {
            "reference": "Patient/PatientC",
            "display": "Amy V. Shaw"
        },
        "encounter": {
            "reference": "Encounter/EncounterC",
            "display": "Office Visit"
        },
        "authoredOn": "2019-06-24",
        "requester": {
            "reference": "Patient/PatientC",
            "display": "**self-prescribed**"
        },
        "dosageInstruction": [
            {
                "text": "Takes 1-2 tablets once daily at bedtime as needed for
restless legs"
            }
        ]
    }
```


Error Codes

If an error occurs, the system will return one of the following error codes.

Code	Severity	Description	Example

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400	error	Bad request	Invalid Parameters passed in the request or there is a Data Access Layer exception due to documentation.
401	error	Unauthorized	Invalid or expired Access Token.
403	error	Forbidden	Valid Access Token is present but requested scope is not authorized.
404	error	Not found	Unknown resource type or Requested resource is not found
408	error	Request time out	Request timed out because there is a communication issue with EMR or the response received from EMR was passed the acceptable threshold (possible reason could be the amount of data system is trying to return).
500	error	Internal Server error	There is an internal error processing the request.

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3.14 Observation

Observations are a core component of healthcare, playing a vital role in supporting diagnoses, tracking patient progress, identifying baselines and patterns, and recording demographic information.

While many observations are simple name/value pair assertions accompanied by metadata, others may consist of grouped or multi-component observations that provide a more comprehensive view of a patient's condition.

Schema

Element Name	Data Type	Card.	Description & Constraints
id	string	0..1	Vital Signs resource entry id
meta	Meta	0..1	Metadata (profile and last updated date/time) about the resource
text	Narrative	0..1	Text summary of the resource, for human interpretation
status	code	1..1	Current Status of the observation
category	(Slice Definition)	1..*	Identifies the class of observation
code	CodeableConcept	1..1	Code that identifies the type of vital signs
subject	Reference (Patient)	1..1	Who the observation is about
encounter	Reference (Encounter)	0..1	Encounter reference during which this observation is made
effectiveDateTime	dateTime	1..1	Often just a dateTime for Vital Signs
issued	instant	0..1	The date and time this version of the observation was made available to providers, typically after the results have been reviewed and verified.
valueCodeableConcept	Quantity	0..1	Value recorded for the vital signs

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Supported Operations

Search Parameter Name	Sample Query	Expected Output
Id	Example: GET {{fhirurl}}/Observation/ObservationHeightC	The system will return the Observation related to the specified resource id.
Patient	Example: GET {{fhirurl}}/Observation?patient=Patient/PatientA	The system will return Observations associated with the specified patient.
Encounter	Example: GET {{fhirurl}}/Observation?encounter=Encounter/EncounterC	The system will return all the Observation resources related to the specified encounter.
Category	Example: GET {{fhirurl}}/Observation?category=encounter-diagnosis	The system will return all the Observations related to the specified category.
Patient, Category, and Status	{{fhirurl}}/Observation?patient=Patient/PatientA&category=survey&status=final	The system will return all Observations associated with a specific patient, category, and status provided in the query.

Sample Request

Headers	GET
Accept: application/json+fhir Authorization: <OAuth2 Bearer Token>	{{fhirurl}}/Observation/ObservationHeightC

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Sample Response

The data elements, such as resource IDs, in the JSON response may be encrypted. The sample output shown in the API documentation is provided for illustration only.


```
{
                "resourceType": "Observation",
                "id": "ObservationHeightC",
                "meta": {
                    "extension": [
                        {
                            "url": "http://hl7.org/fhir/StructureDefinition/instance-
name",
                            "valueString": "Height Example"
                        },
                        {
                            "url": "http://hl7.org/fhir/StructureDefinition/instance-
description",
                            "valueMarkdown": "This is a height example for the
*Vitalsigns Profile*."
                        }
                    ],
                    "versionId": "1",
                    "lastUpdated": "2025-01-15T13:14:02.201+00:00",
                    "profile": [
                        "http://hl7.org/fhir/us/core/StructureDefinition/us-core-body-
height"
                    ]
                },
                "text": {
                    "status": "generated",
                    "div": "<div
xmlns=\"http://www.w3.org/1999/xhtml\"><p><b>Generated Narrative</b></p><div
style=\"display: inline-block; background-color: #d9e0e7; padding: 6px; margin: 4px;
border: 1px solid #8da1b4; border-radius: 5px; line-height: 60%\"><p style=\"margin-
bottom: 0px\">Resource \"height\" </p><p style=\"margin-bottom: 0px\">Profile: <a
href=\"StructureDefinition-us-core-body-height.html\">US Core Body Height
Profile</a></p></div><p><b>status</b>: final</p><p><b>category</b>: Vital Signs <span
style=\"background: LightGoldenRodYellow; margin: 4px; border: 1px solid khaki\"> (<a
href=\"http://terminology.hl7.org/3.1.0/CodeSystem-observation-
category.html\">Observation Category Codes</a>#vital-signs)</span></p><p><b>code</b>:
height <span style=\"background: LightGoldenRodYellow; margin: 4px; border: 1px solid
khaki\"> (<a href=\"https://loinc.org/\">LOINC</a>#8302-2 \"Body
height\")</span></p><p><b>subject</b>: <a href=\"Patient-
example.html\">Patient/example: Amy Shaw</a> \" SHAW\"</p><p><b>encounter</b>: <span>:
GP Visit</span></p><p><b>effective</b>: 1999-07-02</p><p><b>value</b>: 111.506 cm<span
```


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```
style=\"background: LightGoldenRodYellow\"> (Details: UCUM code cm =
'cm')</span></p></div>"
                },
                "status": "final",
                "category": [
                    {
                        "coding": [
                            {
                                "system":
"http://terminology.hl7.org/CodeSystem/observation-category",
                                "code": "vital-signs",
                                "display": "Vital Signs"
                            }
                        ],
                        "text": "Vital Signs"
                    }
                ],
                "code": {
                    "coding": [
                        {
                            "system": "http://loinc.org",
                            "code": "8302-2",
                            "display": "Body height"
                        }
                    ],
                    "text": "height"
                },
                "subject": {
                    "reference": "Patient/PatientC",
                    "display": "Amy Shaw"
                },
                "encounter": {
                    "display": "GP Visit"
                },
                "effectiveDateTime": "1999-07-02",
                "issued": "2013-11-09T10:13:00.45-05:00",
                "valueQuantity": {
                    "value": 111.506,
                    "unit": "cm",
                    "system": "http://unitsofmeasure.org",
                    "code": "cm"
                }
            }
```


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Error Codes

If an error occurs, the system will return one of the following error codes.

Code	Severity	Description	Example
400	error	Bad request	Invalid Parameters passed in the request or there is a Data Access Layer exception due to documentation.
401	error	Unauthorized	Invalid or expired Access Token.
403	error	Forbidden	Valid Access Token is present but requested scope is not authorized.
404	error	Not found	Unknown resource type or Requested resource is not found
408	error	Request time out	Request timed out because there is a communication issue with EMR or the response received from EMR was passed the acceptable threshold (possible reason could be the amount of data system is trying to return).
500	error	Internal Server error	There is an internal error processing the request.

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3.15 Organization

The organization resource can be utilized in a shared registry to store contact details and other information for various organizations, or it may serve as a reference for other resources that need to cite organizations, such as documents, messages, or contained resources.

If adopting a registry approach, multiple registries can exist, each managing different types or levels of organizations.

Schema

Element Name	Data Type	Card.	Description & Constraints
id	string	0..1	Organization resource entry id
meta	Meta	0..1	Metadata (profile) about the resource
text			
identifier	(Slice Definition)	0..*	Identifier associated with this organization across multiple systems
active	boolean	1..1	Whether the organization's record is still in active use
type	CodeableConcept	0..*	Kind of organization
name	string	1..1	Name used for the organization
telecom	ContactPoint	0..*	A contact detail for the organization
address	Address	0..*	An address for the organization

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Supported Operations

Search Parameter Name	Sample Query	Expected Output
Id	Example: GET {{fhirurl}}/Organization/OrganizationC	The system will return the Organization related to the specified resource id.
Name	Example: GET {{fhirurl}}/Organization?name=TestOrg	The system will return Organization resource entries when the specified string in the query parameter is found within the organization name.
Identifier	Example: GET {{fhirurl}}/Organization?identifier=ORG1111	An identifier is a structured data type used in many FHIR resources (like Patient, Practitioner, Observation, Encounter, etc.) to specify external IDs assigned to the resource. Use them as required in the query string to get the associated organizations from the system.
Type	Example: GET {{fhirurl}}/Organization?type=pay	The system will return all the Organization resources related to the specified organization type.
Address	Example: GET {{fhirurl}}/Organization?address=San	The system will return Organization resource entries whenever the specified string in the query parameter is present in either address line 1, address line 2, city, or state.
Active Status	{{fhirurl}}/Organization?active=true	The system will return all the Organizations with the “Active” status.

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Sample Request

Headers	GET
Accept: application/json+fhir Authorization: <OAuth2 Bearer Token>	{{fhirurl}}/Organization/OrganizationC

Sample Response

The data elements, such as resource IDs, in the JSON response may be encrypted. The sample output shown in the API documentation is provided for illustration only.


```
{
                "resourceType": "Organization",
                "id": "OrganizationC",
                "meta": {
                    "versionId": "1",
                    "lastUpdated": "2025-01-15T13:14:03.451+00:00",
                    "profile": [
                        "http://hl7.org/fhir/us/core/StructureDefinition/us-core-
organization"
                    ]
                },
                "text": {
                    "status": "generated",
                    "div": "<div
xmlns=\"http://www.w3.org/1999/xhtml\"><p><b>Generated Narrative</b></p><p><b>id</b>:
acme-lab</p><p><b>meta</b>: </p><p><b>identifier</b>: id: 1144221847, id:
12D4567890</p><p><b>active</b>: true</p><p><b>type</b>: <span title=\"Codes:
{http://terminology.hl7.org/CodeSystem/organization-type prov}\">Healthcare
Provider</span></p><p><b>name</b>: Acme Labs</p><p><b>telecom</b>: ph: (+1) 734-677-
7777, hq@acme.org</p><p><b>address</b>: 3300 Washtenaw Avenue, Suite 227 Amherst MA
01002 USA </p></div>"
                },
                "identifier": [
                    {
                        "type": {
                            "coding": [
                                {
                                    "system":
"http://terminology.hl7.org/CodeSystem/v2-0203",
                                    "code": "NPI",
                                    "display": "National provider identifier"
                                }
```


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```
                            ]
                        },
                        "system": "http://hl7.org.fhir/sid/us-npi",
                        "value": "1144221847"
                    },
                    {
                        "system": "https://github.com/syntheticheath/synthea",
                        "value": "56090ab7-1f97-37ff-a434-194f9c6e5510"
                    },
                    {
                        "system": "urn:oid:2.16.840.1.113883.4.7",
                        "value": "12D4567890"
                    },
                    {
                        "system": "http://hl7.org/fhir/sid/us-npi",
                        "value": "9999999999"
                    }
                ],
                "active": true,
                "type": [
                    {
                        "coding": [
                            {
                                "system":
"http://terminology.hl7.org/CodeSystem/organization-type",
                                "code": "prov",
                                "display": "Healthcare Provider"
                            }
                        ]
                    }
                ],
                "name": "Acme Labs",
                "telecom": [
                    {
                        "system": "phone",
                        "value": "(+1) 734-677-7777"
                    },
                    {
                        "system": "email",
                        "value": "hq@acme.org"
                    }
                ],
                "address": [
                    {
                        "line": [
                            "3300 Washtenaw Avenue, Suite 227"
```


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```
                ],
                "city": "Amherst",
                "state": "MA",
                "postalCode": "01002",
                "country": "USA"
            }
        ]
    }
```

Error Codes

If an error occurs, the system will return one of the following error codes.

Code	Severity	Description	Example
400	error	Bad request	Invalid Parameters passed in the request or there is a Data Access Layer exception due to documentation.
401	error	Unauthorized	Invalid or expired Access Token.
403	error	Forbidden	Valid Access Token is present but requested scope is not authorized.
404	error	Not found	Unknown resource type or Requested resource is not found
408	error	Request time out	Request timed out because there is a communication issue with EMR or the response received from EMR was passed the acceptable threshold (possible reason could be the amount of data system is trying to return).
500	error	Internal Server error	There is an internal error processing the request.

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3.16 Patient

The Patient resource is used to retrieve the demographic information associated with a patient. This resource must comply with the US Core Patient Profile (v3.1.1: STU3) standards.

The Patient Resource contains information about who the patient is. It focuses on basic details like name, date of birth, gender, and contact information, which are needed for things like scheduling, billing, and managing care. Each healthcare organization usually creates and keeps its own record for a patient. So, if a person or animal gets care from different places, there might be several Patient records for them in different systems.

Schema

Element Name	Data Type	Card.	Description & Constraints
id	id	0..1	Patient resource entry id
meta	Meta	0..1	Metadata (profile and last updated date/time) about the resource
text	Narrative	0..1	Text summary of the resource, for human interpretation
extension	Extension	0..*	Default Facility reference sent as a supporting info
identifier	(Slice Definition)	1..*	Identifier for the patient
active	boolean	0..1	Current status of the patient's record
name	HumanName	1..*	A name associated with the patient
telecom	ContactPoint	0..*	Contact details of the patient
gender	code	1..1	Patient's gender
birthDate	date	0..1	The date of birth for the patient
address	Address	0..*	Current address of the patient
contact	BackboneElement	0..*	A contact party (e.g. guardian, partner, friend) for the patient
communication	BackboneElement	0..*	A language which may be used to communicate with the patient about his or her health
generalPractitioner	Reference	0..*	Patient's nominated primary care provider
managingOrganization	Reference(Organization)	0..1	Organization that is the custodian of the patient record

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Supported Operations

Search Parameter Name	Sample Query	Expected Output
Id	Example: GET {{fhirurl}}/Patient/PatientC	The system will return Patient related to the specified resource id.
Patient Encounters	Example: GET {{fhirurl}}/Patient/PatientC/Encounter	The system will return all the Encounters related to the specified patient.
Identifier	Example: GET {{fhirurl}}/Patient?identifier=PQC00000012	An identifier is a structured data type used in many FHIR resources (like Practitioner, Observation, Encounter, etc.) to specify external IDs assigned to the resource. Use them as required in the query string to get the associated patients from the system.
First and Last Name	Example: GET {{fhirurl}}/Patient?family:exact=Test11&given:exact=Jamie11	The system will return Patient resource entries when the specified string in the query parameter is found within the patient first or last name.
Birth Date	Example: GET {{fhirurl}}/Patient?birthdate=gt1990-01-01	The system will return Patient resource related to the specified date of birth.
Race	Example: GET {{fhirurl}}/Patient?race=2028-9	The system will return Patient resource related to the specified race.
Gender	Example: GET {{fhirurl}}/Patient?gender=female	The system will return Patient resource related to the specified gender.

Sample Request

Headers	GET
Accept: application/json+fhir Authorization: <OAuth2 Bearer Token>	{{fhirurl}}/Patient/PatientC

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Sample Response

The data elements, such as resource IDs, in the JSON response may be encrypted. The sample output shown in the API documentation is provided for illustration only.


```
{
                "resourceType": "Patient",
                "id": "PatientB",
                "meta": {
                    "versionId": "1",
                    "lastUpdated": "2025-01-15T13:14:05.719+00:00",
                    "profile": [
                        "http://hl7.org/fhir/us/core/StructureDefinition/us-core-
patient"
                    ]
                },
                "text": {
                    "status": "generated",
                    "div": "<div
xmlns=\"http://www.w3.org/1999/xhtml\"><p><b>Generated Narrative</b></p><p><b>id</b>:
example</p><p><b>meta</b>: </p><p><b>identifier</b>: Medical Record Number: 1032702
(USUAL)</p><p><b>active</b>: true</p><p><b>name</b>: Amy V. Shaw , Amy V. Baxter
</p><p><b>telecom</b>: ph: 555-555-5555(HOME),
amy.shaw@example.com</p><p><b>gender</b>: female</p><p><b>birthDate</b>: 1987-02-
20</p><p><b>address</b>: </p><ul><li>49 Meadow St Mounds OK 74047 US </li><li>183
Mountain View St Mounds OK 74048 US </li></ul></div>"
                },
                "extension": [
                    {
                        "extension": [
                            {
                                "url": "http://hl7.org/fhir/us/core/ValueSet/omb-race-
category",
                                "valueCoding": {
                                    "system": "urn:oid:2.16.840.1.113883.6.238",
                                    "code": "2106-3",
                                    "display": "White"
                                }
                            },
                            {
                                "url": "http://hl7.org/fhir/us/core/ValueSet/omb-race-
category",
                                "valueCoding": {
                                    "system": "urn:oid:2.16.840.1.113883.6.238",
                                    "code": "1002-5",
                                    "display": "American Indian or Alaska Native"
                                }
```


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```
                        },
                        {
                            "url": "text",
                            "valueString": "Mixed"
                        }
                    ],
                    "url": "http://hl7.org/fhir/us/core/StructureDefinition/us-
core-race"
                },
                {
                    "extension": [
                        {
                            "url": "http://hl7.org/fhir/us/core/ValueSet/omb-race-
category",
                            "valueCoding": {
                                "system": "urn:oid:2.16.840.1.113883.6.238",
                                "code": "2135-2",
                                "display": "Hispanic or Latino"
                            }
                        },
                        {
                            "url": "http://hl7.org/fhir/us/core/ValueSet/detailed-
ethnicity",
                            "valueCoding": {
                                "system": "urn:oid:2.16.840.1.113883.6.238",
                                "code": "2184-0",
                                "display": "Dominican"
                            }
                        },
                        {
                            "url": "http://hl7.org/fhir/us/core/ValueSet/detailed-
ethnicity",
                            "valueCoding": {
                                "system": "urn:oid:2.16.840.1.113883.6.238",
                                "code": "2148-5",
                                "display": "Mexican"
                            }
                        },
                        {
                            "url": "text",
                            "valueString": "Hispanic or Latino"
                        }
                    ],
                    "url": "http://hl7.org/fhir/us/core/StructureDefinition/us-
core-ethnicity"
                },
```


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```
                    {
                        "url": "http://hl7.org/fhir/us/core/StructureDefinition/us-
core-birthsex",
                        "valueCode": "M"
                    }
                ],
                "identifier": [
                    {
                        "use": "usual",
                        "type": {
                            "coding": [
                                {
                                    "system":
"http://terminology.hl7.org/CodeSystem/v2-0203",
                                    "code": "MR",
                                    "display": "Medical Record Number"
                                }
                            ],
                            "text": "Medical Record Number"
                        },
                        "system": "http://hospital.smarthealthit.org",
                        "value": "1032702"
                    }
                ],
                "active": true,
                "name": [
                    {
                        "family": "Shaw",
                        "given": [
                            "Amy",
                            "V."
                        ],
                        "period": {
                            "start": "2016-12-06",
                            "end": "2020-07-22"
                        }
                    },
                    {
                        "family": "Baxter",
                        "given": [
                            "Amy",
                            "V."
                        ],
                        "suffix": [
                            "PharmD"
                        ],
```


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```
            "period": {
                "start": "2020-07-22"
            }
        }
    ],
    "telecom": [
        {
            "system": "phone",
            "value": "555-555-5555",
            "use": "home"
        },
        {
            "system": "email",
            "value": "amy.shaw@example.com"
        }
    ],
    "gender": "female",
    "birthDate": "1987-02-20",
    "address": [
        {
            "line": [
                "49 Meadow St"
            ],
            "city": "Mounds",
            "state": "OK",
            "postalCode": "74047",
            "country": "US",
            "period": {
                "start": "2016-12-06",
                "end": "2020-07-22"
            }
        },
        {
            "line": [
                "183 Mountain View St"
            ],
            "city": "Mounds",
            "state": "OK",
            "postalCode": "74048",
            "country": "US",
            "period": {
                "start": "2020-07-22"
            }
        }
    ],
    "contact": [
```


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```
                    {
                        "relationship": [
                            {
                                "coding": [
                                    {
                                        "system":
"http://terminology.hl7.org/CodeSystem/v2-0131",
                                        "code": "E"
                                    }
                                ]
                            }
                        ],
                        "organization": {
                            "reference": "Organization/OrganizationAcmeLabB",
                            "display": "Test Org"
                        }
                    },
                    {
                        "relationship": [
                            {
                                "coding": [
                                    {
                                        "system":
"http://terminology.hl7.org/CodeSystem/v2-0131",
                                        "code": "E"
                                    }
                                ]
                            }
                        ],
                        "organization": {
                            "reference": "Organization/OrganizationB",
                            "display": "Test Org"
                        }
                    }
                ],
                "communication": [
                    {
                        "language": {
                            "coding": [
                                {
                                    "system": "urn:ietf:bcp:47",
                                    "code": "nl",
                                    "display": "Dutch"
                                }
                            ],
                            "text": "Nederlands"
```


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```
                },
                "preferred": true
            }
        ],
        "generalPractitioner": [
            {
                "reference": "Practitioner/PractitionerC1"
            }
        ],
        "managingOrganization": {
            "reference": "Organization/OrganizationB",
            "display": "ACME Healthcare, Inc"
        }
    }
```


Error Codes

If an error occurs, the system will return one of the following error codes.

Code	Severity	Description	Example
400	error	Bad request	Invalid Parameters passed in the request or there is a Data Access Layer exception due to documentation.
401	error	Unauthorized	Invalid or expired Access Token.
403	error	Forbidden	Valid Access Token is present but requested scope is not authorized.
404	error	Not found	Unknown resource type or Requested resource is not found
408	error	Request time out	Request timed out because there is a communication issue with EMR or the response received from EMR was passed the acceptable threshold (possible reason could be the amount of data system is trying to return).
500	error	Internal Server error	There is an internal error processing the request.

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3.17 Practitioner

The Practitioner Resource is used to get basic information about a healthcare provider, like their name and contact details. It follows the rules and structure defined in the US Core Practitioner Profile (version 3.1.1: STU3).

Practitioner covers all individuals who are engaged in the healthcare process and healthcare-related services as part of their formal responsibilities, and this Resource is used for attribution of activities and responsibilities to these individuals.

Schema

Element Name	Data Type	Card	Description
Id	String	0..1	Practitioner resource entry id
meta	Meta	0..1	Metadata(profile) about the resource
text	Narrative	0..1	Text summary of the resource, for human interpretation
extension	extension	0..*	Extensions for the Practitioner resource
identifier	(Slice Definition)	1..*	An identifier for the practitioner
active	boolean	0..1	Whether this practitioner's record is in active use
name	HumanName	1..*	The name(s) associated with the practitioner
telecom	ContactPoint	0..*	A contact detail for the practitioner, e.g. a telephone number or an email address
address	Address	0..*	Address(es) of the practitioner that are not role specific (typically home address)
gender	code	0..1	Administrative Gender - the gender that the person is considered to have for administration and record keeping purposes

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Supported Operations

Search Parameter Name	Sample Query	Expected Output
Id	Example: GET {{fhirurl}}/Practitioner/PractitionerC1	The system will return the Practitioner related to the specified resource id.
Identifier	Example: GET {{fhirurl}}/Practitioner?identifier=TESTPRAC	An identifier is a structured data type used in many FHIR resources (like Patient, Observation, Encounter, etc.) to specify external IDs assigned to the resource. Use them as required in the query string to get the associated practitioners from the system.
Given Name	Example: GET {{fhirurl}}/Practitioner?given=Ryan	The system will return Practitioner resource entries when the specified string in the query parameter is found within the practitioner's given name.
Family Name	Example: GET {{fhirurl}}/Practitioner?family=Fostrey	The system will return Practitioner resource entries when the specified string in the query parameter is found within the practitioner's family name.
Address	Example: GET {{fhirurl}}/Practitioner?address=San	The system will return Practitioner resource entries whenever the specified string in the query parameter is present in either address line 1, address line 2, city, or state.
Gender	Example: GET {{fhirurl}}/Practitioner?gender=female	The system will return Practitioner resource related to the specified gender.

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Sample Request

Headers	GET
Accept: application/json+fhir Authorization: <OAuth2 Bearer Token>	{{fhirurl}}/Practitioner/PractitionerC1

Sample Response

The data elements, such as resource IDs, in the JSON response may be encrypted. The sample output shown in the API documentation is provided for illustration only.


```
{
                "resourceType": "Practitioner",
                "id": "PractitionerC1",
                "meta": {
                    "extension": [
                        {
                            "url": "http://hl7.org/fhir/StructureDefinition/instance-
name",
                            "valueString": "Practitioner 1 Example"
                        },
                        {
                            "url": "http://hl7.org/fhir/StructureDefinition/instance-
description",
                            "valueMarkdown": "This is a practitioner 1 example for the
*US Core Practitioner Profile*."
                        }
                    ],
                    "versionId": "1",
                    "lastUpdated": "2025-01-15T13:14:03.748+00:00",
                    "profile": [
                        "http://hl7.org/fhir/us/core/StructureDefinition/us-core-
practitioner"
                    ]
                },
                "text": {
                    "status": "generated",
                    "div": "<div
xmlns=\"http://www.w3.org/1999/xhtml\"><p><b>Generated Narrative</b></p><div
style=\"display: inline-block; background-color: #d9e0e7; padding: 6px; margin: 4px;
border: 1px solid #8da1b4; border-radius: 5px; line-height: 60%\"><p style=\"margin-
bottom: 0px\">Resource \"practitioner-1\" </p><p style=\"margin-bottom: 0px\">Profile:
<a href=\"StructureDefinition-us-core-practitioner.html\">US Core Practitioner
Profile</a></p></div><p><b>identifier</b>: id: 9941339108, id:
```


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```
25456</p><p><b>name</b>: Ronald Bone </p><p><b>address</b>: 1003 Healthcare Drive
Amherst MA 01002 (HOME)</p></div>"
                },
                "identifier": [
                    {
                        "system": "http://hl7.org/fhir/sid/us-npi",
                        "value": "9941339108"
                    },
                    {
                        "system": "http://www.acme.org/practitioners",
                        "value": "25456"
                    }
                ],
                "name": [
                    {
                        "family": "Bone",
                        "given": [
                            "Ronald"
                        ],
                        "prefix": [
                            "Dr"
                        ]
                    }
                ],
                "telecom": [
                    {
                        "system": "phone",
                        "value": "000-000-0018",
                        "use": "mobile"
                    },
                    {
                        "system": "email",
                        "value": "austin18@test18.com"
                    }
                ],
                "address": [
                    {
                        "use": "home",
                        "line": [
                            "1003 Healthcare Drive"
                        ],
                        "city": "Amherst",
                        "state": "MA",
                        "postalCode": "01002"
                    }
                ],
```


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```
        "gender": "male"
    }
```


Error Codes

If an error occurs, the system will return one of the following error codes.

Code	Severity	Description	Example
400	error	Bad request	Invalid Parameters passed in the request or there is a Data Access Layer exception due to documentation.
401	error	Unauthorized	Invalid or expired Access Token.
403	error	Forbidden	Valid Access Token is present but requested scope is not authorized.
404	error	Not found	Unknown resource type or Requested resource is not found
408	error	Request time out	Request timed out because there is a communication issue with EMR or the response received from EMR was passed the acceptable threshold (possible reason could be the amount of data system is trying to return).
500	error	Internal Server error	There is an internal error processing the request.

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3.18 PractitionerRole

The PractitionerRole Resource is used to get information about a healthcare provider's role, like their job title, specialty, the organization they work for, and where they provide care. It follows the US Core PractitionerRole Profile (version 3.1.1: STU3).

Schema

Element Name	Data Type	Card	Description
id	string	0..1	Practitioner Role resource entry id
meta	Meta	0..1	Metadata(profile) about the resource
practitioner	Reference(US Core Practitioner Profile)	1..1	Practitioner reference this role is associated to
organization	Reference(US Core Organization Profile)	1..1	Organization where the roles are available
code	CodeableConcept	0..*	Code that identifies this practitioner role
specialty	CodeableConcept	0..*	Code that specifies the specialty of the practitioner
location	Reference(Location)	0..*	The location(s) at which this practitioner provides care
telecom	Contact Point	0..*	Contact details that are specific to the role/location/service

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Supported Operations

Search Parameter Name	Sample Query	Expected Output
Id	Example: GET {{fhirurl}}/PractitionerRole/e4237217-06ef-49f1-bfd6-1606c4ea75e1	The system will return the Practitioner Role related to the specified resource id.
Identifier	Example: GET {{fhirurl}}/PractitionerRole?identifier=9999999896	An identifier is a structured data type used in many FHIR resources (like Patient, Practitioner, Observation, Encounter, etc.) to specify external IDs assigned to the resource. Use them as required in the query string to get the associated practitioner roles from the system.
Organization	Example: GET {{fhirurl}}/PractitionerRole?organization=OrganizationC	The system will return Practitioner role resource entries related to the specified organization.
Location	Example: GET {{fhirurl}}/PractitionerRole?location=LocationC	The system will return all Practitioners whose primary service location matches the location specified in the query parameter. If no practitioners are associated with the queried facility, the system will return zero results.

Sample Request

Headers	GET
Accept: application/json+fhir Authorization: <OAuth2 Bearer Token>	{{fhirurl}}/PractitionerRole/e4237217-06ef-49f1-bfd6-1606c4ea75e1

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Sample Response

The data elements, such as resource IDs, in the JSON response may be encrypted. The sample output shown in the API documentation is provided for illustration only.


```
{
                "resourceType": "PractitionerRole",
                "id": "e4237217-06ef-49f1-bfd6-1606c4ea75e1",
                "meta": {
                    "versionId": "1",
                    "lastUpdated": "2025-04-16T11:56:41.344+00:00",
                    "profile": [
                        "http://hl7.org/fhir/us/core/StructureDefinition/us-core-
practitionerrole"
                    ]
                },
                "practitioner": {
                    "identifier": {
                        "system": "http://hl7.org/fhir/sid/us-npi",
                        "value": "PRACROLE"
                    },
                    "display": "Dr. ChrisTest AveryTest"
                },
                "organization": {
                    "identifier": {
                        "system": "https://github.com/synthetichealth/synthea",
                        "value": "ORG1111"
                    },
                    "display": "TEST MOUNT AUBURN HOSPITAL"
                },
                "code": [
                    {
                        "coding": [
                            {
                                "system": "http://nucc.org/provider-taxonomy",
                                "code": "208D00000X",
                                "display": "General Practice"
                            }
                        ],
                        "text": "General Practice"
                    }
                ],
                "specialty": [
                    {
                        "coding": [
                            {
                                "system": "http://nucc.org/provider-taxonomy",
```


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```
                                "code": "208D00000X",
                                "display": "General Practice"
                            }
                        ],
                        "text": "General Practice"
                    }
                ],
                "location": [
                    {
                        "identifier": {
                            "system": "https://github.com/synthetichealth/synthea",
                            "value": "LOC1111"
                        },
                        "display": "TEST MOUNT AUBURN HOSPITAL"
                    }
                ],
                "telecom": [
                    {
                        "system": "phone",
                        "value": "1111111111"
                    },
                    {
                        "extension": [
                            {
                                "url":
"http://hl7.org/fhir/us/core/StructureDefinition/us-core-direct",
                                "valueBoolean": true
                            }
                        ],
                        "system": "email",
                        "value": "ChrisTest.AveryTest@example.com",
                        "use": "work"
                    }
                ]
            }
```


Error Codes

If an error occurs, the system will return one of the following error codes.

Code	Severity	Description	Example
400	error	Bad request	Invalid Parameters passed in the request or there is a Data Access Layer exception due to documentation.

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401	error	Unauthorized	Invalid or expired Access Token.
403	error	Forbidden	Valid Access Token is present but requested scope is not authorized.
404	error	Not found	Unknown resource type or Requested resource is not found
408	error	Request time out	Request timed out because there is a communication issue with EMR or the response received from EMR was passed the acceptable threshold (possible reason could be the amount of data system is trying to return).
500	error	Internal Server error	There is an internal error processing the request.

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3.19 Procedure

The Procedure Resource is used to get information about medical procedures a patient has had. It follows the structure defined in the US Core Procedure Profile (version 3.1.1: STU3).

A procedure is any action that has been done for a patient. This could be something physical, like surgery, or something less invasive, like counseling, long-term care, or hypnotherapy.

Schema

Element Name	Data Type	Card	Description
id	string	0..1	Procedure resource entry id
meta	Meta	0..1	Metadata(profile and last updated date/time) about the resource
identifier	Identifier	0..*	External Identifiers for this procedure
status	code	1..1	The current state of the procedure
code	CodeableConcept	1..1	The code that identifies the procedure
subject	Reference(US Core Patient Profile)	1..1	The person this procedure was performed on
encounter	Reference (Encounter)	0..1	The Encounter during which this Procedure was created or performed or to which the creation of this record is tightly associated
performedPeriod	Element	0..*	Time range defined by start and end date/time *+ Rule: If present, start SHALL have a lower value than end*
performer	BackboneElement	0..*	The people who performed the procedure
focalDevice	BackboneElement	0..*	Manipulated, implanted, or removed device
location	Reference (Location)	0..1	The location where the procedure actually happened. E.g. a newborn at home, a tracheostomy at a restaurant

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Supported Operations

Search Parameter Name	Sample Query	Expected Output
Id	Example: GET {{fhirurl}}/Procedure/ProcedureC	The system will return the Procedure related to the specified resource id.
Patient Id	Example: GET {{fhirurl}}/Procedure?patient=Patient/PatientA	The system will return Procedures associated with the specified patient.
Encounter Id	Example: GET {{fhirurl}}/Procedure?encounter=Encounter/EncounterC	The system will return all the Procedure resources related to the specified encounter.
Status	Example: GET {{fhirurl}}/Procedure?status=completed	The system will return all the Procedures having the specified status.
Location	Example: GET {{fhirurl}}/PractitionerRole?location=LocationC	The system will return all Procedures whose primary service location matches the location specified in the query parameter. If no procedures are associated with the queried facility, the system will return zero results.

Sample Request

Headers	GET
Accept: application/json+fhir Authorization: <OAuth2 Bearer Token>	{{fhirurl}}/Procedure/ProcedureC

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Sample Response

The data elements, such as resource IDs, in the JSON response may be encrypted. The sample output shown in the API documentation is provided for illustration only.


```
{
                "resourceType": "Procedure",
                "id": "ProcedureC",
                "meta": {
                    "extension": [
                        {
                            "url": "http://hl7.org/fhir/StructureDefinition/instance-
name",
                            "valueString": "Procedure R4 Defib Implant Example"
                        },
                        {
                            "url": "http://hl7.org/fhir/StructureDefinition/instance-
description",
                            "valueMarkdown": "This is a Procedure R4 defib implant
example for the *US Core Procedure Profile*."
                        }
                    ],
                    "versionId": "1",
                    "lastUpdated": "2025-01-15T13:14:03.826+00:00",
                    "profile": [
                        "http://hl7.org/fhir/us/core/StructureDefinition/us-core-
procedure"
                    ]
                },
                "identifier": [
                    {
                        "system": "urn:ietf:rfc:3986",
                        "value": "urn:uuid:b2a737f2-2fdb-49c1-b097-dac173d07aff"
                    }
                ],
                "status": "completed",
                "code": {
                    "coding": [
                        {
                            "system": "http://www.ama-assn.org/go/cpt",
                            "code": "33249"
                        }
                    ],
                    "text": "Insertion or replacement of permanent implantable
defibrillator system with transvenous lead(s), single or dual chamber"
                },
                "subject": {
```


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```
            "reference": "Patient/PatientC"
        },
        "encounter": {
            "reference": "Encounter/6da65204-4248-4c23-8bbb-d082f3c8ab5d"
        },
        "performedPeriod": {
            "start": "2020-09-29T23:45:22+05:30",
            "end": "2020-09-30T00:00:22+05:30"
        },
        "location": {
            "reference": "Location/LocHealthProvider11",
            "display": "Loc Health Provider 11"
        },
        "performer": [
            {
                "actor": {
                    "reference": "Practitioner/PractitionerC2"
                }
            }
        ],
        "focalDevice": [
            {
                "manipulated": {
                    "reference": "Device/udi-2"
                }
            }
        ]
    }
```


Error Codes

If an error occurs, the system will return one of the following error codes.

Code	Severity	Description	Example
400	error	Bad request	Invalid Parameters passed in the request or there is a Data Access Layer exception due to documentation.
401	error	Unauthorized	Invalid or expired Access Token.
403	error	Forbidden	Valid Access Token is present but requested scope is not authorized.
404	error	Not found	Unknown resource type or Requested resource is not found

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408	error	Request time out	Request timed out because there is a communication issue with EMR or the response received from EMR was passed the acceptable threshold (possible reason could be the amount of data system is trying to return).
500	error	Internal Server error	There is an internal error processing the request.

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3.20 Provenance

The Provenance Resource is used to get information about the history and source of a resource. It follows the US Core Provenance Profile (version 3.1.1: STU3).

This resource keeps track of details about who created, changed, deleted, or signed a version of a resource. It shows who was involved and helps assess the quality, reliability, and trustworthiness of the resource. It also provides clues for further investigation into where the resource came from and how the information was gathered.

Schema

Element Name	Data Type	Card	Description
id	string	0..1	Provenance resource entry id
meta	Meta	0..1	Metadata(profile) about the resource
text	Narrative	0..1	Text summary of the resource, for human interpretation
target	Reference(Resource)	1..*	The Resource this Provenance record supports
recorded	instant	1..1	Timestamp when the activity was recorded/updated
reason	Codeable Concept	0..*	Reason the activity is occurring
activity	Codeable Concept	0..1	Activity that occurred
agent	(Slice Definition)	1..*	Actor associated with the resource
signature	Signature	0..*	Signature on target

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Supported Operations

Search Parameter Name	Sample Query	Expected Output
Id	Example: GET {{fhirurl}}/Provenance/ProvenanceC	The system will return the Provenance entry related to the specified resource id.
Patient id	Example: GET {{fhirurl}}/Provenance?patient=Patient/PatientA	The system will return provenance entries associated with the specified patient.

Sample Request

Headers	GET
Accept: application/json+fhir Authorization: <OAuth2 Bearer Token>	{{fhirurl}}/Provenance/ProvenanceC

Sample Response

The data elements, such as resource IDs, in the JSON response may be encrypted. The sample output shown in the API documentation is provided for illustration only.


```
{
                "resourceType": "Provenance",
                "id": "ProvenanceC",
                "meta": {
                    "versionId": "1",
                    "lastUpdated": "2025-01-15T13:14:03.998+00:00"
                },
                "text": {
                    "status": "generated",
                    "div": "<div xmlns=\"http://www.w3.org/1999/xhtml\">procedure
record authored on 27-June 2015 by Harold Hippocrates, MD Content extracted from
Referral received 26-June</div>"
                },
                "target": [
                    {
                        "reference": "Patient/PatientC"
```


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```
},
{
    "reference": "AllergyIntolerance/AllergyIntoleranceC"
},
{
    "reference": "Condition/ConditionC1"
},
{
    "reference": "Condition/ConditionC2"
},
{
    "reference": "Device/DeviceC"
},
{
    "reference": "Immunization/ImmunizationC"
},
{
    "reference": "Goal/GoalC"
},
{
    "reference": "MedicationRequest/MedicationRequestC"
},
{
    "reference": "CareTeam/CareTeamC"
},
{
    "reference": "CarePlan/CarePlanC"
},
{
    "reference": "DiagnosticReport/DiagnosticReportNoteC"
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},
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},
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},
{
    "reference": "Practitioner/PractitionerC1"
},
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                        }
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                    {
                        "type": {
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                                    "code": "author",
                                    "display": "Author"
                                }
                            ],
                            "text": "Author"
                        },
                        "who": {
                            "reference": "Practitioner/PractitionerC1",
                            "display": "Dr. Melvin857 Torp761"
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                            "reference": "Organization/OrganizationC",
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                        "type": {
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                                    "display": "Transmitter"
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                "data": "Li4u"
            }
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Error Codes

If an error occurs, the system will return one of the following error codes.

Code	Severity	Description	Example
400	error	Bad request	Invalid Parameters passed in the request or there is a Data Access Layer exception due to documentation.
401	error	Unauthorized	Invalid or expired Access Token.
403	error	Forbidden	Valid Access Token is present but requested scope is not authorized.
404	error	Not found	Unknown resource type or Requested resource is not found
408	error	Request time out	Request timed out because there is a communication issue with EMR or the response received from EMR was passed the acceptable threshold (possible reason could be the amount of data system is trying to return).
500	error	Internal Server error	There is an internal error processing the request.

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