

AssureCare LLC

170.315(g) (10) SmartOnFHIR API Documentation

Version 1.0.0.1

Last updated: November 29, 2022

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About Guide

Revision History

Version	Date	Comment
1.0.0.0	September 15, 2022	Original Document
1.0.0.1	November 29, 2022	Updated the Production Endpoint URLs and content in the Access FHIR API and Terms of Use sections.

Conventions

Before using this document, it is important to understand the typographical conventions used to identify and describe information.

Description	Appearance
Field Names, Keys you press and Buttons/Icons you click is shown in Open Sans Semibold.	e.g., Press Enter . e.g., Click Ok to continue. e.g., Select Provider from the drop-down list.
Dialog Box and Application Window Titles are shown in Open Sans italics.	e.g., The <i>Preview</i> popup appears.
Cross-References to section and hyperlink are shown in Open Sans Semibold.	e.g., Refer to Conventions Used section.
Warning and Alert messages are shown in Italic Quoted Text	e.g., " <i>Warning and Alert messages</i> "
Assumption and example are in Italic	e.g., <i>For example</i>

Support

You can call, fax or e-mail iPatientCare Support:

Phone: 732.607.2400

E-mail: support@ipatientcare.com

For support, you may also generate a ticket from iPatientCare Support Portal:

<http://support.ipatientcare.com>

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Product Name and Version:

iPatientCare 18.0

iPatientCare 22.5

Introduction

In this documentation we will list all the steps required to access protected health information based on the documentation of an open API. The API makes health information broadly available using FHIR®, a set of clinical interoperability resources under the umbrella of the HL7 standards organization. FHIR is based on common web standards can be reached through a RESTful protocol in which each FHIR resource has a known URL. This document describes OAuth 2.0 for client applications to authorize, authenticate, and integrate with FHIR-based data systems.

We follow Smart-On-FHIR authentication (OAuth2) and authorization (Ref. <http://hl7.org/fhir/smart-app-launch/toc.html>)

FHIR Endpoints

Note: Production and Test Server endpoints are subject to change.

Production Endpoint

- FHIR: <https://fhir.ipatientcare.net:9443/fhir-server/api/v4/>
- Authentication Server: <https://oauth.ipatientcare.net/>

Test Server Endpoint

- FHIR: <https://uat-fhir.ipatientcare.net:9443/fhir-server/api/v4/>
- Authentication Server: <https://uat-oauth.ipatientcare.net/>

Types of Smart-On-FHIR applications

- Standalone App: SMART on FHIR confidential client with a patient context, refresh token, and OpenID Connect (OIDC) identity token.
- EHR Embedded app: Demonstrate the ability to perform an EHR launch to a SMART on FHIR
- Smart Backend Services App (Multi-patient authorization and API): These are server-to-server backend applications e.g. Export clinical data for multiple patients in a group. This app is system level app without any UI.

Types of Supported Authentications

- Symmetric (“client secret”) authentication ([HL7.FHIR.UV.SMART-APP-LAUNCH\Example App Launch for Symmetric Client Auth - FHIR v4.0.1](#))
- Asymmetric (“private key JWT”) authentication ([HL7.FHIR.UV.SMART-APP-LAUNCH\Example App Launch for Asymmetric Client Auth - FHIR v4.0.1](#))

- Public Clients ([HL7.FHIR.UV.SMART-APP-LAUNCH\Example App Launch for Public Client - FHIR v4.0.1](#))

Steps for Smart App Launch

1. Client App Registration
2. Retrieve. well-known/smart-configuration
3. Obtain authorization code
4. Obtain access token
5. Access FHIR API
6. Refresh Token to obtain new access token

Client APP Registration

Before a SMART app can run against an EHR, the app must be registered with that EHR's authorization service. We are using OAuth 2.0 Client Registration.

Client App Request process

- Third-party application must sign the API Subscription Agreement with following details
 - The app name
 - The necessary APIs / Scopes
 - Any redirect URIs
 - Launch_URL (optional)
 - URL to JWK Set (Only for apps supporting asymmetric client authentication).
- The application is created by the EHR admin after confirming the app's registration parameters and communicates a client_id to the app.
 - FHIR APIs (of any supported version) listed within the USCDI v1 core data set will be supported
 - Only reads data from FHIR server

Retrieve. well-known/smart-configuration

In order to obtain launch context and request authorization to access FHIR resources, the app discovers the EHR FHIR server's SMART configuration metadata, including OAuth authorization_endpoint and token_endpoint URLs.

FHIR server makes SMART configuration available from well-known endpoint. You can get Authorization end point and token endpoint.

Request

GET 200 [https://\[FHIRBaseURL\]/r4/.well-known/smart-configuration](https://[FHIRBaseURL]/r4/.well-known/smart-configuration).

Response

```
{
  "capabilities": [
    "launch-ehr",
    "launch-standalone",
    "client-public",
    "client-confidential-symmetric",
    "sso-openid-connect",
    "context-banner",
    "context-style",
    "context-ehr-patient",
    "context-ehr-encounter",
    "context-standalone-patient",
    "context-standalone-encounter",
    "permission-offline",
    "permission-patient",
    "permission-user"
  ],
  "revocation_endpoint": "https://[FHIRBaseURL]/oauth/token/revoke-token",
  "authorization_endpoint": "https://[FHIRBaseURL]/oauth/authorization",
  "token_endpoint": "https://[FHIRBaseURL]/oauth/token"
}
```

Error codes

JSON response is returned from the FHIR Server along with the code

200: Ok

401: Unauthorized

400: Bad Request

500: Internal Server Error

Obtain Authorization Code

The app supplies the following parameters to the EHR's 'authorize' endpoint.

Parameters		
response_type	required	Fixed value: code
client_id	required	The client's identifier
redirect_uri	required	Must match one of the client's pre-registered redirect URIs.
launch	conditional	When using the EHR Launch flow, this must match the launch value received from the EHR. Omitted when using the Standalone Launch
scope	required	<p>Must describe the access that the app needs, including scopes like patient/*.rs, openid and fhirUser (if app needs authenticated patient identity) and either:</p> <ul style="list-style-type: none">▪ a launch value indicating that the app wants to receive already-established launch context details from the EHR.▪ a set of launch context requirements in the form launch/patient, which asks the EHR to establish context on your behalf. <p>Please refer to the scopes supported in the table below.</p>
state	required	An opaque value used by the client to maintain state between the request and callback. The authorization server includes this value when redirecting the user-agent back to the client. The parameter SHALL be used for preventing cross-site request forgery or session fixation attacks. The app SHALL use an unpredictable value for the state parameter with at least 122 bits of entropy (e.g., a properly configured random uuid is suitable).

aud	required	<p>URL of the EHR resource server from which the app wishes to retrieve FHIR data. This parameter prevents leaking a genuine bearer token to a counterfeit resource server.</p> <p>Note that in the case of an EHR launch flow, this aud value is the same as the launch's iss value.</p> <p>Note that the aud parameter is semantically equivalent to the resource parameter defined in RFC8707. SMART's aud parameter predates RFC8707 and we have decided not to rename it for reasons of backwards compatibility. We might consider renaming SMART's aud parameter in the future if implementer feedback indicates that alignment would be valuable. For the current release, servers SHALL support the aud parameter and MAY support a resource parameter as a synonym for aud.</p>
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Scopes Supported

Scope	Grants
patient/*.read	Permission to read and search any resource for the current patient (see notes on wildcard scopes below).
user/*.read	Permission to read and write all resources that the current user can access (see notes on wildcard scopes below).
openid	Permission to retrieve information about the current logged-in user.
fhirUser	
launch	Permission to obtain launch context when app is launched from an EHR.
launch/patient	When launching outside the EHR, ask for a patient to be selected at launch time.
offline_access	Request a refresh_token that can be used to obtain a new access token to replace an expired one, even after the end-user no longer is online after the access token expires.

Here's an example of an authorization request using HTTP GET. You will replace the **[redirect_uri]**, **[client_id]**, **[launch_token]**, **[state]**, **[code_challenge]**, and **[audience]** placeholders with your own values.

Request

https://ehr/authorize?

```
response_type=code&
client_id=app-client-id&
redirect_uri=https%3A%3A%2F%2Fapp%2Fafter-auth&
launch=xyz123&
scope=launch+patient%2FObservation.rs+patient%2FPatient.rs+openid+fhirUser&
state=98wrghuwuogerg97&
aud=https://ehr/fhir
```

For example,

```
https://[FHIRBaseURL]/oauth/authorization?response_type=code&client_id=SAMPLE_CONFIDENTIAL_CLIENT_ID&redirect_uri=https%3A%2F%2Finferno.healthit.gov%2Finferno%2Foauth%2Fstatic%2Fredirect&scope=launch%2Fpatient+openid+fhirUser+offline_access+patient%2FMedication.read+patient%2FAllergyIntolerance.read+patient%2FCarePlan.read+patient%2FCareTeam.read+patient%2FCondition.read+patient%2FDevice.read+patient%2FDiagnosticReport.read+patient%2FDocumentReference.read+patient%2FEncounter.read+patient%2FGoal.read+patient%2FImmunization.read+patient%2FLocation.read+patient%2FMedicationRequest.read+patient%2FObservation.read+patient%2FOrganization.read+patient%2FPatient.read+patient%2FPractitioner.read+patient%2FProcedure.read+patient%2FProvenance.read+patient%2FPractitionerRole.read&state=26a45e37-7445-4e4a-b8fb-24144eccbdc4&aud=https%3A%2F%2Finferno.healthit.gov%2Freference-server%2Fr4
```

Response

The EHR's authorization server reviews the request from your application. If approved, the authorization server redirects the browser to the redirect URL supplied in the initial request and appends the following querystring parameter.

- **code:** This parameter contains the authorization code generated by EHR, which will be exchanged for the access token in the next step.
- **state:** The exact value received from the client.

Here is how redirect URL will look like

Location: <https://app/after-auth?code=123abc&state=98wrghuwoogerg97>

https://inferno.healthit.gov/inferno/oauth2/static/redirect?code=SAMPLE_CODE.bGF1bmNoL3BhdGllbnQgb3BlbmlkIGZoaXVc2VyIG9mZmxpbmVfYWVjZXNziHBhdGllbnQvTWVkaWNhdGlvbi5yZWZkIHhdGllbnQvQWxsZXJneUludG9sZXJhbmNlLnJlYWQgcGF0aWVudC9DYXJlUGxhbi5yZWZkIHhdGllbnQvQ2FyZVRIYW0ucmVhZCBwYXRpZW50L0Nvbmc9ZmVudC9Eb2N1bWVudFJlZmV5ZW5jZS5yZWZkIHhdGllbnQvRW5jb3VudGVyLnJlYWQgcGF0aWVudC9Hb2FsLnJlYWQgcGF0aWVudC9JbW11bml6YXRpb24ucmVhZCBwYXRpZW50L0xvY2F0aW9uLnJlYWQgcGF0aWVudC9NZWRpY2F0aW9uUmVxdWVzdC5yZWZkIHhdGllbnQvT2JzZXJ2YXRpb24ucmVhZCBwYXRpZW50L09yZ2FuaXphdGlvbi5yZWZkIHhdGllbnQvUGF0aWVudC5yZWZkIHhdGllbnQvUHJhY3RpdGlvbmV5LnJlYWQgcGF0aWVudC9Qcm9jZWR1cmUucmVhZCBwYXRpZW50L1Byb3ZlbnFuY2UucmVhZCBwYXRpZW50L1ByYWN0aXRpb25lclJvbGUucmVhZCA=.ODU=&state=26a45e37-7445-4e4a-b8fb-24144eccbdc4

After receiving the authorization code, your application trades the code for a JSON object containing an access token and contextual information by sending an HTTP POST to the token endpoint using a Content-Type header with value of "application/x-www-form-urlencoded".

Error codes

JSON response is returned from the FHIR Server along with the code

200: Ok

401: Unauthorized

400: Bad Request

500: Internal Server Error

Obtain access token

For **public apps**, authentication not required because a client with no secret cannot prove its identity when it issues a call. (The end-to-end system can still be secure because the client comes from a known, https protected endpoint specified and enforced by the redirect uri.) For **confidential apps**, authentication is required. Confidential clients SHOULD use [Asymmetric Authentication](#) if available, and MAY use [Symmetric Authentication](#).

There are two different requests to get access token based on authentication type.

In case of Symmetric ("client secret") authentication app issues an HTTP POST to the EHR authorization server's token endpoint URL using content-type application/x-www-form-urlencoded.

In case of Asymmetric authentication app, generate a client authentication assertion and prepare arguments for POST to token API:

Request

Parameters		
grant_type	required	Fixed value: authorization_code for symmetric and client_credentials for assymmetric
Code	required	Code that the app received from the authorization server
redirect_uri	required	The same redirect_uri used in the initial authorization request.
client_id	conditional	Required for public apps . Omit for confidential apps .
client_assertion_type	conditional	Required for asymmetric authentication. set to urn:ietf:params:oauth:client-assertion-type:jwt-bearer
client_assertion	conditional	Required for asymmetric authentication. set to a JWT signed with your dynamic client's private key.
Scope	conditional	system/*.read for backend services type of application (bulk operations)

Symmetric Authentication Request

[https://\[FHIRBaseURL\]/oauth/token](https://[FHIRBaseURL]/oauth/token)

Payload

```
grant_type=authorization_code&code=SAMPLE_CODE.bGF1bmNoL3BhdGllbnQgb3BlbmlkIGZoaXJvc2VylG9mZmxpbmVfYWNjZXNziHBhdGllbnQvTWVkaWNhdGlvbi5yZWFKIHBhdGllbnQvQWxsZXJneUludG9sZXJhbmNlLnJlYWQgcGF0aWVudC9DYXJlUGxhbi5yZWFKIHBhdGllbnQvQ2FyZVRIYW0ucmVhZCBwYXRpZW50L0NvbmlkIGZoaXJvc2VylG9mZmxpbmVfYWNjZXNziHBhdGllbnQvRGV2aWNlLnJlYWQgcGF0aWVudC9EaWFnbm9zdGljUmVwb3J0LnJlYWQgcGF0aWVudC9Eb2N1bWVudFJlZmVyZW5jZS5yZWFKIHBhdGllbnQvRW5jb3VudGVyLnJlYWQgcGF0aWVudC9Hb2FsLnJlYWQgcGF0aWVudC9JbW11bml6YXRpb24ucmVhZCBwYXRpZW50L0xvY2F0aW9uLnJlYWQgcGF0aWVudC9NZWRpY2F0aW9uUmVxdWVzdC5yZWFKIHBhdGllbnQvT2JzZXJ2YXRpb24ucmVhZCBwYXRpZW50L09yZ2FuaXphdGlvbi5yZWFKIHBhdGllbnQvUGF0aWVudC5yZWFKIHBhdGllbnQvUHJhY3RpdGlubmVzLnJlYWQgcGF0aWVudC9Qcm9jZWR1cmUucmVhZCBwYXRpZW50L1Byb3ZlbnFuY2UucmVhZCBwYXRpZW50L1ByYWN0aXRpb25lcjlvbGUucmVhZCA%3D.ODU%3D&redirect_uri=https%3A%2F%2Finferno.healthit.gov%2Finferno%2Foauth%2Fstatic%2Fredirect
```

In case of Asymmetric authentication following is a request

```
client_assertion=eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzI1NiIsInR5cCI6IkpXLTJ5YkNjNkltZj0ekxtcHpiMjRjTENKaFkyTmxjM05VYj0bGjuTkZlSEJwY21WSmJpSTZNVFVzSW1saGRDSTZNVFU1TnpReE16RTVOWDAucTR2NE1zYzc0a041MDZLVFowcV9taW55YXBKdzBnd2xUNk1fdWIMNzNTNCiSnN1Yil6ImV5SmhiR2NpT2IKSVV6STFOaUlzSW5SNWNDSTZJa3BYVknjc0ltdHBAQ0k2SW5KbFoybHpkSEpoZEsdmJpMTBiMnRsYmlKOS5leUpXZDJ0elgzVnliQ0k2SW1oMGRIQTZMeTh4TUM0eE5TNHIOVEl1TnpNdmFXNW1aWEp1Ynk4dWQyVnNiQzFyYm05M2JpOXFkMnR6TG1wemlyNGIMQ0poWTJObGMzTlViMnRsYm5ORmVIQnBjbVZKYmljNk1UVXNjWxoZENjNk1UVTVOeIF4TXpFNU5YMC5xNHY0TXNjNzRrTjUwNktUWjBxX21pbnlhcEp3MGd3bFQ2TV91aUw3M1M0liwiYXVkljoiaHR0cHM6Ly9pbmZlcm5vLmhlYWx0aGl0Lmdvdi9yZWZlcmVuY2Utc2VydMvYl29hdXR0L2J1bGstdG9rZW4iLCJleHAiOiJ2NTMxMDY0ODgsImp0aSI6ImZmZjA5YjlxMjhiOWRmNmU3M0GU5MWQ2ZDUwMGQxMmFmYmU2YWE4N2FhMjZjVhMjc5YjZhNTI0YzA0NmM1ZWEifQ.tlx7jlu9wn7QdHHdWyUMf9otY0r7eX62LuVF3kZOSjjw-CP-glqdbDtOKiu-BQ9doduW4zyk3fs6k48XpAEQLsSXajfEjeDy9uj-WdSmpAHEC0xYHQszajekdwIDSBRA&client_assertion_type=urn%3Aietf%3Aparams%3Aoauth%3Aclient-assertion-type%3Ajwt-bearer&grant_type=client_credentials&scope=system%2F%2A.read
```

Response

The EHR authorization server SHALL return a JSON object that includes an access token or a message indicating that the authorization request has been denied. The JSON structure includes the following parameters:

Parameters		
access_token	required	The access token issued by the authorization server
token_type	required	Fixed value: Bearer
expires_in	recommended	Lifetime in seconds of the access token, after which the token SHALL NOT be accepted by the resource server.
Scope	required	Scope of access authorized. Note that this can be different from the scopes requested by the app.
id_token	optional	Authenticated user identity and user details, if requested
refresh_token	optional	Token that can be used to obtain a new access token, using the same or a subset of the original authorization grants.

Sample response

```
{
  "access_token": "3e934471-1dbf-4a69-8e1f-227f9fd65428",
  "refresh_token": "31c4476d-6e9d-41a3-a272-065d05c3599d",
  "patient": "85",
  "scope": "launch/patient openid fhirUser offline_access patient/*.read ",
  "need_patient_banner": false,
  "id_token":
  "eyJ0eXAiOiJKV1QiLCJhbGciOiJSUzI1NiJ9.eyJzdWIiOiJkYjExNzYyNy02MDU0LTRhODYtYTcxMi0yMDU2N
  DU5ZDUxMzgiLCJhdWQiOiJ1OTU1QTEvVfQ09ORkIERU5USU5FMX0NMSUVOVF9JRCIsImV4cCI6Imh0dHBzOi
  8vaW5mZXJuby5oZWZsdGhpdC5nb3YvcmVmZXJlbnNILXNlcnZlci9yNCIsImV4cCI6Imh0dHBzOi8vaW5mZXJuby5oZWZsdGhpdC5nb3YvcmV
  mZXJlbnNILXNlcnZlci9yNCIsImV4cCI6Imh0dHBzOi8vaW5mZXJuby5oZWZsdGhpdC5nb3YvcmV
  wYCCw7K4TLUBmVzKIGb3_-5wZtqyTTqO6bRwsituXSefoS1Qwl14wLGpk-
  fOsr6M4uSXW5An4WUy8858j3aa5Qkcf0pw4QP3-
  rlmVJoHuN_In4ULn5bpRQjklIEQ2ySPj3pkoWWMwfij5p7nNfvwgkE2QOCM4Q-
  ounE6oLyYZjp_OGvVhkREu8jO77m3Tgsji_jbX7g4-
  deuwB4F9EHUfpjfhM3TB1GloQ7cglFhHOs9mTCcpT0aYYQkmCJGRx1R5jl-I56p4_63lkU2BRau-
  INII3Zvcnsz5ajpvU46elwg",
  "smart_style_url": "https://[FHIRBaseURL]/app/smart-style-url",
  "token_type": "bearer",
  "expires_in": 3600
}
```

Error codes

JSON response is returned from the FHIR Server along with the code

200: Ok

401: Unauthorized

400: Bad Request

500: Internal Server Error

At this point, the authorization flow is complete.

Access FHIR API

With a valid access token, the app can access protected EHR data by issuing a FHIR API call to the FHIR endpoint on the EHR's resource server. Only HTTP GET request types are supported while accessing FHIR Resource API. Following resources are supported

- FHIR Resource
- Allergies and Intolerances
- Assessment and Plan of Treatment
- Care Team Members
- Clinical Notes -US Core [DocumentReference](#) Profile&US Core [DiagnosticReport](#) Profile for Report and Note Exchange
- Goals - US Core [Goal](#) Profile
- Health Concerns - US Core [Condition](#) Profile
- Immunizations - US Core [Immunization](#) Profile
- Laboratory - US Core [Laboratory Result Observation](#) Profile&US Core [DiagnosticReport](#) Profile for Laboratory Results Reporting
- Medications - US Core [Medication](#) Profile, US Core [MedicationRequest](#) Profile, US Core [AllergyIntolerance](#) Profile
- Patient Demographics - US Core [Patient](#) Profile
- Problems - US Core [Condition](#) Profile
- Procedures - US Core [Procedure](#) Profile
- Provenance - US Core [Provenance](#) Profile
- Smoking Status - US Core [Smoking Status Observation](#) Profile
- Unique Device Identifier(s) for Patient's Implantable Device(s) - US Core [ImplantableDevice](#) Profile
- Vital Signs–FHIR Core [VitalSigns](#) Profile

To make the FHIR API call to the FHIR endpoint, you need to pass the Tenant-id of the practice in the request header "X-FHIR-TENANT-ID". Tenant-id is a unique code assigned by AssureCare to each practice on the FHIR Server. Please contact the practice to obtain their Tenant-id.

Request: Patient

Search Parameters

_id: GET [Base_URL]/Patient/_search?Patient=[id]

Identifier: GET [Base_URL]/Patient?identifier={system | } [code]

Name: GET [Base_URL]/Patient?name=[string]

birthdate + name: GET [Base_URL]/Patient?birthdate=[date]&name=[string]

gender + name: GET [Base_URL]/Patient?gender={system | } [code]&name=[string]

Response

US Core Patient Profile as specified in the [US Core v3.1.1 Implementation Guide](#)

Code: 200 (Success)

```
{
  "resourceType": "Bundle",
  "id": "6f1d6f2d-c42b-453b-8f5a-8d74c24f6fb6",
  "type": "searchset",
  "total": 1,
  "link": [
    {
      "relation": "self",
      "url": "https://FHIR-Base-URL/api/v4/Patient?_count=10&_id=17e77411359-8837d878-ea1e-45b5-bb89-882fdb2be4b&_page=1"
    }
  ],
  "entry": [
    {
      "id": "17e77411359-8837d878-ea1e-45b5-bb89-882fdb2be4b",
      "fullUrl": "https://FHIR-Base-URL/api/v4/Patient/17e77411359-8837d878-ea1e-45b5-bb89-882fdb2be4b",
      "resource": {
        "resourceType": "Patient",
        "id": "17e77411359-8837d878-ea1e-45b5-bb89-882fdb2be4b",
```

```

"meta": {
  "versionId": "3",
  "lastUpdated": "2022-03-24T10:50:49.231Z",
  "profile": [
    "http://hl7.org/fhir/us/core/StructureDefinition/us-core-patient"
  ]
},
"text": {
  "status": "generated",
  "div": "<div xmlns=\\"http://www.w3.org/1999/xhtml\\">Generated by <a
href=\\"https://github.com/synthetichealth/synthea\\">Synthea</a>.Version identifier: v2.6.1-3-
g50f4f58f\n . Person seed: 4286870567281389426 Population seed: 3</div>"
},
"extension": [
  {
    "extension": [
      {
        "url": "ombCategory",
        "valueCoding": {
          "system": "urn:oid:2.16.840.1.113883.6.238",
          "code": "2106-3",
          "display": "White"
        }
      }
    ],
    "url": "text",
    "valueString": "White"
  }
],
"url": "http://hl7.org/fhir/us/core/StructureDefinition/us-core-race"
},
{

```



```

"extension": [
  {
    "url": "ombCategory",
    "valueCoding": {
      "system": "urn:oid:2.16.840.1.113883.6.238",
      "code": "2186-5",
      "display": "Non Hispanic or Latino"
    }
  },
  {
    "url": "text",
    "valueString": "Non Hispanic or Latino"
  }
],
"url": "http://hl7.org/fhir/us/core/StructureDefinition/us-core-ethnicity"
},
{
  "url": "http://hl7.org/fhir/StructureDefinition/patient-mothersMaidenName",
  "valueString": "Christen366 Murray856"
},
{
  "url": "http://hl7.org/fhir/us/core/StructureDefinition/us-core-birthsex",
  "valueCode": "M"
},
{
  "url": "http://hl7.org/fhir/StructureDefinition/patient-birthPlace",
  "valueAddress": {
    "city": "Springfield",
    "state": "Massachusetts",
    "country": "US"
  }
}
}

```

```

],
"identifier": [
  {
    "system": "https://github.com/synthetichealth/synthea",
    "value": "e91975f5-9445-c11f-cabf-c3c6dae161f2"
  },
  {
    "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": "e91975f5-9445-c11f-cabf-c3c6dae161f2"
  },
  {
    "type": {
      "coding": [
        {
          "system": "http://terminology.hl7.org/CodeSystem/v2-0203",
          "code": "SS",
          "display": "Social Security Number"
        }
      ],
      "text": "Social Security Number"
    },
    "system": "http://hl7.org/fhir/sid/us-ssn",

```

```

"value": "999-61-9798"
},
{
  "type": {
    "coding": [
      {
        "system": "http://terminology.hl7.org/CodeSystem/v2-0203",
        "code": "DL",
        "display": "Driver's License"
      }
    ],
    "text": "Driver's License"
  },
  "system": "urn:oid:2.16.840.1.113883.4.3.25",
  "value": "S99940282"
}
],
"name": [
  {
    "use": "official",
    "family": "Harry",
    "given": [
      "Tom"
    ],
    "prefix": [
      "Mr."
    ],
    "suffix": [
      "Jr."
    ]
  }
],
{

```

```
"use": "maiden",
"given": [
  "Alex"
]
},
"telecom": [
  {
    "system": "phone",
    "value": "555-770-2787",
    "use": "home"
  }
],
"gender": "male",
"birthDate": "1941-09-05",
"address": [
  {
    "extension": [
      {
        "extension": [
          {
            "url": "latitude",
            "valueDecimal": 42.1343534042923
          },
          {
            "url": "longitude",
            "valueDecimal": -72.67217549422628
          }
        ]
      },
      {
        "url": "http://hl7.org/fhir/StructureDefinition/geolocation"
      }
    ]
  }
],
```

```
"line": [  
  "599 Schowalter Promenade"  
],  
"city": "West Springfield",  
"state": "MA",  
"postalCode": "01089",  
"country": "US",  
"period": {  
  "start": "1940-09-05"  
}  
}  
],  
"maritalStatus": {  
  "coding": [  
    {  
      "system": "http://terminology.hl7.org/CodeSystem/v3-MaritalStatus",  
      "code": "M",  
      "display": "M"  
    }  
  ],  
  "text": "M"  
},  
"multipleBirthBoolean": false,  
"communication": [  
  {  
    "language": {  
      "coding": [  
        {  
          "system": "urn:ietf:bcp:47",  
          "code": "en-US",  
          "display": "English"  
        }  
      ]  
    }  
  }  
]
```

```
    ],
    "text": "English"
  }
}
]
},
"search": {
  "mode": "match",
  "score": 1
}
}
]
}
```

Request: AllergyIntolerance

Search Parameters

GET GET [Base_URL]/AllergyIntolerance?Patient=[id]

Response

Each resource returned from the first search is expected to conform to the US Core AllergyIntolerance Profile.

Code: 200 (Success)

```
{
  "resourceType": "AllergyIntolerance",
  "id": "17e7758c319-7955ecfe-94da-4071-8488-4ef21425ed85",
  "meta": {
    "versionId": "1",
    "lastUpdated": "2022-01-20T11:56:52.889Z",
    "profile": [
      "http://hl7.org/fhir/us/core/StructureDefinition/us-core-allergyintolerance"
    ]
  },
}
```

```
"clinicalStatus": {
  "coding": [
    {
      "system": "http://terminology.hl7.org/CodeSystem/allergyintolerance-clinical",
      "code": "inactive"
    }
  ]
},
"verificationStatus": {
  "coding": [
    {
      "system": "http://terminology.hl7.org/CodeSystem/allergyintolerance-verification",
      "code": "confirmed"
    }
  ]
},
"type": "allergy",
"category": [
  "food"
],
"criticality": "low",
"code": {
  "coding": [
    {
      "system": "http://snomed.info/sct",
      "code": "300916003",
      "display": "Latex allergy"
    }
  ],
  "text": "Latex allergy"
},
"patient": {
```

```

    "reference": "Patient/17e77411359-8837d878-ea1e-45b5-bb89-882dfb2be4b"
  },
  "recordedDate": "1941-10-14T18:33:18-05:00",
  "reaction": [
    {
      "manifestation": [
        {
          "coding": [
            {
              "system": "http://snomed.info/sct",
              "code": "271807003",
              "display": "skin rash"
            }
          ],
          "text": "skin rash"
        }
      ]
    }
  ]
}

```

Request: CarePlan

GET [Base_URL]/AllergyIntolerance?CarePlan=assess-plan&patient=[id]

For example,

[https://\[Base_URL\]/CarePlan?category=assess-plan&patient=17e77411359-8837d878-ea1e-45b5-bb89-882dfb2be4b](https://[Base_URL]/CarePlan?category=assess-plan&patient=17e77411359-8837d878-ea1e-45b5-bb89-882dfb2be4b)

Response

Each resource returned from the first search is expected to conform to the [US Core CarePlan Profile](#).

Code: 200 (Success)

```

{
  "resourceType": "Bundle",

```



```

"id": "79d7a78e-de9b-4c5c-b51d-45b72963ae1f",
"type": "searchset",
"total": 1,
"link": [
  {
    "relation": "self",
    "url": "https://yourfhirserver.com:9443/fhir-server/api/v4/CarePlan?_count=10&category=assessment&patient=Patient/17e77411359-8837d878-ea1e-45b5-bb89-882fdb2be4b&_page=1"
  }
],
"entry": [
  {
    "id": "17e776e13ff-1ea7505d-f475-4f49-adde-30e69df86734",
    "fullUrl": "https://yourfhirserver.com:9443/fhir-server/api/v4/CarePlan/17e776e13ff-1ea7505d-f475-4f49-adde-30e69df86734",
    "resource": {
      "resourceType": "CarePlan",
      "id": "17e776e13ff-1ea7505d-f475-4f49-adde-30e69df86734",
      "meta": {
        "versionId": "2",
        "lastUpdated": "2022-01-21T10:56:06.304Z",
        "profile": [
          "http://hl7.org/fhir/us/core/StructureDefinition/us-core-careplan"
        ]
      },
      "text": {
        "status": "generated",
        "div": "<div xmlns=\\"http://www.w3.org/1999/xhtml\">Care Plan for Fracture care.<br/>Activities: <ul><li>Fracture care</li><li>Fracture care</li></ul><br/>Care plan is meant to treat Fracture of clavicle.</div>"
      }
    },
    "status": "active",
    "intent": "order",

```

```

"category": [
  {
    "coding": [
      {
        "system": "http://hl7.org/fhir/us/core/CodeSystem/careplan-category",
        "code": "assess-plan"
      }
    ]
  },
  {
    "coding": [
      {
        "system": "http://snomed.info/sct",
        "code": "384758001",
        "display": "Self-care interventions (procedure)"
      }
    ],
    "text": "Self-care interventions (procedure)"
  }
],
"subject": {
  "reference": "Patient/17e77411359-8837d878-ea1e-45b5-bb89-882dfdb2be4b"
},
"encounter": {
  "reference": "Encounter/17e77566282-0c9c236b-f0bd-45e0-9c61-80991a376967"
},
"period": {
  "start": "1941-10-02T18:33:18-05:00"
},
"careTeam": [
  {
    "reference": "CareTeam/17e775e7546-36e6a4cd-264e-4a94-92fa-cdf1b2fa30c1"
  }
]

```

```

    }
  ],
  "activity": [
    {
      "detail": {
        "code": {
          "coding": [
            {
              "system": "http://snomed.info/sct",
              "code": "409002",
              "display": "Food allergy diet"
            }
          ],
          "text": "Food allergy diet"
        },
        "status": "in-progress",
        "location": {
          "reference": "Location/17e7750e68f-6266aec8-0cd3-443e-adb9-be37f3bf25f2",
          "display": "HOLYOKE MEDICAL CENTER"
        }
      }
    },
    {
      "detail": {
        "code": {
          "coding": [
            {
              "system": "http://snomed.info/sct",
              "code": "58332002",
              "display": "Allergy education"
            }
          ],
          "text": "Allergy education"
        }
      }
    }
  ]
}

```

```

    "text": "Allergy education"
  },
  "status": "in-progress",
  "location": {
    "reference": "Location/17e7750e68f-6266aec8-0cd3-443e-adb9-be37f3bf25f2",
    "display": "HOLYOKE MEDICAL CENTER"
  }
}
},
{
  "detail": {
    "code": {
      "coding": [
        {
          "system": "http://snomed.info/sct",
          "code": "58332002",
          "display": "Allergy education"
        }
      ],
      "text": "Allergy education"
    },
    "status": "in-progress",
    "location": {
      "reference": "Location/17e7750e68f-6266aec8-0cd3-443e-adb9-be37f3bf25f2",
      "display": "HOLYOKE MEDICAL CENTER"
    }
  }
}
]
},
"search": {
  "mode": "match",

```

```
    "score": 1
  }
}
]
```

Request: CareTeam

GET [Base_URL]/CareTeam?patient=[id]&status=active

For example,

[https://\[Base_URL\]/CareTeam?patient=17e77411359-8837d878-ea1e-45b5-bb89-882dfdb2be4b&status=active](https://[Base_URL]/CareTeam?patient=17e77411359-8837d878-ea1e-45b5-bb89-882dfdb2be4b&status=active)

Response

Each resource returned from the first search is expected to conform to the [US Core CareTeam Profile](#)

Code: 200 (Success)

```
{
  "resourceType": "Bundle",
  "id": "492509fd-0650-4e2e-834f-41fc7b132a5e",
  "type": "searchset",
  "total": 1,
  "link": [
    {
      "relation": "self",
      "url": "https://yourfhirserver.com:9443/fhir-server/api/v4/CareTeam?_count=10&patient=17e77411359-8837d878-ea1e-45b5-bb89-882dfdb2be4b&status=http://hl7.org/fhir/care-team-status%7Cactive&_page=1"
    }
  ],
  "entry": [
    {
      "id": "17e775e7546-36e6a4cd-264e-4a94-92fa-cdf1b2fa30c1",
      "fullUrl": "https://yourfhirserver.com:9443/fhir-server/api/v4/CareTeam/17e775e7546-36e6a4cd-264e-4a94-92fa-cdf1b2fa30c1",
      "resource": {
```

```
"resourceType": "CareTeam",
"id": "17e775e7546-36e6a4cd-264e-4a94-92fa-cdf1b2fa30c1",
"meta": {
  "versionId": "1",
  "lastUpdated": "2022-01-20T12:03:06.182Z",
  "profile": [
    "http://hl7.org/fhir/us/core/StructureDefinition/us-core-careteam"
  ]
},
"status": "active",
"subject": {
  "reference": "Patient/17e77411359-8837d878-ea1e-45b5-bb89-882dfdb2be4b"
},
"encounter": {
  "reference": "Encounter/17e77566282-0c9c236b-f0bd-45e0-9c61-80991a376967"
},
"period": {
  "start": "1941-10-02T18:33:18-05:00"
},
"participant": [
  {
    "role": [
      {
        "coding": [
          {
            "system": "http://snomed.info/sct",
            "code": "116154003",
            "display": "Patient"
          }
        ],
        "text": "Patient"
      }
    ]
  }
]
```

```

],
"member": {
  "reference": "Patient/17e77411359-8837d878-ea1e-45b5-bb89-882fdb2be4b",
  "display": "Mr. Dustin31 Ritchie586"
}
},
{
  "role": [
    {
      "coding": [
        {
          "system": "http://snomed.info/sct",
          "code": "223366009",
          "display": "Healthcare professional (occupation)"
        }
      ],
      "text": "Healthcare professional (occupation)"
    }
  ],
  "member": {
    "reference": "Practitioner/17e774bb850-6b7b7f50-ed52-4523-a3a8-60fb0ef71c5b",
    "display": "Dr. Patricia625 Kilback373"
  }
},
{
  "role": [
    {
      "coding": [
        {
          "system": "http://snomed.info/sct",
          "code": "224891009",
          "display": "Healthcare services (qualifier value)"
        }
      ]
    }
  ]
}

```

```

    }
  ],
  "text": "Healthcare services (qualifier value)"
}
],
"member": {
  "reference": "Organization/17e774dca91-e7e4e9e3-390e-4c10-83ae-88beabc176e2",
  "display": "HOLYOKE MEDICAL CENTER"
}
}
],
"managingOrganization": [
  {
    "reference": "Organization/17e774dca91-e7e4e9e3-390e-4c10-83ae-88beabc176e2",
    "display": "HOLYOKE MEDICAL CENTER"
  }
]
},
"search": {
  "mode": "match",
  "score": 1
}
}
]
}

```


Request: Problems / Health Concern

Search Parameters

```
GET [base]/Condition?patient=[id]&category={system | }[code]
```

```
GET [base]/Condition?patient=[id]&category=http://terminology.hl7.org/CodeSystem/condition-category|problem-list-item
```

```
GET [base]/Condition?patient=[id]&category=http://hl7.org/fhir/us/core/CodeSystem/condition-category|health-concern
```

```
GET [base]/Condition?patient=[id]&category=http://terminology.hl7.org/CodeSystem/condition-category|encounter-diagnosis
```

For example,

```
[Base_URL]/Condition?patient=17e77411359-8837d878-ea1e-45b5-bb89-882fdfb2be4b&category=http://hl7.org/fhir/us/core/CodeSystem/condition-category|health-concern
```

Response

Each resource returned from the first search is expected to conform to the US Core [Condition](#) Profile

Code: 200 (Success)

```
{
  "resourceType": "Bundle",
  "id": "f537c30e-fab7-45f0-8167-4ab7a48386ec",
  "type": "searchset",
  "total": 2,
  "link": [
    {
      "relation": "self",
      "url": "https://yourfhirserver.com:9443/fhir-server/api/v4/Condition?_count=10&patient=17e77411359-8837d878-ea1e-45b5-bb89-882fdfb2be4b&_page=1"
    }
  ],
  "entry": [
    {
      "id": "17e7777ce8c-c66752fb-ee1b-40c2-ba5a-2e6ee89b3e1a",
```

```
"fullUrl": "https://yourfhirserver.com:9443/fhir-server/api/v4/Condition/17e7777ce8c-c66752fb-ee1b-40c2-ba5a-2e6ee89b3e1a",
"resource": {
  "resourceType": "Condition",
  "id": "17e7777ce8c-c66752fb-ee1b-40c2-ba5a-2e6ee89b3e1a",
  "meta": {
    "versionId": "1",
    "lastUpdated": "2022-01-20T12:30:47.436Z",
    "profile": [
      "http://hl7.org/fhir/us/core/StructureDefinition/us-core-condition"
    ]
  },
  "clinicalStatus": {
    "coding": [
      {
        "system": "http://terminology.hl7.org/CodeSystem/condition-clinical",
        "code": "resolved"
      }
    ]
  },
  "verificationStatus": {
    "coding": [
      {
        "system": "http://terminology.hl7.org/CodeSystem/condition-ver-status",
        "code": "confirmed"
      }
    ]
  },
  "category": [
    {
      "coding": [
        {
```

```

    "system": "http://terminology.hl7.org/CodeSystem/condition-category",
    "code": "encounter-diagnosis",
    "display": "Encounter Diagnosis"
  }
]
},
"code": {
  "coding": [
    {
      "system": "http://snomed.info/sct",
      "code": "444814009",
      "display": "Viral sinusitis (disorder)"
    }
  ],
  "text": "Viral sinusitis (disorder)"
},
"subject": {
  "reference": "Patient/17e77411359-8837d878-ea1e-45b5-bb89-882dfdb2be4b"
},
"encounter": {
  "reference": "Encounter/17e77566282-0c9c236b-f0bd-45e0-9c61-80991a376967"
},
"onsetDateTime": "1940-11-09T18:33:18-05:00",
"abatementDateTime": "1940-11-30T18:33:18-05:00",
"recordedDate": "1940-11-09T18:33:18-05:00"
},
"search": {
  "mode": "match",
  "score": 1
}
},

```

```

{
  "id": "17eb029f925-40603327-0ac3-48dd-972b-6c882b8751f5",
  "fullUrl": "https://yourfhirserver.com:9443/fhir-server/api/v4/Condition/17eb029f925-40603327-0ac3-48dd-972b-6c882b8751f5",
  "resource": {
    "resourceType": "Condition",
    "id": "17eb029f925-40603327-0ac3-48dd-972b-6c882b8751f5",
    "meta": {
      "versionId": "1",
      "lastUpdated": "2022-01-31T12:44:07.847Z",
      "profile": [
        "http://hl7.org/fhir/us/core/StructureDefinition/us-core-condition"
      ]
    },
    "clinicalStatus": {
      "coding": [
        {
          "system": "http://terminology.hl7.org/CodeSystem/condition-clinical",
          "code": "resolved"
        }
      ]
    },
    "verificationStatus": {
      "coding": [
        {
          "system": "http://terminology.hl7.org/CodeSystem/condition-ver-status",
          "code": "confirmed"
        }
      ]
    },
    "category": [
      {

```

```

"extension": [
  {
    "url": "http://hl7.org/fhir/StructureDefinition/data-absent-reason",
    "valueCode": "unknown"
  }
]
},
"code": {
  "coding": [
    {
      "system": "http://snomed.info/sct",
      "code": "195662009",
      "display": "Acute viral pharyngitis (disorder)"
    }
  ],
  "text": "Acute viral pharyngitis (disorder)"
},
"subject": {
  "reference": "Patient/17e77411359-8837d878-ea1e-45b5-bb89-882dfdb2be4b"
},
"encounter": {
  "reference": "Encounter/17e77566282-0c9c236b-f0bd-45e0-9c61-80991a376967"
},
"onsetDateTime": "1961-06-25T01:11:45-04:00",
"abatementDateTime": "1961-07-07T01:11:45-04:00",
"recordedDate": "1961-06-25T01:11:45-04:00"
},
"search": {
  "mode": "match",
  "score": 1
}

```

```
}  
]  
}
```

Request: Implantable Device

Search Parameters

GET [Base_URL]/Device?patient=[id]

For example,

[Base_URL]/Device?patient=17e77411359-8837d878-ea1e-45b5-bb89-882fdfb2be4b

Response

Each resource returned from the first search is expected to conform to the US Core [ImplantableDevice](#) Profile

Code: 200 (Success)

```
{  
  "resourceType": "Bundle",  
  "id": "5804551e-120d-4164-b05b-9705fad44fa5",  
  "type": "searchset",  
  "total": 1,  
  "link": [  
    {  
      "relation": "self",  
      "url": "https://yourfhirserver.com:9443/fhir-server/api/v4/Device?_count=10&patient=17e77411359-8837d878-ea1e-45b5-bb89-882fdfb2be4b&_page=1"  
    }  
  ],  
  "entry": [  
    {  
      "id": "17e777b3f34-04bc3627-92d3-43bb-92e7-35533110f750",  
      "fullUrl": "https://yourfhirserver.com:9443/fhir-server/api/v4/Device/17e777b3f34-04bc3627-92d3-43bb-92e7-35533110f750",  
      "resource": {
```

```
"resourceType": "Device",
"id": "17e777b3f34-04bc3627-92d3-43bb-92e7-35533110f750",
"meta": {
  "versionId": "1",
  "lastUpdated": "2022-01-20T12:34:32.884Z",
  "profile": [
    "http://hl7.org/fhir/us/core/StructureDefinition/us-core-implantable-device"
  ]
},
"udiCarrier": [
  {
    "deviceIdentifier": "43069338026389",
    "carrierHRF": "(01)43069338026389(11)000302(17)250317(10)1134(21)842026117977"
  }
],
"status": "active",
"distinctIdentifier": "43069338026389",
"manufactureDate": "2000-03-02T18:33:18-05:00",
"expirationDate": "2025-03-17T19:33:18-04:00",
"lotNumber": "1134",
"serialNumber": "842026117977",
"deviceName": [
  {
    "name": "Implantable defibrillator, device (physical object)",
    "type": "user-friendly-name"
  }
],
"type": {
  "coding": [
    {
      "system": "http://snomed.info/sct",
      "code": "72506001",
```

```
    "display": "Implantable defibrillator, device (physical object)"
  }
],
"text": "Implantable defibrillator, device (physical object)"
},
"patient": {
  "reference": "Patient/17e77411359-8837d878-ea1e-45b5-bb89-882fdfb2be4b"
}
},
"search": {
  "mode": "match",
  "score": 1
}
}
]
```


Request: Diagnostic Report/ Clinical Notes/ DocumentReference

Search Parameters

patient: GET [Base_URL]/DiagnosticReport?patient=[id]

patient + code: GET [Base_URL]/DiagnosticReport?patient=[id]&code={system |}[code]

patient + category: GET [Base_URL]/DiagnosticReport?patient=[id]&category=LAB

patient: GET [Base_URL]/ DocumentReference?patient=[id]

for example,

[https://\[Base_URL\]/DiagnosticReport?category=LP29684-5&patient=17e77411359-8837d878-ea1e-45b5-bb89-882fdb2be4b](https://[Base_URL]/DiagnosticReport?category=LP29684-5&patient=17e77411359-8837d878-ea1e-45b5-bb89-882fdb2be4b)

[https://\[Base_URL\]/DiagnosticReport?category=LP7839-6&patient=17e77411359-8837d878-ea1e-45b5-bb89-882fdb2be4b](https://[Base_URL]/DiagnosticReport?category=LP7839-6&patient=17e77411359-8837d878-ea1e-45b5-bb89-882fdb2be4b)

[https://\[Base_URL\]/DiagnosticReport?category=LP29708-2&patient=17e77411359-8837d878-ea1e-45b5-bb89-882fdb2be4b](https://[Base_URL]/DiagnosticReport?category=LP29708-2&patient=17e77411359-8837d878-ea1e-45b5-bb89-882fdb2be4b)

[https://\[Base_URL\]/DocumentReference?patient=17e77411359-8837d878-ea1e-45b5-bb89-882fdb2be4b](https://[Base_URL]/DocumentReference?patient=17e77411359-8837d878-ea1e-45b5-bb89-882fdb2be4b)

Category and codes details can be obtained from [US Core DiagnosticReport Profile for Report and Note exchange](#)

Response

Each resource returned from the first search is expected to conform to the [US Core DiagnosticReport Profile for Report and Note exchange](#).

Code: 200 (Success)

```
{
  "resourceType": "Bundle",
  "id": "a87a8318-2dfc-488d-9f0a-6b07d7c29271",
  "type": "searchset",
  "total": 1,
  "link": [
    {
      "relation": "self",
```

```

    "url": "https://yourfhirserver.com:9443/fhir-
server/api/v4/DiagnosticReport?_count=10&category=LP29684-5&patient=17e77411359-8837d878-
ea1e-45b5-bb89-882fdb2be4b&_page=1"
  }
],
"entry": [
  {
    "id": "17e7b6e6f1c-119e9b8b-11b9-448b-b760-dc116013b654",
    "fullUrl": "https://yourfhirserver.com:9443/fhir-server/api/v4/DiagnosticReport/17e7b6e6f1c-
119e9b8b-11b9-448b-b760-dc116013b654",
    "resource": {
      "resourceType": "DiagnosticReport",
      "id": "17e7b6e6f1c-119e9b8b-11b9-448b-b760-dc116013b654",
      "meta": {
        "versionId": "1",
        "lastUpdated": "2022-01-21T06:59:02.053Z",
        "profile": [
          "http://hl7.org/fhir/us/core/StructureDefinition/us-core-diagnosticreport-note"
        ]
      },
      "status": "final",
      "category": [
        {
          "coding": [
            {
              "system": "http://loinc.org",
              "code": "LP29684-5",
              "display": "Radiology"
            }
          ],
          "text": "Radiology"
        }
      ]
    }
  }
]

```

```

],
"code": {
  "coding": [
    {
      "system": "http://loinc.org",
      "code": "34117-2",
      "display": "History and physical note"
    }
  ],
  "text": "History and physical note"
},
"subject": {
  "reference": "Patient/17e77411359-8837d878-ea1e-45b5-bb89-882dfdb2be4b"
},
"encounter": {
  "reference": "Encounter/17e77566282-0c9c236b-f0bd-45e0-9c61-80991a376967"
},
"effectiveDateTime": "1974-01-24T19:33:18-04:00",
"issued": "1974-01-24T19:33:18.715-04:00",
"performer": [
  {
    "reference": "Practitioner/17e774bb850-6b7b7f50-ed52-4523-a3a8-60fb0ef71c5b",
    "display": "Dr. Blossom971 Christiansen251"
  },
  {
    "reference": "Practitioner/17e774bb850-6b7b7f50-ed52-4523-a3a8-60fb0ef71c5b"
  },
  {
    "reference": "Organization/17e774dca91-e7e4e9e3-390e-4c10-83ae-88beabc176e2"
  }
],
"presentedForm": [

```


Request: Laboratory Result Observation

Search Parameters

patient: GET [Base_URL]/DiagnosticReport?patient=[id]

patient + code: GET [Base_URL]/DiagnosticReport?patient=[id]&code={system|}[code]

patient + category: GET [Base_URL]/DiagnosticReport?patient=[id]&category=LAB

for example,

[https://\[Base_URL\]/DiagnosticReport?category=http://terminology.hl7.org/CodeSystem/v2-0074%7CLAB&patient=17e77411359-8837d878-ea1e-45b5-bb89-882dfb2be4b](https://[Base_URL]/DiagnosticReport?category=http://terminology.hl7.org/CodeSystem/v2-0074%7CLAB&patient=17e77411359-8837d878-ea1e-45b5-bb89-882dfb2be4b)

[https://\[Base_URL\]/DiagnosticReport?category=LAB&patient=17e77411359-8837d878-ea1e-45b5-bb89-882dfb2be4b](https://[Base_URL]/DiagnosticReport?category=LAB&patient=17e77411359-8837d878-ea1e-45b5-bb89-882dfb2be4b)

[https://\[Base_URL\]/DiagnosticReport?category=LAB&patient=Patient/17e77411359-8837d878-ea1e-45b5-bb89-882dfb2be4b](https://[Base_URL]/DiagnosticReport?category=LAB&patient=Patient/17e77411359-8837d878-ea1e-45b5-bb89-882dfb2be4b)

Category and codes details can be obtained from [US Core DiagnosticReport Profile for Laboratory Results Reporting](#).

Response

Each resource returned from the first search is expected to conform to the [US Core DiagnosticReport Profile for Laboratory Results Reporting](#)

Code: 200 (Success)

```
{
  "resourceType": "Bundle",
  "id": "019290b1-c4e1-4025-862c-60ffc3a6160b",
  "type": "searchset",
  "total": 1,
  "link": [
    {
      "relation": "self",
      "url": "https://yourfhirserver.com:9443/fhir-server/api/v4/DiagnosticReport?_count=10&category=http://terminology.hl7.org/CodeSystem/v2-0074%7CLAB&patient=17e77411359-8837d878-ea1e-45b5-bb89-882dfb2be4b&_page=1"
    }
  ],
  "entry": [
```

```

{
  "id": "17e7b7b7e66-36f4cf84-3482-4e36-8cca-13cc832b3bed",
  "fullUrl": "https://yourfhirserver.com:9443/fhir-server/api/v4/DiagnosticReport/17e7b7b7e66-36f4cf84-3482-4e36-8cca-13cc832b3bed",
  "resource": {
    "resourceType": "DiagnosticReport",
    "id": "17e7b7b7e66-36f4cf84-3482-4e36-8cca-13cc832b3bed",
    "meta": {
      "versionId": "1",
      "lastUpdated": "2022-01-21T07:13:17.926Z",
      "profile": [
        "http://hl7.org/fhir/us/core/StructureDefinition/us-core-diagnosticreport-lab"
      ]
    },
    "status": "final",
    "category": [
      {
        "coding": [
          {
            "system": "http://terminology.hl7.org/CodeSystem/v2-0074",
            "code": "LAB",
            "display": "Laboratory"
          }
        ]
      }
    ],
    "code": {
      "coding": [
        {
          "system": "http://loinc.org",
          "code": "51990-0",
          "display": "Basic Metabolic Panel"
        }
      ]
    }
  }
}

```

```

    }
  ],
  "text": "Basic Metabolic Panel"
},
"subject": {
  "reference": "Patient/17e77411359-8837d878-ea1e-45b5-bb89-882fdb2be4b"
},
"encounter": {
  "reference": "Encounter/17e77566282-0c9c236b-f0bd-45e0-9c61-80991a376967"
},
"effectiveDateTime": "2017-09-28T19:33:18-04:00",
"issued": "2017-09-28T19:33:18.715-04:00",
"performer": [
  {
    "reference": "Organization/17e774dca91-e7e4e9e3-390e-4c10-83ae-88beabc176e2",
    "display": "PCP170967"
  },
  {
    "reference": "Practitioner/17e774bb850-6b7b7f50-ed52-4523-a3a8-60fb0ef71c5b"
  },
  {
    "reference": "Organization/17e774dca91-e7e4e9e3-390e-4c10-83ae-88beabc176e2"
  }
],
"result": [
  {
    "reference": "Observation/17e77809e90-d5cfd26d-ab5d-4f36-bc32-1ee799b2c278",
    "display": "Glucose"
  },
  {
    "reference": "Observation/17e7785ea69-6c9f88d9-0553-4216-be17-f908ebe0b371",
    "display": "Urea Nitrogen"
  }
]

```

```
    }  
  ]  
},  
"search": {  
  "mode": "match",  
  "score": 1  
}  
}  
]  
}
```


Request: GOAL

GET [https://\[Base_URL\]/Goal?patient=\[id\]](https://[Base_URL]/Goal?patient=[id])

For example, [https://\[Base_URL\]/Goal?patient=17e77411359-8837d878-ea1e-45b5-bb89-882fdfb2be4b](https://[Base_URL]/Goal?patient=17e77411359-8837d878-ea1e-45b5-bb89-882fdfb2be4b)

Response

Each resource returned from the first search is expected to conform to the [US Core Goal Profile](#)

Code: 200 (Success)

```
{
  "resourceType": "Bundle",
  "id": "6f2db230-b4f4-4447-856b-3f398377a95f",
  "type": "searchset",
  "total": 1,
  "link": [
    {
      "relation": "self",
      "url": "https://yourfhirserver.com:9443/fhir-server/api/v4/Goal?_count=10&patient=17e77411359-8837d878-ea1e-45b5-bb89-882fdfb2be4b&_page=1"
    }
  ],
  "entry": [
    {
      "id": "17e7b8b62f8-a4f77df6-b97e-4ece-82ff-36480c9cc38c",
      "fullUrl": "https://yourfhirserver.com:9443/fhir-server/api/v4/Goal/17e7b8b62f8-a4f77df6-b97e-4ece-82ff-36480c9cc38c",
      "resource": {
        "resourceType": "Goal",
        "id": "17e7b8b62f8-a4f77df6-b97e-4ece-82ff-36480c9cc38c",
        "meta": {
          "versionId": "1",
          "lastUpdated": "2022-01-21T07:30:39.48Z",
          "profile": [
            "http://hl7.org/fhir/us/core/StructureDefinition/us-core-goal"
          ]
        }
      }
    }
  ]
}
```

```
]
},
"lifecycleStatus": "active",
"description": {
  "coding": [
    {
      "system": "http://snomed.info/sct",
      "code": "281004",
      "display": "Alcoholic dementia"
    }
  ],
  "text": "Alcoholic dementia"
},
"subject": {
  "reference": "Patient/17e77411359-8837d878-ea1e-45b5-bb89-882fdfb2be4b"
},
"target": [
  {
    "dueDate": "2020-12-07"
  }
]
},
"search": {
  "mode": "match",
  "score": 1
}
]
}
```

Request: Immunization

GET https://[Base_URL]/Immunization?patient=[id]

For example, [https://\[Base_URL\]/Immunization?patient=17e77411359-8837d878-ea1e-45b5-bb89-882fdfb2be4b](https://[Base_URL]/Immunization?patient=17e77411359-8837d878-ea1e-45b5-bb89-882fdfb2be4b)

Response

Each resource returned from the first search is expected to conform to the [US Core Immunization Profile](#)

Code: 200 (Success)

```
{
  "resourceType": "Bundle",
  "id": "206f31dc-9636-4e6f-a652-40c307eebe40",
  "type": "searchset",
  "total": 2,
  "link": [
    {
      "relation": "self",
      "url": "https://yourfhirserver.com:9443/fhir-server/api/v4/Immunization?_count=10&patient=Patient/17e77411359-8837d878-ea1e-45b5-bb89-882fdfb2be4b&_page=1"
    }
  ],
  "entry": [
    {
      "id": "17e7b8dc9ab-8abc85e3-0ab1-470f-ae8-1f4e9a3597bb",
      "fullUrl": "https://yourfhirserver.com:9443/fhir-server/api/v4/Immunization/17e7b8dc9ab-8abc85e3-0ab1-470f-ae8-1f4e9a3597bb",
      "resource": {
        "resourceType": "Immunization",
        "id": "17e7b8dc9ab-8abc85e3-0ab1-470f-ae8-1f4e9a3597bb",
        "meta": {
          "versionId": "1",
          "lastUpdated": "2022-01-21T07:33:16.843Z",
          "profile": [
```

```

    "http://hl7.org/fhir/us/core/StructureDefinition/us-core-immunization"
  ]
},
"status": "not-done",
"statusReason": {
  "coding": [
    {
      "system": "http://terminology.hl7.org/CodeSystem/v3-ActReason",
      "code": "OSTOCK",
      "display": "product out of stock"
    }
  ],
  "text": "product out of stock"
},
"vaccineCode": {
  "coding": [
    {
      "system": "http://terminology.hl7.org/CodeSystem/data-absent-reason",
      "code": "unknown",
      "display": "Unknown"
    }
  ],
  "text": "Unknown"
},
"patient": {
  "reference": "Patient/17e77411359-8837d878-ea1e-45b5-bb89-882fdfb2be4b"
},
"encounter": {
  "reference": "Encounter/17e77566282-0c9c236b-f0bd-45e0-9c61-80991a376967"
},
"occurrenceString": "1946-08-29T19:33:18-04:00",
"primarySource": true,

```

```

"location": {
  "reference": "Location/17e7750e68f-6266aec8-0cd3-443e-adb9-be37f3bf25f2",
  "display": "RIVER BEND MEDICAL GROUP - CHICOPEE OFFICE - URGENT CARE"
}
},
"search": {
  "mode": "match",
  "score": 1
}
},
{
  "id": "17eb02c0f47-3b8a6c05-ae47-4002-9001-fd61626bfca5",
  "fullUrl": "https://yourfhirserver.com:9443/fhir-server/api/v4/Immunization/17eb02c0f47-3b8a6c05-ae47-4002-9001-fd61626bfca5",
  "resource": {
    "resourceType": "Immunization",
    "id": "17eb02c0f47-3b8a6c05-ae47-4002-9001-fd61626bfca5",
    "meta": {
      "versionId": "1",
      "lastUpdated": "2022-01-31T12:46:24.583Z",
      "profile": [
        "http://hl7.org/fhir/us/core/StructureDefinition/us-core-immunization"
      ]
    },
    "status": "not-done",
    "statusReason": {
      "coding": [
        {
          "system": "http://terminology.hl7.org/CodeSystem/v3-ActReason",
          "code": "OSTOCK",
          "display": "product out of stock"
        }
      ]
    }
  }
}

```

```

    ],
    "text": "product out of stock"
  },
  "vaccineCode": {
    "coding": [
      {
        "system": "http://terminology.hl7.org/CodeSystem/data-absent-reason",
        "code": "unknown",
        "display": "Unknown"
      }
    ],
    "text": "Unknown"
  },
  "patient": {
    "reference": "Patient/17e77411359-8837d878-ea1e-45b5-bb89-882fdb2be4b"
  },
  "encounter": {
    "reference": "Encounter/17e77566282-0c9c236b-f0bd-45e0-9c61-80991a376967"
  },
  "occurrenceString": "1946-08-29T19:33:18-04:00",
  "primarySource": true,
  "location": {
    "reference": "Location/17e7750e68f-6266aec8-0cd3-443e-adb9-be37f3bf25f2",
    "display": "RIVER BEND MEDICAL GROUP - CHICOPEE OFFICE - URGENT CARE"
  }
},
"search": {
  "mode": "match",
  "score": 1
}
]

```

```
}
```

Request: Medication

GET [https://\[Base_URL\]/MedicationRequest?patient=\[id\]](https://[Base_URL]/MedicationRequest?patient=[id])

For example, [https://\[Base_URL\]/MedicationRequest?patient=17e77411359-8837d878-ea1e-45b5-bb89-882fdfb2be4b &intent=order&status=active](https://[Base_URL]/MedicationRequest?patient=17e77411359-8837d878-ea1e-45b5-bb89-882fdfb2be4b&intent=order&status=active)

Response

Each resource returned from the first search is expected to conform to the [US Core Medication Profile](#), [US Core MedicationRequest Profile](#)

Code: 200 (Success)

```
{
  "resourceType": "MedicationRequest",
  "id": "17e7b9b263e-9cd8f64f-f7e1-447e-8583-a753342d13c6",
  "meta": {
    "versionId": "1",
    "lastUpdated": "2022-01-21T07:47:52.51Z",
    "profile": [
      "http://hl7.org/fhir/us/core/StructureDefinition/us-core-medicationrequest"
    ]
  },
  "status": "stopped",
  "intent": "plan",
  "reportedBoolean": true,
  "medicationCodeableConcept": {
    "coding": [
      {
        "system": "http://www.nlm.nih.gov/research/umls/rxnorm",
        "code": "2123111",
        "display": "NDA020503 200 ACTUAT Albuterol 0.09 MG/ACTUAT Metered Dose Inhaler"
      }
    ]
  },
  "text": "NDA020503 200 ACTUAT Albuterol 0.09 MG/ACTUAT Metered Dose Inhaler"
```

```
},
"subject": {
  "reference": "Patient/17e77411359-8837d878-ea1e-45b5-bb89-882fdfb2be4b"
},
"authoredOn": "2020-08-13T19:33:18-04:00",
"requester": {
  "reference": "Patient/17e77411359-8837d878-ea1e-45b5-bb89-882fdfb2be4b"
},
"reasonReference": [
  {
    "reference": "Condition/17e7777ce8c-c66752fb-ee1b-40c2-ba5a-2e6ee89b3e1a"
  }
],
"dosageInstruction": [
  {
    "sequence": 1,
    "text": "Take as needed.",
    "asNeededBoolean": true
  }
]
}
```


Request: Smoking Status

GET `https://[Base_URL]/Observation?code=72166-2&patient=[id]`

For example, `https://[Base_URL]/Observation?code=72166-2&patient=17e77411359-8837d878-ea1e-45b5-bb89-882dfb2be4b`

Response

Each resource returned from the first search is expected to conform to the [US Core Smoking Status Observation Profile](#)

Code: 200 (Success)

```
{
  "resourceType": "Bundle",
  "id": "2ea85043-b450-40f1-8d2d-751af1c10abb",
  "type": "searchset",
  "total": 2,
  "link": [
    {
      "relation": "self",
      "url": "https://yourfhirserver.com:9443/fhir-server/api/v4/Observation?_count=10&code=72166-2&patient=17e77411359-8837d878-ea1e-45b5-bb89-882dfb2be4b&_page=1"
    }
  ],
  "entry": [
    {
      "id": "17e77809e90-d5cfd26d-ab5d-4f36-bc32-1ee799b2c278",
      "fullUrl": "https://yourfhirserver.com:9443/fhir-server/api/v4/Observation/17e77809e90-d5cfd26d-ab5d-4f36-bc32-1ee799b2c278",
      "resource": {
        "resourceType": "Observation",
        "id": "17e77809e90-d5cfd26d-ab5d-4f36-bc32-1ee799b2c278",
        "meta": {
          "versionId": "1",
          "lastUpdated": "2022-01-20T12:40:24.976Z",
          "profile": [
```

```

    "http://hl7.org/fhir/us/core/StructureDefinition/us-core-smokingstatus"
  ]
},
"status": "final",
"category": [
  {
    "coding": [
      {
        "system": "http://terminology.hl7.org/CodeSystem/observation-category",
        "code": "survey",
        "display": "survey"
      }
    ]
  }
],
"code": {
  "coding": [
    {
      "system": "http://loinc.org",
      "code": "72166-2",
      "display": "Tobacco smoking status NHIS"
    }
  ],
  "text": "Tobacco smoking status NHIS"
},
"subject": {
  "reference": "Patient/17e77411359-8837d878-ea1e-45b5-bb89-882dfdb2be4b"
},
"encounter": {
  "reference": "Encounter/17e77566282-0c9c236b-f0bd-45e0-9c61-80991a376967"
},
"effectivePeriod": {

```

```

    "start": "1940-09-05T19:33:18-04:00",
    "end": "1940-09-05T20:33:18-04:00"
  },
  "issued": "1940-09-05T19:33:18.715-04:00",
  "valueCodeableConcept": {
    "coding": [
      {
        "system": "http://snomed.info/sct",
        "code": "266919005",
        "display": "Never smoker"
      }
    ],
    "text": "Never smoker"
  }
},
"search": {
  "mode": "match",
  "score": 1
}
},
{
  "id": "17e7785ea69-6c9f88d9-0553-4216-be17-f908ebe0b371",
  "fullUrl": "https://yourfhirserver.com:9443/fhir-server/api/v4/Observation/17e7785ea69-6c9f88d9-0553-4216-be17-f908ebe0b371",
  "resource": {
    "resourceType": "Observation",
    "id": "17e7785ea69-6c9f88d9-0553-4216-be17-f908ebe0b371",
    "meta": {
      "versionId": "1",
      "lastUpdated": "2022-01-20T12:46:12.073Z",
      "profile": [
        "http://hl7.org/fhir/us/core/StructureDefinition/us-core-smokingstatus"
      ]
    }
  }
}

```

```

]
},
"status": "final",
"category": [
  {
    "coding": [
      {
        "system": "http://terminology.hl7.org/CodeSystem/observation-category",
        "code": "survey",
        "display": "survey"
      }
    ]
  }
],
"code": {
  "coding": [
    {
      "system": "http://loinc.org",
      "code": "72166-2",
      "display": "Tobacco smoking status NHIS"
    }
  ],
  "text": "Tobacco smoking status NHIS"
},
"subject": {
  "reference": "Patient/17e77411359-8837d878-ea1e-45b5-bb89-882fdfb2be4b"
},
"encounter": {
  "reference": "Encounter/17e77566282-0c9c236b-f0bd-45e0-9c61-80991a376967"
},
"effectivePeriod": {
  "start": "1940-09-05T19:33:18-04:00",

```

```
"end": "1940-09-05T20:33:18-04:00"
},
"issued": "1940-09-05T19:33:18.715-04:00",
"valueCodeableConcept": {
  "coding": [
    {
      "system": "http://snomed.info/sct",
      "code": "266919005",
      "display": "Never smoker"
    }
  ],
  "text": "Never smoker"
}
},
"search": {
  "mode": "match",
  "score": 1
}
]
}
```

Request: Procedure

GET https://[Base_URL]/Procedure?patient=[id]

For example, [https://\[Base_URL\]/Procedure?patient=17e77411359-8837d878-ea1e-45b5-bb89-882fdfb2be4b](https://[Base_URL]/Procedure?patient=17e77411359-8837d878-ea1e-45b5-bb89-882fdfb2be4b)

Response

Each resource returned from the first search is expected to conform to the [US Core Procedure Profile](#)

Code: 200 (Success)

```
{
  "resourceType": "Bundle",
  "id": "ed4425dd-7479-4b52-b404-502697281ee0",
  "type": "searchset",
  "total": 1,
  "link": [
    {
      "relation": "self",
      "url": "https://yourfhirserver.com:9443/fhir-server/api/v4/Procedure?_count=10&patient=17e77411359-8837d878-ea1e-45b5-bb89-882fdfb2be4b&_page=1"
    }
  ],
  "entry": [
    {
      "id": "17e7ba24dee-bf67ef6b-6419-4c7c-b905-a107b26bf8fb",
      "fullUrl": "https://yourfhirserver.com:9443/fhir-server/api/v4/Procedure/17e7ba24dee-bf67ef6b-6419-4c7c-b905-a107b26bf8fb",
      "resource": {
        "resourceType": "Procedure",
        "id": "17e7ba24dee-bf67ef6b-6419-4c7c-b905-a107b26bf8fb",
        "meta": {
          "versionId": "1",
          "lastUpdated": "2022-01-21T07:55:41.422Z",
          "profile": [
```

```

    "http://hl7.org/fhir/us/core/StructureDefinition/us-core-procedure"
  ]
},
"status": "completed",
"code": {
  "coding": [
    {
      "system": "http://snomed.info/sct",
      "code": "430193006",
      "display": "Medication Reconciliation (procedure)"
    }
  ],
  "text": "Medication Reconciliation (procedure)"
},
"subject": {
  "reference": "Patient/17e77411359-8837d878-ea1e-45b5-bb89-882fdb2be4b"
},
"encounter": {
  "reference": "Encounter/17e77566282-0c9c236b-f0bd-45e0-9c61-80991a376967"
},
"performedDateTime": "1941-02-13T18:33:18-05:00",
"location": {
  "reference": "Location/17e7750e68f-6266aec8-0cd3-443e-adb9-be37f3bf25f2",
  "display": "PCP170967"
}
},
"search": {
  "mode": "match",
  "score": 1
}
}
]

```

```
}
```

Request: Provenance

GET https://[Base_URL]/Provenance/[id]

For example,

[https://\[Base_URL\]/Provenance/17e8adbdd12-21675728-3f52-4320-8b3b-d5977915336c](https://[Base_URL]/Provenance/17e8adbdd12-21675728-3f52-4320-8b3b-d5977915336c)

Response

Each resource returned from the first search is expected to conform to the [US Core Provenance Profile](#)

Code: 200 (Success)

```
{
  "resourceType": "Provenance",
  "id": "17e8adbdd12-21675728-3f52-4320-8b3b-d5977915336c",
  "meta": {
    "versionId": "5",
    "lastUpdated": "2022-01-31T12:51:12.934Z",
    "profile": [
      "http://hl7.org/fhir/us/core/StructureDefinition/us-core-provenance"
    ]
  },
  "target": [
    {
      "reference": "Patient/17e77411359-8837d878-ea1e-45b5-bb89-882fdfb2be4b"
    },
    {
      "reference": "Location/17e7750e68f-6266aec8-0cd3-443e-adb9-be37f3bf25f2"
    },
    {
      "reference": "Organization/17e774dca91-e7e4e9e3-390e-4c10-83ae-88beabc176e2"
    },
    {
      "reference": "Practitioner/17e774bb850-6b7b7f50-ed52-4523-a3a8-60fb0ef71c5b"
    }
  ]
}
```



```
},
{
  "reference": "Encounter/17e77566282-0c9c236b-f0bd-45e0-9c61-80991a376967"
},
{
  "reference": "AllergyIntolerance/17e7758c319-7955ecfe-94da-4071-8488-4ef21425ed85"
},
{
  "reference": "CareTeam/17e775e7546-36e6a4cd-264e-4a94-92fa-cdf1b2fa30c1"
},
{
  "reference": "CarePlan/17e776e13ff-1ea7505d-f475-4f49-adde-30e69df86734"
},
{
  "reference": "Condition/17e7777ce8c-c66752fb-ee1b-40c2-ba5a-2e6ee89b3e1a"
},
{
  "reference": "Condition/17eb029f925-40603327-0ac3-48dd-972b-6c882b8751f5"
},
{
  "reference": "Device/17e777b3f34-04bc3627-92d3-43bb-92e7-35533110f750"
},
{
  "reference": "Observation/17e77809e90-d5cfd26d-ab5d-4f36-bc32-1ee799b2c278"
},
{
  "reference": "Observation/17e7785ea69-6c9f88d9-0553-4216-be17-f908ebe0b371"
},
{
  "reference": "Observation/17e778a9113-66c19e50-1b3f-41fd-a4da-ef86393fb0b2"
},
{
```

```
"reference": "Observation/17e778d42db-92528d6f-7103-40fb-99ca-b2ac8837210d"
},
{
  "reference": "Observation/17e7791dd19-11eaf5c1-a5c0-429c-9867-f3110c743572"
},
{
  "reference": "Observation/17e77947034-7677a2e6-33af-4e06-83ae-a6727ac79885"
},
{
  "reference": "Observation/17e7797685b-e707227d-0cb5-4b28-bab2-ca1f4a1ba111"
},
{
  "reference": "Observation/17e7799a564-8f9ed437-d396-46bf-8f68-bf728955654c"
},
{
  "reference": "Observation/17e779bc672-37c76705-1f73-4531-bfcb-ee3cd3e25bfd"
},
{
  "reference": "Observation/17e77a065f3-77947ea0-1b53-47a5-9a9e-10f6e169f292"
},
{
  "reference": "Observation/17e77a29d41-85ec6814-a99a-4a73-ae02-f6a494a11468"
},
{
  "reference": "Observation/17e77a53c30-b356fe0d-d90b-42ed-91f9-5ed08c8047ca"
},
{
  "reference": "Observation/17e7c606d8a-9aeab44c-0261-465d-8930-4a218b201bf5"
},
{
  "reference": "DiagnosticReport/17e7b6e6f1c-119e9b8b-11b9-448b-b760-dc116013b654"
},
},
```

```
{
  "reference": "DiagnosticReport/17e7b741f29-4b6b813d-d11e-4597-8178-5bc5996ac4e4"
},
{
  "reference": "DiagnosticReport/17e7b7b7e66-36f4cf84-3482-4e36-8cca-13cc832b3bed"
},
{
  "reference": "DiagnosticReport/17e7d0e6d1d-c0e0136b-81d4-4164-a8b8-863694276a4f"
},
{
  "reference": "DocumentReference/17e7b838c61-4be99b80-0f94-4b26-a086-a30ed78c91ce"
},
{
  "reference": "DocumentReference/17e7d144d28-7d79ed3e-ca9e-400d-a9ed-add23f5cef07"
},
{
  "reference": "DocumentReference/17e7d19866c-dbbaa2e9-4d81-44bb-af5d-ec2e829e9c72"
},
{
  "reference": "DocumentReference/17e7d1c49cd-bfb30b25-9f98-40c7-9d94-977b7b803f21"
},
{
  "reference": "DocumentReference/17e7d24c947-205cd8e5-3a93-4ab9-8662-5e92b0080af7"
},
{
  "reference": "Goal/17e7b8b62f8-a4f77df6-b97e-4ece-82ff-36480c9cc38c"
},
{
  "reference": "Immunization/17e7b8dc9ab-8abc85e3-0ab1-470f-ae8-1f4e9a3597bb"
},
{
  "reference": "Immunization/17eb02c0f47-3b8a6c05-ae47-4002-9001-fd61626bfca5"
```

```
},
{
  "reference": "Medication/17e7b8f47d0-2bf2943a-123e-4725-b5dd-f5200df6c3a2"
},
{
  "reference": "MedicationRequest/17e7b94dd8d-d3b0e43a-de55-4822-8bb5-07e5fd6177d9"
},
{
  "reference": "MedicationRequest/17e7b990c43-4525f6a4-81a0-40f7-97c7-7dbebff6e34b"
},
{
  "reference": "MedicationRequest/17e7b9b263e-9cd8f64f-f7e1-447e-8583-a753342d13c6"
},
{
  "reference": "MedicationRequest/17e7ba05cb1-0a5defbd-deb9-4792-9952-8f7f0e5bc74b"
},
{
  "reference": "Procedure/17e7ba24dee-bf67ef6b-6419-4c7c-b905-a107b26bf8fb"
},
{
  "reference": "Observation/17e81e97c4b-ea761488-0b67-43d0-a0d7-346dea549bee"
},
{
  "reference": "Observation/17e81ebac04-75d9f0f2-fcb2-4e2f-9c22-87fb7ddf5f5e"
},
{
  "reference": "Observation/17e81ed9c56-bcda0427-df92-4b58-b3ae-ac11c22f4d7d"
},
{
  "reference": "Observation/17e81ef5b5e-40df3e7d-19bc-4c2a-94bc-9a04ff93537c"
},
{
```

```

    "reference": "Observation/17e81f0fd34-6fc95b32-8346-4aec-9de3-072d12c992a5"
  },
  {
    "reference": "Observation/17e81f291e7-c99c91ac-57dd-47f6-b7f7-a365d2c087d7"
  },
  {
    "reference": "Observation/17e81f4a61d-ff3926f2-e35b-466a-bb6c-62a061425258"
  },
  {
    "reference": "Observation/17e8501692e-8c2d145f-fb69-4ae3-85d1-ef31ebf4a6a2"
  },
  {
    "reference": "Observation/17e8502f180-3c7e4770-3630-4654-922a-3f802c2939b1"
  }
],
"recorded": "2020-12-10T18:33:18.715-05:00",
"agent": [
  {
    "type": {
      "coding": [
        {
          "system": "http://terminology.hl7.org/CodeSystem/provenance-participant-type",
          "code": "author",
          "display": "Author"
        }
      ],
      "text": "Author"
    },
    "who": {
      "reference": "Practitioner/17e774bb850-6b7b7f50-ed52-4523-a3a8-60fb0ef71c5b",
      "display": "Dr. Blossom971 Christiansen251"
    }
  },

```

```

"onBehalfOf": {
  "reference": "Organization/17e774dca91-e7e4e9e3-390e-4c10-83ae-88beabc176e2",
  "display": "PCP170967"
}
},
{
  "type": {
    "coding": [
      {
        "system": "http://hl7.org/fhir/us/core/CodeSystem/us-core-provenance-participant-type",
        "code": "transmitter",
        "display": "Transmitter"
      }
    ],
    "text": "Transmitter"
  },
  "who": {
    "reference": "Practitioner/17e774bb850-6b7b7f50-ed52-4523-a3a8-60fb0ef71c5b",
    "display": "Dr. Blossom971 Christiansen251"
  },
  "onBehalfOf": {
    "reference": "Organization/17e774dca91-e7e4e9e3-390e-4c10-83ae-88beabc176e2",
    "display": "PCP170967"
  }
}
]
}

```

Request: Vital Signs

patient + code: GET `https://[Base_URL]/Observation?code=85354-9&patient=[id]`

patient + category + date: GET `https://[Base_URL]/Observation?category=vital-signs&date=[leYYYY-MM-DD]&patient=[id]`

for example,

`https://[Base_URL]/Observation?code=85354-9&patient=Patient/17e77411359-8837d878-ea1e-45b5-bb89-882fdb2be4b`

`https://[Base_URL]/Observation?code=85354-9&patient=17e77411359-8837d878-ea1e-45b5-bb89-882fdb2be4b`

`https://[Base_URL]/Observation?category=vital-signs&date=gt1994-05-18T19:33:18-04:00&patient=17e77411359-8837d878-ea1e-45b5-bb89-882fdb2be4b`

Response

Each resource returned from the first search is expected to conform to the FHIR Core [VitalSigns Profile](#)

Code: 200 (Success)

```
{
  "resourceType": "Bundle",
  "id": "231df7ad-8e46-4371-99cc-4ce0dc9c5cb0",
  "type": "searchset",
  "total": 6,
  "link": [
    {
      "relation": "self",
      "url": "https://yourfhirserver.com:9443/fhir-server/api/v4/Observation?_count=10&category=vital-signs&date=gt1994-05-18T19:33:18-04:00&patient=17e77411359-8837d878-ea1e-45b5-bb89-882fdb2be4b&_page=1"
    }
  ],
  "entry": [
    {
      "id": "17e7797685b-e707227d-0cb5-4b28-bab2-ca1f4a1ba111",
      "fullUrl": "https://yourfhirserver.com:9443/fhir-server/api/v4/Observation/17e7797685b-e707227d-0cb5-4b28-bab2-ca1f4a1ba111",
    }
  ]
}
```

```

"resource": {
  "resourceType": "Observation",
  "id": "17e7797685b-e707227d-0cb5-4b28-bab2-ca1f4a1ba111",
  "meta": {
    "versionId": "1",
    "lastUpdated": "2022-01-20T13:05:18.427Z",
    "profile": [
      "http://hl7.org/fhir/StructureDefinition/bodytemp",
      "http://hl7.org/fhir/StructureDefinition/vitalsigns"
    ]
  },
  "status": "final",
  "category": [
    {
      "coding": [
        {
          "system": "http://terminology.hl7.org/CodeSystem/observation-category",
          "code": "vital-signs",
          "display": "vital-signs"
        }
      ]
    }
  ],
  "code": {
    "coding": [
      {
        "system": "http://loinc.org",
        "code": "8310-5",
        "display": "Body temperature"
      },
      {
        "system": "http://loinc.org",

```



```

      "code": "8331-1",
      "display": "Oral temperature"
    }
  ],
  "text": "Body temperature"
},
"subject": {
  "reference": "Patient/17e77411359-8837d878-ea1e-45b5-bb89-882dfdb2be4b"
},
"encounter": {
  "reference": "Encounter/17e77566282-0c9c236b-f0bd-45e0-9c61-80991a376967"
},
"effectiveDateTime": "2009-08-19T19:33:18-04:00",
"issued": "2009-08-19T19:33:18.715-04:00",
"valueQuantity": {
  "value": 37.799,
  "unit": "Cel",
  "system": "http://unitsofmeasure.org",
  "code": "Cel"
}
},
"search": {
  "mode": "match",
  "score": 1
}
},
{
  "id": "17e7799a564-8f9ed437-d396-46bf-8f68-bf728955654c",
  "fullUrl": "https://yourfhirserver.com:9443/fhir-server/api/v4/Observation/17e7799a564-8f9ed437-d396-46bf-8f68-bf728955654c",
  "resource": {
    "resourceType": "Observation",

```

```

"id": "17e7799a564-8f9ed437-d396-46bf-8f68-bf728955654c",
"meta": {
  "versionId": "1",
  "lastUpdated": "2022-01-20T13:07:45.124Z",
  "profile": [
    "http://hl7.org/fhir/StructureDefinition/bp",
    "http://hl7.org/fhir/StructureDefinition/vitalsigns"
  ]
},
"status": "final",
"category": [
  {
    "coding": [
      {
        "system": "http://terminology.hl7.org/CodeSystem/observation-category",
        "code": "vital-signs",
        "display": "vital-signs"
      }
    ]
  }
],
"code": {
  "coding": [
    {
      "system": "http://loinc.org",
      "code": "85354-9",
      "display": "Blood Pressure"
    }
  ],
  "text": "Blood Pressure"
},
"subject": {

```

```

"reference": "Patient/17e77411359-8837d878-ea1e-45b5-bb89-882fdb2be4b"
},
"encounter": {
  "reference": "Encounter/17e77566282-0c9c236b-f0bd-45e0-9c61-80991a376967"
},
"effectiveDateTime": "1994-05-19T19:33:18-04:00",
"issued": "1994-05-19T19:33:18.715-04:00",
"component": [
  {
    "code": {
      "coding": [
        {
          "system": "http://loinc.org",
          "code": "8462-4",
          "display": "Diastolic Blood Pressure"
        }
      ],
      "text": "Diastolic Blood Pressure"
    },
    "valueQuantity": {
      "value": 85,
      "unit": "mm[Hg]",
      "system": "http://unitsofmeasure.org",
      "code": "mm[Hg]"
    }
  },
  {
    "code": {
      "coding": [
        {
          "system": "http://loinc.org",
          "code": "8480-6",

```

```

      "display": "Systolic Blood Pressure"
    }
  ],
  "text": "Systolic Blood Pressure"
},
"valueQuantity": {
  "value": 129,
  "unit": "mm[Hg]",
  "system": "http://unitsofmeasure.org",
  "code": "mm[Hg]"
}
}
]
},
"search": {
  "mode": "match",
  "score": 1
}
},
{
  "id": "17e77a29d41-85ec6814-a99a-4a73-ae02-f6a494a11468",
  "fullUrl": "https://yourfhirserver.com:9443/fhir-server/api/v4/Observation/17e77a29d41-85ec6814-a99a-4a73-ae02-f6a494a11468",
  "resource": {
    "resourceType": "Observation",
    "id": "17e77a29d41-85ec6814-a99a-4a73-ae02-f6a494a11468",
    "meta": {
      "versionId": "1",
      "lastUpdated": "2022-01-20T13:17:32.865Z",
      "profile": [
        "http://hl7.org/fhir/StructureDefinition/hearttrate",
        "http://hl7.org/fhir/StructureDefinition/vitalsigns"

```

```

]
},
"status": "final",
"category": [
  {
    "coding": [
      {
        "system": "http://terminology.hl7.org/CodeSystem/observation-category",
        "code": "vital-signs",
        "display": "vital-signs"
      }
    ]
  }
],
"code": {
  "coding": [
    {
      "system": "http://loinc.org",
      "code": "8867-4",
      "display": "Heart rate"
    }
  ],
  "text": "Heart rate"
},
"subject": {
  "reference": "Patient/17e77411359-8837d878-ea1e-45b5-bb89-882fdfb2be4b"
},
"encounter": {
  "reference": "Encounter/17e77566282-0c9c236b-f0bd-45e0-9c61-80991a376967"
},
"effectiveDateTime": "2003-07-10T19:33:18-04:00",
"issued": "2003-07-10T19:33:18.715-04:00",

```

```

"valueQuantity": {
  "value": 65,
  "unit": "/min",
  "system": "http://unitsofmeasure.org",
  "code": "/min"
}
},
"search": {
  "mode": "match",
  "score": 1
}
},
{
  "id": "17e81ef5b5e-40df3e7d-19bc-4c2a-94bc-9a04ff93537c",
  "fullUrl": "https://yourfhirserver.com:9443/fhir-server/api/v4/Observation/17e81ef5b5e-40df3e7d-19bc-4c2a-94bc-9a04ff93537c",
  "resource": {
    "resourceType": "Observation",
    "id": "17e81ef5b5e-40df3e7d-19bc-4c2a-94bc-9a04ff93537c",
    "meta": {
      "versionId": "1",
      "lastUpdated": "2022-01-22T13:17:34.43Z",
      "source": "#iLFSV7OLv0KF8dmQ",
      "profile": [
        "http://hl7.org/fhir/StructureDefinition/vitalsigns",
        "http://hl7.org/fhir/StructureDefinition/bodytemp"
      ]
    },
    "status": "final",
    "category": [
      {
        "coding": [

```

```

    {
      "system": "http://terminology.hl7.org/CodeSystem/observation-category",
      "code": "vital-signs",
      "display": "vital-signs"
    }
  ]
}
],
"code": {
  "coding": [
    {
      "system": "http://loinc.org",
      "code": "8310-5",
      "display": "Body temperature"
    },
    {
      "system": "http://loinc.org",
      "code": "8331-1",
      "display": "Oral temperature"
    }
  ],
  "text": "Body temperature"
},
"subject": {
  "reference": "Patient/17e77411359-8837d878-ea1e-45b5-bb89-882dfb2be4b"
},
"encounter": {
  "reference": "Encounter/17e77566282-0c9c236b-f0bd-45e0-9c61-80991a376967"
},
"effectiveDateTime": "2009-08-19T19:33:18-04:00",
"issued": "2009-08-19T19:33:18.715-04:00",
"dataAbsentReason": {

```

```

"coding": [
  {
    "system": "http://terminology.hl7.org/CodeSystem/data-absent-reason",
    "code": "unknown",
    "display": "Unknown"
  }
],
"text": "Unknown"
}
},
"search": {
  "mode": "match",
  "score": 1
}
},
{
  "id": "17e81f0fd34-6fc95b32-8346-4aec-9de3-072d12c992a5",
  "fullUrl": "https://yourfhirserver.com:9443/fhir-server/api/v4/Observation/17e81f0fd34-6fc95b32-8346-4aec-9de3-072d12c992a5",
  "resource": {
    "resourceType": "Observation",
    "id": "17e81f0fd34-6fc95b32-8346-4aec-9de3-072d12c992a5",
    "meta": {
      "versionId": "1",
      "lastUpdated": "2022-01-22T13:19:21.396Z",
      "source": "#iLFSV7OLv0KF8dmQ",
      "profile": [
        "http://hl7.org/fhir/StructureDefinition/vitalsigns",
        "http://hl7.org/fhir/StructureDefinition/bp"
      ]
    },
    "status": "final",

```



```

"category": [
  {
    "coding": [
      {
        "system": "http://terminology.hl7.org/CodeSystem/observation-category",
        "code": "vital-signs",
        "display": "vital-signs"
      }
    ]
  }
],
"code": {
  "coding": [
    {
      "system": "http://loinc.org",
      "code": "85354-9",
      "display": "Blood Pressure"
    }
  ],
  "text": "Blood Pressure"
},
"subject": {
  "reference": "Patient/17e77411359-8837d878-ea1e-45b5-bb89-882fdfb2be4b"
},
"encounter": {
  "reference": "Encounter/17e77566282-0c9c236b-f0bd-45e0-9c61-80991a376967"
},
"effectiveDateTime": "1994-05-19T19:33:18-04:00",
"issued": "1994-05-19T19:33:18.715-04:00",
"dataAbsentReason": {
  "coding": [
    {

```

```

      "system": "http://terminology.hl7.org/CodeSystem/data-absent-reason",
      "code": "unknown",
      "display": "Unknown"
    }
  ],
  "text": "Unknown"
},
"component": [
  {
    "code": {
      "coding": [
        {
          "system": "http://loinc.org",
          "code": "8462-4",
          "display": "Diastolic Blood Pressure"
        }
      ],
      "text": "Diastolic Blood Pressure"
    },
    "dataAbsentReason": {
      "coding": [
        {
          "system": "http://terminology.hl7.org/CodeSystem/data-absent-reason",
          "code": "unknown",
          "display": "Unknown"
        }
      ],
      "text": "Unknown"
    }
  },
  {
    "code": {

```

```

    "coding": [
      {
        "system": "http://loinc.org",
        "code": "8480-6",
        "display": "Systolic Blood Pressure"
      }
    ],
    "text": "Systolic Blood Pressure"
  },
  "dataAbsentReason": {
    "coding": [
      {
        "system": "http://terminology.hl7.org/CodeSystem/data-absent-reason",
        "code": "unknown",
        "display": "Unknown"
      }
    ],
    "text": "Unknown"
  }
]
},
"search": {
  "mode": "match",
  "score": 1
}
},
{
  "id": "17e8502f180-3c7e4770-3630-4654-922a-3f802c2939b1",
  "fullUrl": "https://yourfhirserver.com:9443/fhir-server/api/v4/Observation/17e8502f180-3c7e4770-3630-4654-922a-3f802c2939b1",
  "resource": {

```

```
"resourceType": "Observation",
"id": "17e8502f180-3c7e4770-3630-4654-922a-3f802c2939b1",
"meta": {
  "versionId": "1",
  "lastUpdated": "2022-01-23T03:37:49.696Z",
  "source": "#iLFSV7OLv0KF8dmQ",
  "profile": [
    "http://hl7.org/fhir/StructureDefinition/vitalsigns",
    "http://hl7.org/fhir/StructureDefinition/hearttrate"
  ]
},
"status": "final",
"category": [
  {
    "coding": [
      {
        "system": "http://terminology.hl7.org/CodeSystem/observation-category",
        "code": "vital-signs",
        "display": "vital-signs"
      }
    ]
  }
],
"code": {
  "coding": [
    {
      "system": "http://loinc.org",
      "code": "8867-4",
      "display": "Heart rate"
    }
  ],
  "text": "Heart rate"
```

```

},
"subject": {
  "reference": "Patient/17e77411359-8837d878-ea1e-45b5-bb89-882fdb2be4b"
},
"encounter": {
  "reference": "Encounter/17e77566282-0c9c236b-f0bd-45e0-9c61-80991a376967"
},
"effectiveDateTime": "2003-07-10T19:33:18-04:00",
"issued": "2003-07-10T19:33:18.715-04:00",
"dataAbsentReason": {
  "coding": [
    {
      "system": "http://terminology.hl7.org/CodeSystem/data-absent-reason",
      "code": "unknown",
      "display": "Unknown"
    }
  ],
  "text": "Unknown"
}
},
"search": {
  "mode": "match",
  "score": 1
}
}
]
}

```

Error Handling

Error	Description
200 - OK	Everything worked as expected.
401 - Unauthorized	No valid Bearer token provided.
404 - Not Found	The requested resource doesn't exist.
5xx - Server Error	Something went wrong on FHIR Server side.

[OperationOutcome](#) explains the error reported.

Profile audience and scope

This profile is intended to be used by developers of apps that need to access user identity information or other FHIR resources by requesting authorization from OAuth 2.0 compliant authorization servers.

The profile defines a method through which an app requests authorization to access a FHIR resource, and then uses that authorization to retrieve the resource. Synchronization of patient context is not addressed; for use cases that require context synchronization (e.g., learning about when the in-context patient changes within an EHR session) In other words, if the patient chart is changed during the session, the application will not inherently be updated.

Security and Privacy Considerations

App Protection

The app is responsible for protecting itself from potential misbehaving or malicious values passed to its redirect URL (e.g., values injected with executable code, such as SQL) and for protecting authorization codes, access tokens, and refresh tokens from unauthorized access and use. The app developer must be aware of potential threats, such as malicious apps running on the same platform, counterfeit authorization servers, and counterfeit resource servers, and implement countermeasures to help protect both the app itself and any sensitive information it may hold. For background, see the [OAuth 2.0 Threat Model and Security Considerations](#).

Specific requirements are:

- Apps SHALL ensure that sensitive information (authentication secrets, authorization codes, tokens) is transmitted ONLY to authenticated servers, over TLS-secured channels.
- Apps SHALL generate an unpredictable state parameter for each user session; SHALL include state with all authorization requests; and SHALL validate the state value for any request sent to its redirect URL.

- An app SHALL NOT execute untrusted user-supplied inputs as code.
- App SHALL NOT forward values passed back to its redirect URL to any other arbitrary or user-provided URL (a practice known as an “open redirector”).
- An app SHALL NOT store bearer tokens in cookies that are transmitted as clear text.
- Apps SHOULD persist tokens and other sensitive data in app-specific storage locations only, and SHOULD NOT persist them in system-wide-discoverable locations.

Terms of Use

1. TERMS ACCEPTANCE AND REPRESENTATION

- **Accepting the Terms:** These Terms of Use ("Terms") govern your access to and use of the Certified iPatientCare 2015 Edition API, documentation, services, etc. By accessing or using the Certified iPatientCare APIs, you agree to be bound by these Terms. “Certified iPatientCare API” means the API provided by iPatientCare to allow authorized access to query our Client(s) Electronic Health Record system. You represent and warrant that you are at least 18 years of age and that you possess the legal right and ability to agree to these Terms and to use the Certified iPatientCare APIs in accordance with these Terms.
- **Entity Representation:** If you are using the Certified iPatientCare API on behalf of a legal entity (i.e. a Clinical software services company), you represent that you have proper authority to act on behalf of and bind the entity to these Terms, and by accepting, you accept on behalf of the entity (and all references to “you” in the Terms refer to the entity).

2. REPRESENTATIONS AND RESPONSIBILITIES

- **Compliance:** You agree to be financially responsible for your use of the Certified iPatientCare APIs and to comply with your responsibilities and obligations as stated in these Terms. You agree to comply at all times with all applicable laws, rules and regulations relating to the use of the Certified iPatientCare APIs. You hereby grant iPatientCare the right to monitor and periodically audit in a reasonable manner your use of the Certified iPatientCare APIs, your App and other activities related to your obligations under these Terms.
- **Virus Warranty:** You warrant that your Apps will not contain any viruses or other malicious computer instructions, devices, or techniques that can or were designed to threaten, infect, damage, disable, or shut down the iPatientCare APIs, any technology, software, solution, equipment or any computer system.

3. GENERAL

- **Changes:** iPatientCare may, in its sole and absolute discretion, make changes, modifications or updates to the Certified iPatientCare API (including without limitation changes to the capabilities and tech specs), without notice to you.
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 - **Governing Law:** These Terms are governed by US federal law or the laws of the State of Ohio.
4. Application developer affirmations to Certified API Developers regarding the ability of their applications to secure a refresh token, a client secret, or both, must be treated in a good faith manner