

# iPatientCare – AssureCare LLC

## 170.315(g) (10) SmartOnFHIR API

### Documentation

Version 1.0.0.0

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# About Guide

## Revision History

Version	Date	Comment
1.0.0.0	September 14, 2022	Original Document

## 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 <i>Enter</i> . e.g., Click <i>Ok</i> to continue. e.g., Select <i>Provider</i> 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 <b><i><a href="#">Conventions Used</a></i></b> 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](mailto: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.

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

<i>Parameters</i>		
<i>response_type</i>	required	Fixed value: code
<i>client_id</i>	required	The client's identifier
<i>redirect_uri</i>	required	Must match one of the client's pre-registered redirect URIs.
<i>launch</i>	conditional	When using the EHR Launch flow, this must match the launch value received from the EHR. Omitted when using the Standalone Launch
<i>scope</i>	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"> <li>▪ a launch value indicating that the app wants to receive already established launch context details from the EHR.</li> <li>▪ a set of launch context requirements in the form launch/patient which asks the EHR to establish context on your behalf.</li> </ul> <p>Please refer to the scopes supported in the table below.</p>
<i>state</i>	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 suitable).



<i>aud</i>	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 <i>EHR launch</i> 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 <a href="#">RFC8707</a>. 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.</p> <p>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
<i>patient/*.read</i>	Permission to read and search any resource for the current patient (see notes on wildcard scopes below).
<i>user/*.read</i>	Permission to read and write all resources that the current user can access (see notes on wildcard scopes below).
<i>openid</i>	Permission to retrieve information about the current logged-in user.
<i>fhirUser</i>	
<i>launch</i>	Permission to obtain launch context when app is launched from an EHR.
<i>launch/patient</i>	When launching outside the EHR, ask for a patient to be selected at launch time.
<i>offline_access</i>	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%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.





In case of Asymmetric authentication following is a request

```
client_assertion=eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzU4NCIsImtpZCI6IjRiNDlhNmM5ZDFiYjExNWlzMjI1ZjRjZjliZWl2ZDFiIn0.eyJpc3MiOiJleUpoYkdjaU9pSkIvekkxTmlJc0luUjVjQ0k2SWtwWFZDSXNjbXRwWkNjNkluSmxamMx6ZEhKaGRHbHZiaTEwYjJ0bGJpSjkuZXIKcWQydHpYM1Z5YkNjNkltADBkSEE2THk4eE1DNHhOUzR5TIRJdU56TXZhVzVtWlhKdWJ5OHVkmIZzYkMxcMjOTNiaTlxZDJ0ekxtcHpiMjRpTENKaFkyTmxjM05VYjJ0bGJpTkZlSEJwY2IWSmJpSTZNVFVzSW1saGRDSTZNVFU1TnpReE16RTVOWDAucTR2NE1zYz0a041MDZLVFowcV9taW55YXBkdzBnd2xUNk1fdWIMNzNTNCiInN1Yil6ImV5SmhiR2NpT2lKSXV6STFOaUlzSW5SNWNDSTZJa3BYVknJc0ltdHBaQ0k2SW5KbFoybHpkSEpoZEsdmJpMTBiMnRsYmIKOS5leUpxZDJ0elgzVnliQ0k2SW1oMGRIQTZMeTh4TUM0eE5TNHIOVEl1TnpNdmFXNW1aWEp1Ynk4dWQyVnNiQzFyYm05M2JpOXFkMnR6TG1wemIyNGlMQ0poWTJObGMzTIViMnRsYm5ORmVIQnBjbVZKYmlJNk1UVXNjWxoZENjNk1UVTVOeIF4TXpFNU5YMC5xNHY0TXNjNzRrTjUwNktUWjBxX21pbnlhcEp3MGd3bFQ2TV91aUw3M1M0IiwjYXVkljoiaHR0cHM6Ly9pbmZlcm5vLmhlYWx0aGl0Lmdvdj9yZWZlcmVvY2Ute2VydmVvY29hdXR0L2J1bGstG9rZW4iLCJleHAiOiJlE2NTMxMDY4ODgsImp0aSI6ImZmZjA5YjIxMjhiOVRmNmU3MGU5MWQ2ZDUwMGQxMmFmYmU2YWE4N2FhMjJlZjVhMjc5YjZhNTI0YzA0NmM1ZWEifQ.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		
<i>access_token</i>	required	The access token issued by the authorization server
<i>token_type</i>	required	Fixed value: Bearer
<i>expires_in</i>	recommended	Lifetime in seconds of the access token, after which the token SHA NOT be accepted by the resource server.
<i>Scope</i>	required	Scope of access authorized. Note that this can be different from the scopes requested by the app.
<i>id_token</i>	optional	Authenticated user identity and user details, if requested
<i>refresh_token</i>	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.eyJzdWUiOiJkYjExNzk1Ny02MDU4LTRhODYtYTcxMi0yMDU2N
DU5ZDUxMzgiLCJhdWQiOiJTQU1QTEVfQ09ORkIERU5USUFMX0NMSUVOVF9JRCIsImZcyI6Imh0dHBzOi
8vaW5mZXJuby5oZWZsdGhpdC5nb3YvcnVmZXJlbnNlXNlcnZlci9yNCIsImV4cCI6MTY4NDU3OTc5Nywia
WF0IjoXNjUzMDQzNzk3LCJmaGlyVXNlciI6Imh0dHBzOi8vaW5mZXJuby5oZWZsdGhpdC5nb3YvcnVmZXJlbn
mNlXNlcnZlci9yNC9QYXRpZW50LzglIn0.R1oMsXCTXMKiM1ohCxb3LkgXrgfBebNiaC_jam9sBOwYCCw7
K4TLUBmVzKIGb3_-5wZtqyTTqO6bRwsituXSefoS1QwI14wLGpk-
fOsr6M4uSXW5An4WUy8858j3aa5Qkcf0pw4QP3-
rlmVJoHuN_In4ULn5bpRQJkllEQ2ySPj3pkoWWMwfi5p7nNfvgkE2QOCM4Q-
ounE6oLyYZJp_OGvVhkREu8jO77m3Tgsji_jbX7g4-
deuwB4F9EHUfjfhM3TB1GloQ7cgJFhHos9mTCcpT0aYYQkmCJGRx1R5jI-I56p4_63IkU2BRau-
INII3Zvcnsz5ajpvU46eIwg",
"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

## 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-bb89-882fdfb2be4b"
},
"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-bb89-882fdfb2be4b](https://[Base_URL]/CarePlan?category=assess-plan&patient=17e77411359-8837d878-ea1e-45b5-bb89-882fdfb2be4b)*

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=assess-plan&patient=Patient/17e77411359-8837d878-ea1e-45b5-bb89-882fdfb2be4b&_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-bb89-882fdb2be4b"
},
"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"
    },
    "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-bb89-882fdb2be4b&status=active](https://[Base_URL]/CareTeam?patient=17e77411359-8837d878-ea1e-45b5-bb89-882fdb2be4b&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-bb89-882fdb2be4b&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-bb89-882fdb2be4b"
},
"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-bb89-882fdb2be4b&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-bb89-882fdb2be4b&_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-bb89-882fdfb2be4b"
},
"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-bb89-882fdfb2be4b"
},
"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-bb89-882fdb2be4b&_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-bb89-882fdfb2be4b](https://[Base_URL]/DiagnosticReport?category=LP29684-5&patient=17e77411359-8837d878-ea1e-45b5-bb89-882fdfb2be4b)

[https://\[Base\\_URL\]/DiagnosticReport?category=LP7839-6&patient=17e77411359-8837d878-ea1e-45b5-bb89-882fdfb2be4b](https://[Base_URL]/DiagnosticReport?category=LP7839-6&patient=17e77411359-8837d878-ea1e-45b5-bb89-882fdfb2be4b)

[https://\[Base\\_URL\]/DiagnosticReport?category=LP29708-2&patient=17e77411359-8837d878-ea1e-45b5-bb89-882fdfb2be4b](https://[Base_URL]/DiagnosticReport?category=LP29708-2&patient=17e77411359-8837d878-ea1e-45b5-bb89-882fdfb2be4b)

[https://\[Base\\_URL\]/DocumentReference?patient=17e77411359-8837d878-ea1e-45b5-bb89-882fdfb2be4b](https://[Base_URL]/DocumentReference?patient=17e77411359-8837d878-ea1e-45b5-bb89-882fdfb2be4b)

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-bb89-882fdfb2be4b&_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"
    }
  }
}

```



```
NzbWVudCBhbmQgUGxhbgoKCiMjIFBsYW4KUGF0aWVudCB3YXMgZ212ZW4gdGhlIGZvbGxvd2luZyBpbW
11bml6YXRpb25zOiBpbmZsdWVuemEsIHNIYXNvbmfLCBpbmplY3RhYmxlLCBwcmVzZXJ2YXRpdmUgZnJ
lZS4gClRoZSBmb2xs3dpcmcgcHJvY2VkdXJlcyB3ZXJlIGNvbmlR1Y3RlZDoKLSBtZWRRpY2F0aW9uIHJlY29u
Y2lsaWF0aW9uIChwcm9jZWR1cmUpClRoZSBwYXRpZW50IHdhcyBwcmVzY3JpYmVkiHRoZSBmb2xs3dpc
mcgbWVkaWNhdGlvbnM6Ci0gMTIwIGFjdHVhdCBmbHV0aWNhc29uZSBwcm9waW9uYXRlIDAuMDQ0IG1n
L2FjdHVhdCBtZXRLcmVkiGRvc2UgaW5oYWxlcgotIG5kYTAyMDUwMyAyMDAgYWN0dWF0IGFsYnV0ZXJ
vbCAwLjA5IG1nL2FjdHVhdCBtZXRLcmVkiGRvc2UgaW5oYWxlcgo="
```

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

## 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-bb89-882fdb2be4b&_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-bb89-882fdfb2be4b"
  },
  "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]`

For example, `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-bb89-882fdb2be4b"
},
"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-bb89-882fdb2be4b](https://[Base_URL]/Immunization?patient=17e77411359-8837d878-ea1e-45b5-bb89-882fdb2be4b)

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-bb89-882fdb2be4b&_page=1"
    }
  ],
  "entry": [
    {
      "id": "17e7b8dc9ab-8abc85e3-0ab1-470f-ace8-1f4e9a3597bb",
      "fullUrl": "https://yourfhirserver.com:9443/fhir-server/api/v4/Immunization/17e7b8dc9ab-8abc85e3-0ab1-470f-ace8-1f4e9a3597bb",
      "resource": {
        "resourceType": "Immunization",
        "id": "17e7b8dc9ab-8abc85e3-0ab1-470f-ace8-1f4e9a3597bb",
        "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-bb89-882fdb2be4b &intent=order&status=active](https://[Base_URL]/MedicationRequest?patient=17e77411359-8837d878-ea1e-45b5-bb89-882fdb2be4b&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-bb89-882fdb2be4b`

### 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-bb89-882fdb2be4b&_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-bb89-882fdfb2be4b"
},
"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
}
},
{
  "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-bb89-882fdb2be4b`

## 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-bb89-882fdb2be4b&_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-bb89-882fdfb2be4b"
},
"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*

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-bb89-882fdb2be4b"
    },
    {
      "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-ace8-1f4e9a3597bb"
},
{
  "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=\[id\]](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=\[id\]](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=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?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](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-bb89-882fdfb2be4b"
},

```

```

"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-bb89-882fdfb2be4b"
},
"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",
"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-bb89-882fdfb2be4b"
},
"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-bb89-882fdfb2be4b"
},
"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",
"dataAbsentReason": {
  "coding": [
    {
      "system": "http://terminology.hl7.org/CodeSystem/data-absent-reason",
      "code": "unknown",
      "display": "Unknown"
    }
  ],
  "text": "Unknown"
}
},
"search": {

```



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

<i>Error</i>	<i>Description</i>
<i>200 - OK</i>	Everything worked as expected.
<i>401 - Unauthorized</i>	No valid Bearer token provided.
<i>404 - Not Found</i>	The requested resource doesn't exist.
<i>5xx - Server Error</i>	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.

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