

FHIR API

Technical Specifications and Standards:

The CalMHSA Connex FHIR API is a RESTful API, based on the FHIR Version 4.0.1 standard. It supplies data in JSON format and uses the OAuth 2.0 protocol for authentication/authorization. Developers can retrieve detailed information on required and optional parameters through the Swagger documentation platform after authenticating with a token to the API endpoint.

- [RESTful API Overview](#)
- [FHIR Version 4.0.1](#)
- [OAuth 2.0](#)
- [HL7 FHIR CARIN](#)
- [HL7 FHIR Da Vinci](#)

Authentication:

Sample Request to Get OAuth 2.0 JWT for Patient Access:

```
curl --request GET
'https://ihe-calmhsa.ehn-prod.net/SpiritHSB/REST/forward_sts/IUA/oauth2/Patient/token' \
--header 'Content-Type: application/x-www-form-urlencoded' \
--data-urlencode 'username={{LOGIN_USERNAME}}' \
--data-urlencode 'password={{PASSWORD}}' \
--data-urlencode 'grant_type=password' \
--data-urlencode 'subject={{SUBJECT_NAME}}' \
--data-urlencode 'role=Patient' \
--data-urlencode 'organization={{ORGANIZATION_NAME}}' \
--data-urlencode 'organizationId=urn:{{ORGANIZATION_OID}}'
```

Parameters:

Parameter	Data Type	Required	Description
username	String	True	Username
password	String	True	Password

grant_type	String	True	Grant type set to "password"
subject	String	True	Name of subject receiving token
role	String	True	Role set to "Patient"
organization	String	True	Organization name
organizationId	String	True	Organization ID

Sample Response 200 (OK):

```
{
  "access_token": "{{BASE_64_ENCODED_TOKEN}}",
  "expires_in": 1725453419000,
  "token_type": "Bearer",
  "not-before-policy": 1725452819000
}
```

Sample BASE_64_ENCODED_TOKEN Decoded:

```
{
  "aud": "http://ihe.connectathon.IUA/ResourceProvider-IHE-Connectathon",
  "sub": "6cc272ba-4dd9-4a98-a270-b042e92cceb9",
  "extensions": {
    "ihe_iua": {
      "home_community_id":
"urn:oid:2.16.840.1.113883.2.1.3.31.2.1.1.1.1.12",
      "subject_organization_id": "testOrgId",
      "subject_role": {
        "system": "1.2.3.4.5.7",
        "code": "patient",
        "display": "ROLE"
      },
      "purpose_of_use": {
        "system": "1.2.3.4.5.6",
        "code": "TREATMENT",
        "display": "TREATMENT"
      },
      "subject_name": "usertest",
      "subject_organization": "testOrg"
    }
  }
}
```

```

},
"nbf": 1707472463,
"scope": "ITI-66 ITI-67 ITI-68 ITI-78 ITI-83 PCC-44",
"iss": "urn:mint:sts",
"exp": 1707473063,
"jti": "34bda15e-cbc8-4ab3-ac5e-36a169af6467"
}

```

Sample Error Responses:

Status	Response	description
400	<pre> <html> <head> <title>Error</title> </head> <body>Bad Request</body> </html> </pre>	Bad Request
403	<pre> <html> <head> <title>Error</title> </head> <body>Forbidden!</body> </html> </pre>	Forbidden
500	<pre> <html> <head> <title>Error</title> </head> <body>Internal Server Error</body> </html> </pre>	Internal Server Error
502	<pre> <html> <head> <title>Error</title> </head> <body>Bad Gateway</body> </html> </pre>	Bad Gateway

Authorization:

The authorization is dependent on the user's OAuth 2.0 JWT.

Patient Access API:

Base URL:

https://ihe-calmhsa.ehn-prod.net/SpiritHSB/REST/forward_qedm/r4/

Resources:

Resource	Read	Search	create/update
AllergyIntolerance	Y	Y	N
Binary	Y	Y	N
CarePlan	Y	Y	N
CareTeam	Y	Y	N
Condition	Y	Y	N
Coverage	Y	Y	N
Device	Y	Y	N
DiagnosticReport	Y	Y	N
DocumentReference	Y	Y	N
Encounter	Y	Y	N
ExplanationOfBenefit	Y	Y	N
Goal	Y	Y	N
Group	Y	Y	N
Immunization	Y	Y	N
Location	Y	Y	N

MedicationRequest	Y	Y	N
Observation	Y	Y	N
Organization	Y	Y	N
Patient	Y	Y	N
Practitioner	Y	Y	N
Procedure	Y	Y	N
Provenance	Y	Y	N

Sample Request:

```
curl --location
'https://ihe-calmhsa.ehn-prod.net/SpirithSB/REST/forward_qedm/r4/AllergyIntolerance?patient={{PATIENT_IDENTIFIER}}' \
--header 'Authorization: Bearer {{BASE_64_ENCODED_TOKEN}}' \
```

Shared Parameters:

Parameter	Type	Required	Description
patient	String	True	Patient Identifier. We will provide this identifier (FHIR ID)
_format	String	False	Format of response
_include	String	False	Adds resources and resource versions referenced by the primary results
_revinclude	String	False	Adds resources that reference the primary result

Supported Headers:

Parameter	Direction	Required	Description
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Authorization	Request	True	Bearer token used to authorize the request.
Content-Type	Request	False	Preferred format of response payload. Default: application/fhir+json;charset=UTF-8

Sample Response 200 (OK):

```
{
  "resourceType": "Bundle",
  "id": "1af026a0-a25f-4803-b8cd-e3fb30826561",
  "meta": {
    "lastUpdated": "2024-09-05T20:16:50.136+00:00"
  },
  "type": "searchset",
  "total": 1,
  "link": [
    {
      "relation": "self",
      "url":
"https://ihe-calmhsa.ehn-
prod.net/SpirithSB/REST/forward_qedm/r4/AllergyInt
olerance?patient={{PATIENT_IDENTIFIER}}" }
  ],
  "entry": [...]
}
```

Sample response 400 (Bad Request):

```
{
  "resourceType": "OperationOutcome",
  "text": {
    "status": "generated",
    "div": "<div xmlns=\"http://www.w3.org/1999/xhtml\"><h1>Operation Outcome</h1><table border=\"0\"><tr><td style=\"font-weight: bold;\">ERROR</td><td>[]</td><td><pre>{{ERROR_DESCRIPTION}}</pre></td><tr><td><pre>{{ERROR_CODE}}</pre></td></tr></table></div>"
  },
  "issue": [
    {
      "severity": "error",
      "code": "{{ERROR_CODE}}",
      "diagnostics": "{{ERROR_DESCRIPTION}}"
    }
  ]
}
```

Sample Error Responses:

Status	Response	description
401	{}	Unauthorized
403	{}	Forbidden
500	{}	Internal Server Error
502	{}	Bad Gateway

Practitioner Access API (Same as Patient Access API):

Base URL:

https://ihe-calmhsa.ehn-prod.net/SpiritHSB/REST/forward_gedm/r4/

Provider Directory Access API:

Base URL:

<https://fhir-calmhsa-provider.ehn-prod.net/fhir>

Metadata Statement:

<https://fhir-calmhsa-provider.ehn-prod.net/fhir/metadata>

Resources:

Resource	Read	Search	create/update
Practitioner	Y	Y	N
PractitionerRole	Y	Y	N
HealthcareService	Y	Y	N
Location	Y	Y	N
Organization	Y	Y	N

Sample Request:

```
curl --location  
'https://fhir-calmhsa-provider.ehn-  
dev.net/fhir/{{RESOURCE_TYPE}}/?_id={{RE SOURCE_ID}}'
```

Shared Parameters:

Parameter	Type	Required	Description
_id	String	False	Resource ID
_lastUpdated	Date	False	When the resource version last changed
_security	String	False	Security Labels applied to this resource
_filter	String	False	Search the contents of the resource's data using a filter
_profile	String	False	Profiles this resource claims to conform to
_tag	String	False	Tags applied to this resource

_text	String	False	Search on the narrative of the resource
_has	String	False	Return resources linked to by the given target
_content	String	False	Search on the entire content of the resource
_source	String	False	Identifies where the resource comes from

Practitioner Parameters:

Parameter	Type	Required	Description
identifier	String	False	A practitioner's Identifier
address-state	String	False	A state specified in an address
address-postalc	String	False	A postalCode specified in an address
ode			
address-country	String	False	A country specified in an address
address-city	String	False	A city specified in an address
address	String	False	A server defined search that may match any of the string fields in the Address, including line, city, district, state, country, postalCode, and/or text
address-use	String	False	A use code specified in an address
gender	String	False	Resource containing gender
phonetic	String	False	A portion of name using some kind of phonetic matching algorithm
telecom	Date	False	The value in any kind of contact

communication	String	False	One of the languages that the practitioner can communicate with
email	String	False	Resource containing email
given	String	False	A portion of the given name
active	String	False	Whether the practitioner record is active
phone	String	False	Resource containing the phone number
name	String	False	A server defined search that may match any of the string fields in the HumanName, including family, give, prefix, suffix, suffix, and/or text
family	String	False	A portion of the family name

PractitionerRole Parameters:

Parameter	Type	Required	Description
identifier	String	False	A practitioner role Identifier
date	Date	False	The period during which the practitioner is authorized to perform in these role(s)
specialty	String	False	The practitioner has this specialty at an organization
role	String	False	The practitioner can perform this role
practitioner	String	False	The practitioner associated with role
active	String	False	Whether this practitioner role record is in active use
endpoint	String	False	Technical endpoints providing access to services operated for the practitioner with this role
phone	String	False	Resource containing the phone number

service	String	False	The list of healthcare services that this worker provides for this role's Organization/Location(s)
organization	String	False	The identity of the organization the practitioner represents / acts on behalf of
location	String	False	One of the locations at which this practitioner provides care
telecom	String	False	The value in any kind of contact
email	String	False	A value in an email contact

HealthcareService Parameters:

Parameter	Type	Required	Description
identifier	String	False	External identifiers for this item
service-category	String	False	Service Category of the Healthcare Service
specialty	String	False	The specialty of the service provided by this healthcare service
service-type	String	False	The type of service provided by this healthcare service
program	String	False	One of the Programs supported by this HealthcareService
characteristic	String	False	One of the HealthcareService's characteristics
coverage-area	String	False	Location(s) service is intended for/available to
organization	String	False	The organization that provides this Healthcare Service
name	String	False	A portion of the Healthcare service name
active	String	False	The Healthcare Service is currently marked as

			active
endpoint	String	False	Technical endpoints providing access to electronic services operated for the healthcare service
location	String	False	The location of the Healthcare Service

Location Parameters:

Parameter	Type	Required	Description
identifier	String	False	External identifiers for this item
address-state	String	False	A state specified in an address
address-country	String	False	A country specified in an address
address-city	String	False	A city specified in an address
address-postalcode	String	False	A postalCode specified in an address
address	String	False	A (part of the) address of the location
address-use	String	False	A use code specified in an address
operational-status	String	False	Searches for locations (typically bed/room) that have an operational status (e.g. contaminated, housekeeping)
type	String	False	A code for the type of location
endpoint	String	False	Technical endpoints providing access to services operated for the location
partof	String	False	A location of which this location is a part
organization	String	False	Searches for locations that are managed by the provided organization

name	String	False	A portion of the location's name or alias
status	String	False	Searches for locations with a specific kind of status

Organization Parameters:

Parameter	Type	Required	Description
identifier	String	False	Any identifier for the organization (not the accreditation issuer's identifier)
partof	String	False	An organization of which this organization forms a part
address-state	String	False	A state specified in an address
address-country	String	False	A country specified in an address
address-city	String	False	A city specified in an address
address-postalcode	String	False	A postalCode specified in an address
address	String	False	A (part of the) address of the location
address-use	String	False	A use code specified in an address
active	String	False	Is the Organization record active
type	String	False	A code for the type of organization
endpoint	String	False	Technical endpoints providing access to services operated for the organization
phonetic	String	False	A portion of the organization's name using some kind of phonetic matching algorithm
name	String	False	A portion of the organization's name or alias

Sample Response 200 (OK):

```
{
  "resourceType": "Bundle",
  "id": "1af026a0-a25f-4803-b8cd-e3fb30826561",
  "meta": {
    "lastUpdated": "2024-09-05T20:16:50.136+00:00"
  },
  "type": "searchset",
  "total": 1,
  "link": [
    {
      "relation": "self",
      "url":
"https://fhir-calmhsa-provider.ehn-dev.net/fhir/{{RESOURCE_TYPE}}"
    }
  ],
  "entry": [...]
}
```

Sample response 400 (Bad Request):

```
{
  "resourceType": "OperationOutcome",
  "text": {
    "status": "generated",
    "div": "<div xmlns=\"http://www.w3.org/1999/xhtml\"><h1>Operation
Outcome</h1><table border=\"0\"><tr><td style=\"font-weight:
bold;\">ERROR</td><td>]</td><td><pre>{{ERROR_DESCRIPTION}}</pre></td>\n\t\t
</tr>\n\t\t</table>\n\t</div>"
  },
  "issue": [
    {
      "severity": "error",
      "code": "{{ERROR_CODE}}",
      "diagnostics": "{{ERROR_DESCRIPTION}}"
    }
  ]
}
```

Sample Error Responses:

Status	Response	description
401	<code>{}</code>	Unauthorized

403	<code>{}</code>	Forbidden
500	<code>{}</code>	Internal Server Error
502	<code>{}</code>	Bad Gateway

