

MMI API Interoperability

MMI provides access to several APIs for various purposes. This documentation is specific to the Certified FHIR API. For information on MMI's Proprietary API, please see <https://www.modmed.com/synapsys-api>.

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The main difference between the two APIs relates to use cases and access. The Certified FHIR API Supports two types of API-enabled services:

- Services for which a single patient's data is the focus
 - A Patient, using their Patient Portal credentials, can authenticate to the API in order to retrieve, access, exchange, or visualize their data.
 - A Provider, using their login credentials, can authenticate to the API in order to retrieve, access, exchange, or visualize a single patient's data.
- Services for which multiple patients' data are the focus
 - A Provider, using their login credentials, can authenticate to the API in order to retrieve, access, exchange, or visualize multiple patient's data (or a subset of their patient population's data) for population health purposes or insights.
 - Bulk Data Export - a Provider, using their login credentials, can authenticate to the API in order to export (in a standard format - ndjson) multiple patient's data (or a subset of their patient population's data).

As of now, this Certified FHIR API supports only Read, Search, and Bulk operations.

Introduction to FHIR

ModMed implements the R4 Version of the HL7[®] FHIR[®] standard. It is recommended that you become familiar with the standard by checking out the wealth of information provided by the HL7 organization. [Here](#) is a good starting point.

The MMI Certified FHIR API supports both the EMA/MMPM Platform as well as the gGastro Platform. The MMI Certified FHIR API is intended to be used for the purpose of the exchange of health information included in the [U.S. Core Data for Interoperability](#).

USCDI v1

MMI has implemented the US Core Implementation Guide - 4.0.0 - STU4 Release - Links below will point to that version of the IG, and unless otherwise noted, the API will conform to the requirements in the IG.

USCDI	US Core Profile	FHIR Resource
Allergies and Intolerances:		
Substance (Medication)	US Core Allergies Profile	AllergyIntolerance
Substance (Drug Class)	US Core Allergies Profile	AllergyIntolerance
Reaction	US Core Allergies Profile	AllergyIntolerance
Assessment and Plan of Treatment	US Core CarePlan Profile	CarePlan
Care Team Members	US Core CareTeam Profile	CareTeam
Clinical Notes:		
Consultation Note	US Core DocumentReference Profile	DocumentReference
Discharge Summary Note	US Core DocumentReference Profile	DocumentReference
History & Physical	US Core DocumentReference Profile	DocumentReference
Imaging Narrative	US Core DocumentReference Profile, US Core DiagnosticReport Profile for Report and Note exchange	DocumentReference, DiagnosticReport
Laboratory Report Narrative	US Core DocumentReference Profile, US Core DiagnosticReport Profile for Report and Note exchange	DocumentReference, DiagnosticReport
Pathology Report Narrative	US Core DocumentReference	DocumentReference, DiagnosticReport

	<u>Profile,US Core DiagnosticReport Profile for Report and Note exchange</u>	
Procedure Note	<u>US Core DocumentReference Profile,US Core DiagnosticReport Profile for Report and Note exchange</u>	DocumentReference,DiagnosticReport
Progress Note	<u>US Core DocumentReference Profile</u>	DocumentReference
Goals:		
Patient Goals	<u>US Core Goal Profile</u>	Goal
Health Concerns	<u>US Core Condition Profile</u>	Condition
Immunizations	<u>US Core Immunization Profile</u>	Immunization
Laboratory:		
Tests	<u>US Core Laboratory Result Observation Profile, US Core DiagnosticReport Profile for Laboratory Results Reporting</u>	Observation, DiagnosticReport
Values/Results	<u>US Core Laboratory Result Observation Profile, US Core DiagnosticReport Profile for Laboratory Results Reporting</u>	Observation, DiagnosticReport
Medications:		
Medications	<u>US Core Medication Profile, US Core Medication Request Profile</u>	Medication, MedicationRequest
Medication Allergies	<u>US Core Allergies Profile</u>	AllergyIntolerance
Patient Demographics:		
First Name	<u>US Core Patient Profile</u>	<u>Patient.name.given</u>
Last Name	<u>US Core Patient Profile</u>	<u>Patient.name.family</u>
Previous Name	<u>US Core Patient Profile</u>	<u>Patient.name</u>

Middle Name (including middle initial)	US Core Patient Profile	Patient.name.given
Suffix	US Core Patient Profile	Patient.name.suffix
Birth Sex	US Core Patient Profile	US Core Birth Sex Extension
Date of Birth	US Core Patient Profile	Patient.birthDate
Race	US Core Patient Profile	US Core Race Extension
Ethnicity	US Core Patient Profile	US Core Ethnicity Extension
Preferred Language	US Core Patient Profile	Patient.communication
Address	US Core Patient Profile	Patient.address
Phone Number	US Core Patient Profile	Patient.telecom
Problems	US Core Condition Profile	Condition
Procedures	US Core Procedure Profile	Procedure
Provenance:	US Core Provenance Profile	Provenance
Author Time Stamp	US Core Provenance Profile	Provenance.recorded
Author Organization	US Core Provenance Profile	Provenance.agent
Smoking Status	US Core Smoking Status Observation Profile	Observation
Unique Device Identifier(s) for a Patient's Implantable Device(s)	US Core Implantable Device Profile	Device
Vital Signs:		
Diastolic blood pressure	US Core Blood Pressure Profile (Builds on Us Core Vital Signs Profile)	Observation
Systolic blood pressure	US Core Blood Pressure Profile (Builds on Us Core Vital Signs Profile)	Observation
Body height	US Core Body Height Profile (Builds on Us Core Vital Signs Profile)	Observation

Body weight	<u>US Core Body Weight Profile (Builds on Us Core Vital Signs Profile)</u>	Observation
Heart rate	<u>US Core Heart Rate Profile (Builds on Us Core Vital Signs Profile)</u>	Observation
Respiratory rate	<u>US Core Respiratory Rate Profile (Builds on Us Core Vital Signs Profile)</u>	Observation
Body temperature	<u>US Core Body Temperature Profile (Builds on Us Core Vital Signs Profile)</u>	Observation
Pulse oximetry	<u>US Core Pulse Oximetry Profile (Builds on Us Core Vital Signs Profile)</u>	Observation
Inhaled oxygen concentration	<u>US Core Pulse Oximetry Profile (Builds on Us Core Vital Signs Profile)</u>	Observation
BMI Percentile (2-20 years old)	<u>US Core Pediatric BMI for Age Observation Profile (Builds on Us Core Vital Signs Profile)</u>	Observation
Weight-for-length Percentile (Birth - 36 months)	<u>US Core Pediatric Weight for Height Observation Profile (Builds on Us Core Vital Signs Profile)</u>	Observation
Occipital-frontal Head Circumference Percentile (Birth - 36 months)	<u>US Core Pediatric Head Occipital Frontal Circumference Observation Profile (Builds on Us Core Vital Signs Profile)</u>	Observation

API Syntax and Functions

AllergyIntolerance

Supported Operations:

Operations	Method	Description
READ	GET	https://{base_url}/fhir/r4/AllergyIntolerance/{id}
SEARCH	GET	https://{base_url}/fhir/r4/AllergyIntolerance?{search_parameters}

Supported Search Parameters:

Name	Type	Description
clinical-status	token	active inactive resolved
patient	reference	Who the sensitivity is for

CarePlan

Supported Operations:

Operations	Method	Description
READ	GET	https://{base_url}/fhir/r4/CarePlan/{id}
SEARCH	GET	https://{base_url}/fhir/r4/CarePlan?{search_parameters}

Supported Search Parameters:

Name	Type	Description
category	token	Type of plan
intent	string	proposal plan order option

patient	reference	Who the care plan is for
status	string	draft active on-hold revoked completed entered-in-error unknown

CareTeam

Supported Operations:

Operations	Method	Description
READ	GET	https://{base_url}/fhir/r4/CareTeam/{id}
SEARCH	GET	https://{base_url}/fhir/r4/CareTeam?{search_parameters}

Supported Search Parameters:

Name	Type	Description
patient	reference	Who care team is for
status	string	proposed active suspended inactive entered-in-error

Condition

Supported Operations:

Operations	Method	Description
READ	GET	https://{base_url}/fhir/r4/Condition/{id}
SEARCH	GET	https://{base_url}/fhir/r4/Condition?{search_parameters}

Supported Search Parameters:

Name	Type	Description
patient	reference	Who has the condition?
clinical-status	token	The clinical status of the condition
category	token	The category of the condition
code	token	Code for the condition
onset-date	date	Date related onsets (dateTime and Period)

Device

Supported Operations:

Operations	Method	Description
READ	GET	https://{base_url}/fhir/r4/Device/{id}
SEARCH	GET	https://{base_url}/fhir/r4/Device?{search_parameters}

Supported Search Parameters:

Name	Type	Description
patient	reference	Patient information, if the resource is affixed to a person
type	token	The type of the device

DiagnosticReport

Supported Operations:

Operations	Method	Description
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READ	GET	https://{base_url}/fhir/r4/DiagnosticReport/{id}
SEARCH	GET	https://{base_url}/fhir/r4/DiagnosticReport?{search_parameters}

Supported Search Parameters:

Name	Type	Description
category	reference	Which diagnostic discipline/department created the report
code	token	The code for the report, as opposed to codes for the atomic results, which are the names on the observation resource referred to from the result
date	date	The clinically relevant time of the report
patient	reference	The subject of the report if a patient
status	string	The status of the report

DocumentReference

Supported Operations:

Operations	Method	Description
READ	GET	https://{base_url}/fhir/r4/DocumentReference/{id}
SEARCH	GET	https://{base_url}/fhir/r4/DocumentReference?{search_parameters}

Supported Search Parameters:

Name	Type	Description
_id	token	The ID of the resource
category	token	Categorization of document

date	date	When this document reference was created
patient	reference	Who/what is the subject of the document
period	date	Time of service that is being documented
status	token	current superseded entered-in-error
type	token	Kind of document (LOINC if possible)

Encounter

Supported Operations:

Operations	Method	Description
READ	GET	https://{base_url}/fhir/r4/Encounter/{id}
SEARCH	GET	https://{base_url}/fhir/r4/Encounter?{search_parameters}

Supported Search Parameters:

Name	Type	Description
_id	token	The ID of the resource
class	token	Classification of patient encounter
date	date	A date within the period the Encounter lasted
identifier	token	Identifier(s) by which this encounter is known
patient	reference	The patient or group present at the encounter
status	string	planned arrived triaged in-progress onleave finished cancelled +
type	token	Specific type of encounter

Endpoint

Supported Operations:

Operations	Method	Description
READ	GET	https://{base_url}/fhir/r4/Endpoint/{id}
SEARCH	GET	https://{base_url}/fhir/r4/Endpoint?{search_parameters}

Supported Search Parameters:

Name	Type	Description
connection-type	token	Protocol/Profile/Standard to be used with this endpoint connection
name	string	A name that this endpoint can be identified by
organization	reference	The organization that is managing the endpoint
status	string	The current status of the Endpoint (usually expected to be active)

Goal

Supported Operations:

Operations	Method	Description
READ	GET	https://{base_url}/fhir/r4/Goal/{id}
SEARCH	GET	https://{base_url}/fhir/r4/Goal?{search_parameters}

Supported Search Parameters:

Name	Type	Description
lifecycle-status	token	proposed planned accepted active on-hold completed cancelled entered-in-error rejected
patient	reference	Who this goal is intended for
target-date	date	Reach goal on or before

Group

Supported Operations:

Operations	Method	Description
READ	GET	https://{base_url}/fhir/r4/Group/{id}

Immunization

Supported Operations:

Operations	Method	Description
READ	GET	https://{base_url}/fhir/r4/Immunization/{id}
SEARCH	GET	https://{base_url}/fhir/r4/Immunization?{search_parameters}

Supported Search Parameters:

Name	Type	Description
date	date	Vaccination (non)-Administration Date
patient	reference	The patient for the vaccination record
status	string	Immunization event status

Location

Supported Operations:

Operations	Method	Description
READ	GET	https://{base_url}/fhir/r4/Location/{id}
SEARCH	GET	https://{base_url}/fhir/r4/Location?{search_parameters}

Supported Search Parameters:

Name	Type	Description
address	string	A (part of the) address of the location
address-city	string	A city specified in an address
address-country	string	A country specified in an address
address-postalcode	string	A postal code specified in an address
address-state	string	A state specified in an address
address-use	string	A use code specified in an address
identifier	token	An identifier for the location
name	string	A portion of the location's name or alias
status	token	Searches for locations with a specific kind of status

Medication

Supported Operations:

Operations	Method	Description
READ	GET	https://{base_url}/fhir/r4/Medication/{id}

MedicationRequest

Supported Operations:

Operations	Method	Description
READ	GET	https://{base_url}/fhir/r4/MedicationRequest/{id}
SEARCH	GET	https://{base_url}/fhir/r4/MedicationRequest?{search_parameters}

Supported Search Parameters:

Name	Type	Description
authoredon	date	Return prescriptions written on this date
encounter	reference	Return prescriptions with this encounter identifier
intent	string	Returns prescriptions with different intents
patient	reference	Returns prescriptions for a specific patient
status	string	Status of the prescription

Observation

Supported Operations:

Operations	Method	Description
READ	GET	https://{base_url}/fhir/r4/Observation/{id}

SEARCH	GET	https://{base_url}/fhir/r4/Observation?{search_parameters}
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Supported Search Parameters:

Name	Type	Description
category	token	The classification of the type of observation
code	token	The code of the observation type
date	date	Obtained date/time. If the obtained element is a period, a date that falls in the period
patient	reference	The subject that the observation is about (if patient)
status	string	The status of the observation

OperationDefinition

Supported Operations:

Operations	Method	Description
READ	GET	https://{base_url}/fhir/r4/OperationDefinition/{id}

Organization

Supported Operations:

Operations	Method	Description
READ	GET	https://{base_url}/fhir/r4/Organization/{id}
SEARCH	GET	https://{base_url}/fhir/r4/Organization?{search_parameters}

Supported Search Parameters:

Name	Type	Description
_id	token	The ID of the resource
address	string	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
identifier	token	Any identifier for the organization (not the accreditation issuer's identifier)
name	string	A portion of the organization's name or alias

Patient

Supported Operations:

Operations	Method	Description
READ	GET	https://{base_url}/fhir/r4/Patient/{id}
SEARCH	GET	https://{base_url}/fhir/r4/Patient?{search_parameters}

Supported Search Parameters:

Name	Type	Description
_id	token	The ID of the resource
active	token	Whether the patient record is active
address	string	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-city	string	A city specified in an address

address-country	string	A country specified in an address
address-postalcode	string	A postalCode specified in an address
address-state	token	A state specified in an address
address-use	token	A use code specified in an address
birthdate	date	The patient's date of birth
deceased	token	This patient has been marked as deceased, or as a death date entered
email	token	A value in an email contact
family	string	A portion of the family name of the patient
gender	token	Gender of the patient
general-practitioner	reference	Patient's nominated general practitioner, not the organization that manages the record
given	string	A portion of the given name of the patient
identifier	token	A patient identifier
language	token	Language code (irrespective of use value)
name	string	A server defined search that may match any of the string fields in the HumanName, including family, give, prefix, suffix, suffix, and/or text
phone	token	A value in a phone contact
telecom	token	The value in any kind of telecom details of the patient
operation	export	http://hl7.org/fhir/uv/bulkdata/OperationDefinition/patient-export

Practitioner

Supported Operations:

Operations	Method	Description
READ	GET	https://{base_url}/fhir/r4/Practitioner/{id}
SEARCH	GET	https://{base_url}/fhir/r4/Practitioner?{search_parameters}

Supported Search Parameters:

Name	Type	Description
active	token	Whether the practitioner record is active
email	token	A value in an email contact
family	string	A portion of the family name
given	string	A portion of the given name
identifier	token	A practitioner's Identifier
name	string	A server defined search that may match any of the string fields in the HumanName, including family, give, prefix, suffix, suffix, and/or text
phone	token	A value in a phone contact
telecom	token	The value in any kind of contact

PractitionerRole

Supported Operations:

Operations	Method	Description
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READ	GET	https://{base_url}/fhir/r4/PractitionerRole/{id}
SEARCH	GET	https://{base_url}/fhir/r4/PractitionerRole?{search_parameters}

Supported Search Parameters:

Name	Type	Description
active	token	Whether this practitioner role record is in active use
email	token	A value in an email contact
location	reference	One of the locations at which this practitioner provides care
organization	reference	The identity of the organization the practitioner represents / acts on behalf of
phone	token	A value in a phone contact
practitioner	reference	The practitioner can perform this role at for the organization
role	token	A value in a phone contact
specialty	token	The practitioner has this specialty at an organization
telecom	token	The value in any kind of contact

Procedure

Supported Operations:

Operations	Method	Description
READ	GET	https://{base_url}/fhir/r4/Procedure/{id}
SEARCH	GET	https://{base_url}/fhir/r4/Procedure?{search_parameters}

Supported Search Parameters:

Name	Type	Description
code	token	A code to identify a procedure
date	date	When the procedure was performed
patient	reference	Search by subject - a patient
status	string	preparation in-progress not-done on-hold stopped completed entered-in-error unknown

Provenance

Supported Operations:

Operations	Method	Description
READ	GET	https://{base_url}/fhir/r4/Provenance/{id}
SEARCH	GET	https://{base_url}/fhir/r4/Provenance?{search_parameters}

Supported Search Parameters:

Name	Type	Description
target	reference	Target Reference(s) (usually version specific)

ValueSet

Supported Operations:

Operations	Method	Description
READ	GET	https://{base_url}/fhir/r4/ValueSet/{id}
SEARCH	GET	https://{base_url}/fhir/r4/ValueSet?{search_parameters}

Supported Search Parameters:

Name	Type	Description
code	token	This special parameter searches for codes in the value set. See additional notes on the ValueSet resource
name	string	Computationally friendly name of the value set
publisher	string	Name of the publisher of the value set
title	string	The human-friendly name of the value set

Errors

Code	Error
304	HTTP_304_NOT_MODIFIED
400	HTTP_400_BAD_REQUEST
401	HTTP_401_CLIENT_UNAUTHORIZED
403	HTTP_403_FORBIDDEN
404	UnclassifiedServerFailureException
405	HTTP_405_METHOD_NOT_ALLOWED
409	HTTP_409_CONFLICT
410	HTTP_410_GONE
412	HTTP_412_PAYLOAD_TOO_LARGE
412	HTTP_412_PRECONDITION_FAILED
412	HTTP_412_PRECONDITION_FAILED

422	HTTP_422_UNPROCESSABLE_ENTITY
500	HTTP_500_INTERNAL_ERROR
501	HTTP_501_NOT_IMPLEMENTED

Mandatory Software Components and Configurations

As MMI is a mostly cloud-hosted multi-tenant SaaS EHR, there are very few special requirements to be able to take advantage of the Certified FHIR functionality.

For MMI EMA systems, the version of the software required is version 7.0 or higher.

For MMI gGastro systems, the version of the software required is version xxxxx or higher.

Apps should support securing, sending, or receiving data secured with the TLS 1.2 or higher encryption protocol.

Authentication and Authorization

ModMed utilizes OAuth2.0 as its authentication and authorization mechanism in order to ensure the security and privacy of our customers and their patient data.

SMART on FHIR

ModMed utilizes SVAP Version Approved: [SMART App Launch 2.0](#) and supports:

- EHR-Launch
- Standalone-Launch
- “Both” (“EHR-Launch” and “Standalone-Launch”)

Includes the ability to initiate a “launch sequence” using the “launch-ehr” “SMART on FHIR® Core Capability” SMART EHR Launch mode as well as to launch using the “launch-standalone” “SMART on FHIR® Core Capability” SMART Standalone Launch mode.

Includes the ability to support SMART’s public client profile.

Includes the ability to support a “.well-known/smart-configuration.json” path including support for:

- “authorization_endpoint”;
- “token_endpoint”;
- “capabilities” including support for “launch-ehr”, “launch-standalone”, “client-public”, “client-confidential-symmetric”, “sso-openid-connect”, “context-banner”, “context-style”, “context-ehr-patient”, “context-standalone-patient”, “permission-offline”, “permission-patient”, “permission-user”, “authorize-post”, “permission-v2”;
- “grant_types_supported” with support for “authorization_code” and “client_credentials”;
- and
- “code_challenge_methods_supported” with support for “S256” and shall not include support for “plain”

Includes the ability to the ability to receive an authorization request including support for the following parameters:

- “response_type”;
- “client_id”;
- “redirect_uri”;
- “launch” (for EHR-Launch mode only);
- “scope”;
- “state”;
- “aud”;
- “code_challenge”; and
- “code_challenge_method”

Includes the ability to support the receipt of the following scopes and capabilities:

- “openid” (to support “sso-openid-connect” “SMART on FHIR® Capability”);
- “FHIR®User” (to support “sso-openid-connect” “SMART on FHIR® Capability”);
- “need_patient_banner” (to support “context-banner” “SMART on FHIR® Capability” for EHR-Launch mode only);
- “smart_style_url” (to support “context-style” “SMART on FHIR® Capability” for EHR-Launch mode only);
- “launch/patient” (to support “context-standalone-patient” “SMART on FHIR® Capability” for Standalone-Launch mode only);
- “launch” (for EHR-Launch mode only);
- “offline_access” (to support “permission-offline” “SMART on FHIR® Capability”);
- Patient-level scopes (to support “permission-patient” and “SMART on FHIR® Capability”);
- User-level scopes (to support “permission-user” “SMART on FHIR® Capability”); and

- SMARTv2 scope syntax for patient-level and user-level scopes (to support “permission-v2” “SMART on FHIR® Capability”)

Vendor/App Registration

Before registering an App, the vendor will need to know and select from the options below as to the type of app and required configurations required.

Application Name

Description

Access Type

- Public
- Client-Confidential

PKCE

- None
- PKCE s256

App Type

- Patient
- Provider
- Patient and Provider
- Bulk

FHIR Version

- v4.0.1

Launch Url

Redirect Url

Logo Url

Policy Url

Terms of Service Url

Standard Scopes

- openid
- launch
- launch/patient
- online_access

Optional Standard Scopes

- fhirUser
- offline_access
- Patient Scopes
- patient/AllergyIntolerance.rs
- patient/CarePlan.rs
- patient/CareTeam.rs
- patient/Condition.rs
- patient/Device.rs
- patient/DocumentReference.rs
- patient/DiagnosticReport.rs
- patient/Encounter.rs
- patient/Goal.rs
- patient/Immunization.rs
- patient/Location.rs
- patient/Medication.rs
- patient/MedicationRequest.rs
- patient/Observation.rs
- patient/Organization.rs
- patient/Patient.rs
- patient/Practitioner.rs
- patient/PractitionerRole.rs
- patient/Procedure.rs
- patient/Provenance.rs
- User Scopes
- user/AllergyIntolerance.rs
- user/CarePlan.rs
- user/CareTeam.rs
- user/Condition.rs
- user/Device.rs
- user/DocumentReference.rs
- user/DiagnosticReport.rs
- user/Encounter.rs

- user/Goal.rs
- user/Immunization.rs
- user/Location.rs
- user/Medication.rs
- user/MedicationRequest.rs
- user/Observation.rs
- user/Organization.rs
- user/Patient.rs
- user/Practitioner.rs
- user/PractitionerRole.rs
- user/Procedure.rs
- user/Provenance.rs

[Click here](#) to register as a new vendor or app.

FHIR Endpoints

[Click here](#) for the published list of publicly available endpoints for MMI customers. - PROD

Overview of FHIR Bulk

ModMed supports a Bulk FHIR API implementation so that authorized vendors can access data from practices in a bulk manner. This could be data for all patients in a practice; data for groups of patients in a practice or all data from a practice. The purpose of this could be for research or analyzing the population data to help practices serve their patients better.

The individual API calls would need a large number of calls to access the same amount of data that could be retrieved in a single bulk API call. Initially the Bulk data client will kick off the request for data to the server. Once the request is made, a response will be returned which will allow the client to know how to get the status of the request. Bulk requests will take time depending on the amount of data being prepared for return.

The Bulk client will need to poll the status URL periodically to check on the status of the request. Once the bulk processing is done by the server, a manifest file will be created which will have all the ndjson files that have the FHIR bulk data.

Vendors who want to pull Bulk Data from modmed will need to sign up their apps for Bulk data pull through the [vendor registration link](#). Once modmed has approved the Bulk FHIR app, vendors can start making the Bulk calls.

More Details on Creating Bulk FHIR Vendors

Vendors can create Bulk apps using the vendor registration link. Every practice that needs to be integrated with would need their own separate vendor app created.

The following parameters need to be paid attention to when creating the Bulk app.

App Type - Bulk

Bulk Data FHIR Url - url of the practice

Scopes

- openid
- online_access
- system/AllergyIntolerance.rs
- system/CarePlan.rs
- system/CareTeam.rs
- system/Condition.rs
- system/Device.rs
- system/DocumentReference.rs
- system/DiagnosticReport.rs
- system/Encounter.rs
- system/Goal.rs
- system/Immunization.rs
- system/Location.rs
- system/Medication.rs
- system/MedicationRequest.rs
- system/Observation.rs
- system/Organization.rs
- system/Patient.rs
- system/Practitioner.rs
- system/PractitionerRole.rs
- system/Procedure.rs
- system/Provenance.rs

Following are the different API calls allowed

- {base_url}/Patient/\$export
- {base_url}/\$export?_since=2022-10-01T00:00:00&_outputFormat=ndjson
- {base_url}/Group/1.105681.22.0.1/\$export

Following is an overview of the workflow that happens as part of the FHIR Bulk process.

Start the Bulk FHIR Data Request

Vendors will first need to know the base url of the practice they want to integrate with. Then they will need to contact modmed to get Patients Groups setup in order to make the Grouped export calls.

The Patient export returns FHIR resources in the USCDI data set.

When making a Group export call, parameters of `_since` and `_outputFormat` are supported. Only 'ndjson' format is supported for the Output.

The parameters supported in the various data sets are shown in the metadata section. The same data available through the USCDI single API calls are supported in the Bulk calls.

Check Status of the Bulk Request

After making the Bulk API call, the Content-Location will return how to check the status of the Bulk call. Depending on the size of the customer patient database, the calls will take time to return the data, hence checking the status would be necessary.

Below is an example of how to check the status of a Bulk request that was made

```
{base_url}/$export-status/b3a288d02e2a0aa63487b9c512f17187
```

After this request is completed, the status API returns the URL for the resource files.

For example :-

```
url":"https://modmed-fhir-batch.s3.us-east-2.amazonaws.com/ema/100491/141be1b64458efc  
c0d7aa3b0154be48a/encounter_1.ndjson....."
```

Viewing the Resource Files

Once the Bulk process is done, separate files get generated for each resource. The format of each of the files in 'ndjson'. Each file contains a maximum of 1000 resources.

Here is a sample of a file for the 'Medication Request' Resource.

```
{"resourceType":"MedicationRequest","id":"1.100491.15.42308","meta":{"lastUpdated":"2022-10-21T08:4  
{"resourceType":"MedicationRequest","id":"1.100491.15.42313","meta":{"lastUpdated":"2022-10-25T07:5  
{"resourceType":"MedicationRequest","id":"1.100491.15.42333","meta":{"lastUpdated":"2022-10-27T11:2  
{"resourceType":"MedicationRequest","id":"1.100491.15.42334","meta":{"lastUpdated":"2022-10-27T11:2
```

Deleting the Bulk Request

If a vendor started a bulk request and then decides to delete the request, we can support that using a delete CALL on the Bulk Request.

```
{base_url}/fhir-services/$export-status/d60cbaa19d337fbfb8ba2677d4dc30a4
```

Error Cases

If vendors try to access files in a different format, for example 'csv', then we will throw a '400 Bad Request' error as this format is not supported. The error message would state 'Invalid Tenant'.

```
{base_url}/$export?_since=2022-10-01T00:00:00&_outputFormat=csv
```