# Health Plan – ESI
# FHIR Interaction Model

## Health Services Technology

V.14 11/05/2021

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EXPRESS SCRIPTS® CHAMPIONS FOR BETTER®

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# Version History

| Date | Version | Comments |
|---|---|---|
| 08/07/2020 | 0.1 | Initial draft release |
| 08/26/2020 | 0.2 | Added preliminary data for DaVinci Formulary, minor edits based on feedback from FHIR SME. |
| 09/09/2020 | 0.3 | Added information on demographic based patient search in the Patient Identity section. Updated some information on the US Core profiles and the expected data to be provided (CarePlan, Procedure). Began guidance for Pharmacy Network support within the Provider Directory section. |
| 09/23/2020 | 0.4 | Added FAQ section with questions / answers from first open office hours. Added information on demographic based search and updated the note on patient cross referenced information. |
| 10/07/2020 | 0.5 | Added some information to the MedicationRequest profile.<br><br>Endpoint URL for on-prem test server modified from .../pbm-fhir/.. to .../fhir/...<br><br>Added information regarding a Coverage-based cross reference to obtain the ESI identifier for a Patient for inquiries.<br><br>Added a significant amount of information to the Provider Directory section on how ESI plans to make Pharmacy Network information available.<br><br>Added Q&A information from Sept. 28 and Oct. 5 open office hour sessions. |
| 10/21/2020 | 0.6 | Added information on scope of data availability per plan type to the Formulary and Provider Directory sections.<br><br>Added the External API Consumer Security Guide into the Appendix. It contains the basics on how to perform the OAuth 2.0 handshake with the Express Scripts API Gateway to obtain an access token and use it in subsequent FHIR API calls.<br><br>Started providing details in the CARIN Implementation Guide for Blue Button® section.<br><br>Q&A information from Oct. 19 and Oct. 26 open office hour sessions. |
| 11/18/2020 | 0.7 | System property for ESI custom identifiers now use https://code.esrx.com (singular) rather than previously stated https://codes.esrx.com (plural).<br><br>Updated logical architecture diagram.<br><br>Created templates for each profile in each IG and started populating the information, beginning with US Core.<br><br>Note about Organization resource added across all IGs. It is important that clients utilize the _profile query parameter to ensure the scope of Organizations is properly limited for the intended purpose. For example, |

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| | | |
|---|---|---|
| | | without the use of _profile, an inquiry for Provider Directory purposes could get back Organization resources that are only intended for use within an Administrative (CARIN IG for Blue Button®) context. |
| 12/02/2020 | 0.8 | Removed MedicationRequest example and replaced with Observation example.<br><br>Replaced http://code.esrx.com/mgp-id with http://code.esrx.com/mgp<br><br>Continued filling in information for US Core resources in alphabetical order. Status for Encounter profile changed to supported, specifically for MTM interactions. |
| 12/22/2020 | 0.9 | Additions throughout the document, including production URLs, details within US Core, especially for CarePlan and Vital Signs, details in CARIN IG for Blue Button®, and updates to the CoveragePlan documentation within Formulary. |
| 1/20/2021 | 0.10 | Added in SHOULD and SHALL search query parameters, examples, along with supportability notes from ESI. |
| 4/27/2021 | 0.11 | Consolidated redundant information.<br><br>Additions throughout the document including pagination, information around supported implementation guides, a resource cross-referential diagram, updated examples to match available data sets in the PBM UAT (test) environment, and updated information by profile.<br><br>FAQ updated with question areas and added the ESI Production Support triage recommendation. |
| 6/24/2021 | 0.12 | Addition of details around the "Real Time" FHIR API service level metrics, Bundle.total attribute behaviors across the ESI FHIR server, updated cross-referential diagram, Patient Access data sensitivity tag options, $everything operation supportability, dependent information to the Coverage resource information, ExplanationOfBenefit search parameter supportability, and updated information for CoveragePlan (List) and FormularyDrug (MedicationKnowledge).<br><br>ESI support hours added for the FHIR APIs added into the FAQ ESI Production Support section. |
| 7/23/2021 | 0.13 | Logical architecture diagram updated, Provenance support updated |
| 11/01/2021 | 0.14 | Fixed error in the security section on page 9, change {baseURL} to {hostname}.<br><br>Reinserted Provenance as this profile is now available, added search parameters. |

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# FHIR for CMS Interoperability

In 2020, Centers for Medicare & Medicaid Services (CMS) published rules primarily focused on making healthcare information accessible via an API to individuals covered through a government healthcare program, such as Medicare Advantage. Please consult the CMS website for more detailed information about the rules (https://www.cms.gov/Regulations-and-Guidance/Guidance/Interoperability/index).

While Express Scripts does not have a regulatory obligation under the CMS rules, we recognize that many of the Health Plan clients we serve do have an obligation and data that Express Scripts creates and utilizes on behalf of our clients does fall within the regulated data domains prescribed in the rules. To support our clients, we have FHIR APIs available for retrieving applicable data from the four Implementation Guides required by CMS.

Our documentation here is intended to be supplementary guidance to the information provided by the Implementation Guides. Please be sure you are familiar with these Implementation Guides.

# FHIR at Express Scripts

Express Scripts has embraced FHIR as a key part of our integration and interoperability strategy. Our goal is to make data we hold, that aligns with a concept within FHIR, securely available to authorized parties via a FHIR-conformant API. This is not limited to plans mandated by regulatory agencies, such as ONC and CMS, rather this strategy applies to all of the plans and groups that we manage on your behalf.

This is not a replacement for our proprietary API strategy but rather an extension of our strategy, leveraging industry standards where appropriate.

We are committed to working with our partners that provide us healthcare information to do so using the FHIR format.

We are committed to working with health information exchanges, electronic medical record (EMR) networks, and other provider-based sources of healthcare information to leverage FHIR-based data exchanges, where appropriate, as part of our business processes with the goal of improving the efficiency and the effectiveness of those processes, to achieve better outcomes and experiences for our members, our clients, and the provider community.

## Interaction Guide Scope

The information contained in this document currently represents work in progress and is subject to change. It is being provided to keep our efforts as transparent as possible and promote collaboration with the technology partners of our health plan clients. Please direct any questions regarding the content through your Express Scripts Account Management team.

Please note, the focus of this document is on FHIR-based, real-time interactions. Additional information around Express Scripts' FHIR Bulk Data Access is available in an extension guide available through our Developer Portal or by contacting your Express Scripts Account Management team.

While existing file transfers or propriety APIs maybe leveraged for CMS rules coverage, support for these is outside of the scope of this document. There are no plans to translate any of these existing data exchange means into the FHIR format.

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## ESI FHIR Servers

ESI will have FHIR servers for its PBM operations as well as its various Pharmacy operations.

Data in the PBM FHIR server is generally available to Health Plan clients and will cover the domains required for Health Plan CMS compliance. The PBM FHIR server will provide access to data created or utilized within PBM operations, such as claims adjudication, prior authorization/utilization management decisions, and data associated with adherence and other clinical programs tied to the member's benefit.

The PBM FHIR server will not provide access to any data that is collected, stored, and exclusively used within the operations of our pharmacies.

| Environment | Base URL | Availability Date |
|---|---|---|
| Production PBM FHIR server base URL: | `https://api.express-scripts.io/pbm-fhir/v4/resources` | 2/26/2021 – Available: Provider Directory, Formulary, and Clinical (excluding ExplanationOfBenefit)<br><br>First week of May – Full availability |
| Stable Test PBM FHIR server base URL: | `https://api-uat.express-scripts.io/pbm-fhir/v4/resources` | Available |
| Interim Test On-Premise FHIR server base URL: | `https://api-uat.express-scripts.io/fhir/v4/resources` | Decommissioning 4/2/2021 |

Wherever you see `{baseURL}` throughout this document, one of the above URLs is what should be used, depending on which server is being utilized. Where `{hostname}` appears, it only refers to the hostname portion of the URIs above, e.g. `api.express-scripts.io`.

### Pharmacy Operations FHIR Servers

All pharmacies operated by Express Scripts, including, but not limited to, the Express Scripts Pharmacy, Accredo, and Freedom Fertility, will each have their own FHIR server for accessing data associated with their pharmacy operations. This data is not subject to CMS rules, and access to this data is not required for Health Plans to meet CMS obligations. Parties interested in accessing this information should contact Express Scripts. Sharing of pharmacy data is subject to pharmacy practice regulations, HIPAA privacy regulations, and ONC information blocking rules.

At this time, FHIR API based access for our pharmacy servers is not currently available to external parties.

### FHIR Server Service Level Agreements

Express Scripts has established an objective methodology to measure and report on the following target service level metrics. The Health Plan Client may, at its sole discretion, also implement such monitoring and measuring methodologies.

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**Uptime Service Level Metrics:**

Express Scripts Production API Uptime: 99.9%, for all hours, all days (excluding scheduled downtime).

| Per Year | Per Month | Per Week | Per Day |
|---|---|---|---|
| 8.77 hours | 43.85 minutes | 10.08 minutes | 1.44 minutes |

Express Scripts' test systems and test API environments shall have uptime requirements of not less 95% between 8AM and 8PM Central Time.

**FHIR API Call Response Time Service Level Metrics:**

"Real Time" FHIR API call response times are measured "in datacenter" from the moment an API call hits Express Script's external endpoint to the moment a response leaves Express Script's datacenter, excluding situations where the response time of a provider's IT system exceeded 2.0 seconds. In the event Express Scripts reports that datacenter response times have a median under 2 seconds but Health Plan Client measurements of response time show greater than that, the Health Plan Client should report to their ESI Account Representatives with supporting information for research and, if possible, resolution.

The service level goal for the "Real Time" FHIR API call response time is to achieve a median response time of 3-4 seconds.

These service level metrics do not apply to the FHIR for Bulk Data Access solutions.

## FHIR Server Functionality

### Response Pagination

Within the ESI FHIR servers, there are instances where response pagination may be encountered. This will result in the population of a "next" link within the response bundle. As this is server-level based functionality, our recommendation is to use the "next" link provided, as-is, and without alteration to maintain your original request results. Failure to maintain the "next" link provided in the response bundle may result in a repetition of the first page of responses or even errors.

There are 3 pagination styles that may be encountered across the ESI FHIR servers. An example of each style is outlined in the table below by the area where they may be encountered. These are subject to change.

| Area | Example pagination "next" link |
|---|---|
| Patient and DocumentReference | `{baseURL}/[Resource]?_getpages=[AssociatedBundleResourceID]&_getpagesoffset=10&_count=10&_pretty=true&_bundletype=searchset` |
| Clinical, Administrative, and Provider Directory | `{baseURL}/[Resource]?[original-search-parameters]&ct=[server-generated-code]` |
| Formulary | `{baseURL}/[Resource]?[original-search-parameters]&_pagesoffset=2&_pagesize=20` |

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### Bundle.total Attribute Behavior

The ESI FHIR servers handles the count shown within the Bundle.total attribute differently based on the area. The different behaviors are outlined in the table below. These are subject to change.

| Area | Bundle.total Behavior |
|---|---|
| Patient and DocumentReference | The Bundle.total attribute is populated and will reflect the total count of records available on the server associated to the query, regardless of how many pages exist to retrieve all the records. |
| Clinical, Administrative, and Provider Directory | The Bundle.total attribute is not populated.<br><br>As this is not populated, an alternative method to retrieve this count would be to add "_total=accurate" to the query parameter. This will provide a count across all the results, regardless of how many pages.<br><br>Example: If I search for a Coverage resource and add "_total=accurate" to the query parameter, the first page of results may show 10 records but the Bundle.total attribute may show 87 (the total number of records on the server). |
| Formulary | The Bundle.total attribute will reflect the number of records included in the response on the specific results page. |

## FHIR Server Security

The Express Scripts PBM FHIR server is secured using OAuth 2.0 credentials, leveraging the Client Credentials grant type. Access to any FHIR API will require client authentication and authorization. Health plan clients or their delegates will only have access to their own data. This is appropriate for B2B-style interactions.

This is the same security mechanism used by the Express Scripts proprietary APIs. If you already have a consumer key and secret for accessing our proprietary APIs, this same key and secret can be leveraged for accessing the PBM FHIR server. However, you are not required to use the same credentials. If your Information Security guidelines call for separate credentials for separate purposes (e.g. one set of credentials for API use from your digital customer service systems and a separate set of credentials for FHIR access), additional credentials can be issued. Please contact your ESI Account Manager for assistance.

Separate credentials must be issued for the test environment and the production environment.

The basic mechanism is this, where the payload will indicate the grant type desired (client credentials), your consumer key, and your consumer secret.

```
POST {hostname}/v1/auth/oauth2/token
```

Our server will return an access token (assuming the key and secret are correct). This access token is then included on every FHIR API request submitted within the Authorization HTTP header.

For more details on the OAuth 2.0 security patterns, please refer to the "Express Scripts API Consumer Security Guide" section in the Appendix of this document.

Express Scripts is not providing any public, unauthenticated APIs at this time.

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## Requesting Access to the FHIR server

In order to obtain access to the Express Scripts FHIR server, contact your account management team and/or client strategist. As stated in the security section, you will not need to obtain new API credentials if you already have them (unless you desire a separate set for FHIR use), however, Express Scripts will need to update the configuration for those credentials to grant access to the FHIR server.

If you do not currently have API credentials, we will need the email address of the individuals in your organization that should receive the secure email containing the credentials in order to execute our process.

## Heartbeat Checks

If you want to regularly ping an ESI FHIR server to check on availability, the recommended endpoint is the FHIR metadata endpoint:

```
GET {baseURL}/metadata
```

This provides the CapabilityStatement resource from the FHIR server, which both exercises the connectivity between the FHIR server and its underlying data store, which are the two components required for API availability.

## Other FHIR Features

- Bulk FHIR API – Please refer to the Bulk FHIR API Interaction Guide (June 2021 Production release)
- Payer-to-Payer Data Exchange – Express Scripts is still identifying requirements of this for the 1/1/2022 regulation.

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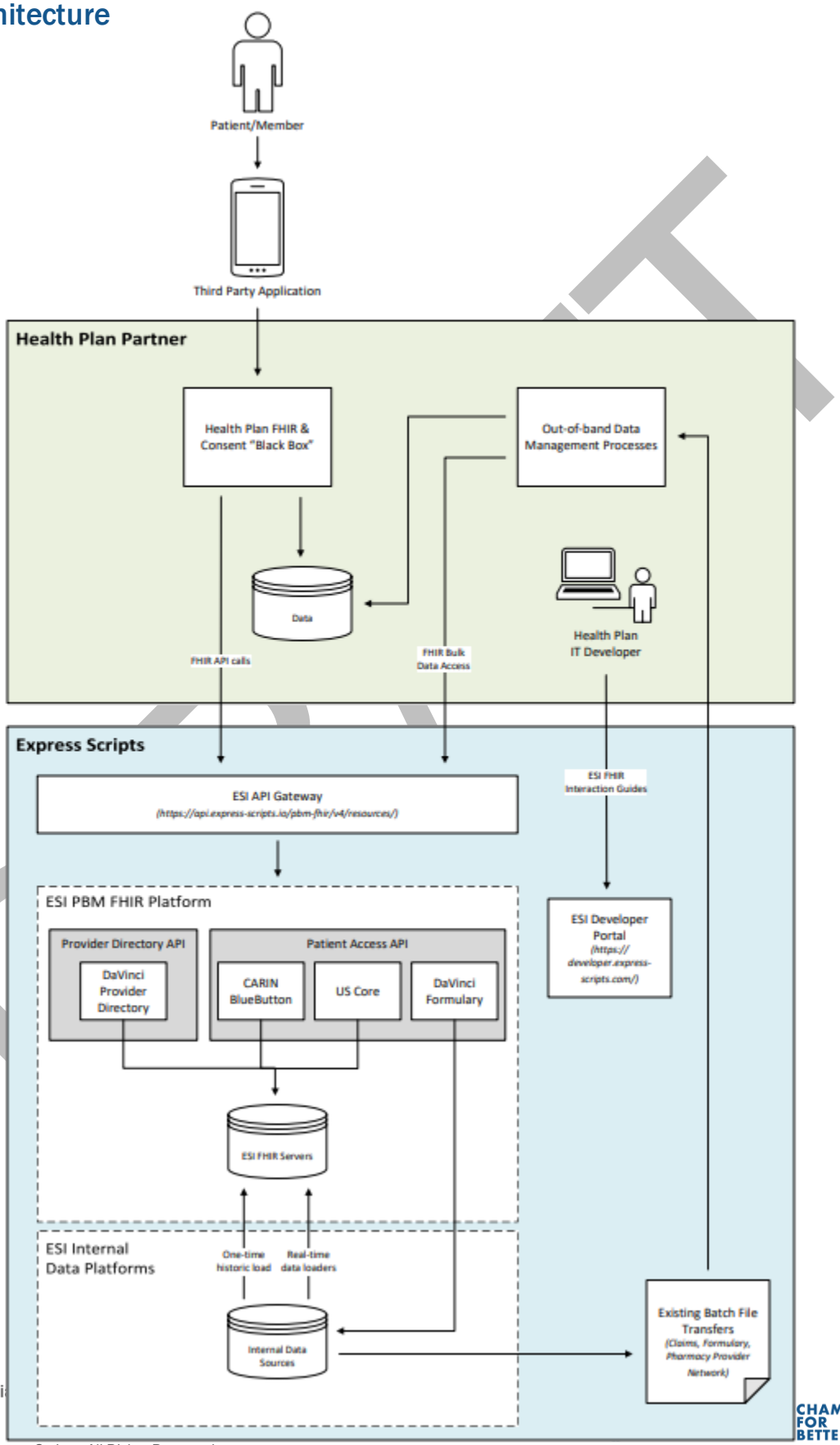
## Logical Architecture



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# CMS Implementation Guides

## Patient Access API

The Patient Access API covers three areas of information:

| Data Area | Link | Current Guide Version | ESI Supported Version |
|---|---|---|---|
| Clinical | US Core implementation guide: https://www.hl7.org/fhir/us/core/ | STU3 Release 3.1.1 | STU3 Release 3.1.1 |
| Administrative | CARIN for Blue Button® implementation guide: http://hl7.org/fhir/us/carin-bb/ | STU1 Release 1.0.0 | STU1 Release 1.0.0 |
| Formulary | DaVinci Payer Data Exchange (PDex) US Drug Formulary implementation guide: http://hl7.org/fhir/us/davinci-drug-formulary/ | STU 1.0.1 Release 1.0.1 | STU 1.0.1 Release 1.0.1 |

Please note, the Formulary Data interaction models are not patient-specific. The working group indicated to us that this API was designed with "plan shopping" in mind, however, the rules placed this under the Patient Access API. It is your decision on how you wish to restrict (or not restrict) third party application access to plan information outside of the patient's plan. Express Scripts will provide Formulary information for the plans required by the CMS rules, only. Formulary information for commercial plans or government plans not explicitly included in the CMS rules is not available through our FHIR API at this time.

These three areas must be queried in the context of an individual patient. The patient, through standard OAuth 2.0 mechanisms, must explicitly inform the Health Plan's systems that the third-party app is authorized to access data on their behalf.

This authorization mechanism is responsibility of the Health Plan. In the context of CMS compliance, Express Scripts will not be providing a directly accessible FHIR API to third party applications or providing a mechanism for patients to grant consent. Instead, our FHIR API should be used in a B2B-style interaction by your systems, or those of a third-party vendor if you are relying on a third-party for your solution. Please note that access with a third-party vendor will require separate legal agreements with Express Scripts.

In the B2B-style approach, your systems will have access to all of your member's data that falls within the domains required by CMS. Our servers have the responsibility for ensuring this access while your FHIR server has the responsibility of making sure only the data the patient is allowed to access is provided. Express Scripts has no responsibility in enforcing caregiver/authorized representative relationships that may exist with the Health Plan client; this is the responsibility of the Health Plan.

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### Patient Identity / Patient Cross Reference

All interactions with Express Scripts are recommended to begin with a cross reference inquiry to allow the Health Plan client to obtain the ESI logical identifier for the ESI Patient resource that represents the individual whose data is being retrieved.

There are three options currently being researched by Express Scripts, and while we are working through the details, all options are currently listed in this document.



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- Coverage-based cross reference (recommended)
- Demographic-based inquiry (fallback)
- Patient-based cross reference

**Coverage-based Cross Reference (Recommended)**

In this approach, the first step is to perform a member match as the shared information between Express Scripts and a Health Plan client represents a member identifier, not a Patient identifier. The Health Plan should have access to membership/eligibility information as a result of the patient having authenticated with the Health Plan systems (or those of the partner to which they have delegated CMS support).

This membership information is used as a query parameter for a FHIR Coverage query taking the following format:

```
GET {baseURL}/Coverage?identifier=<member-id>
```

The Express Scripts Coverage resource will hold the member identifiers from our eligibility information on file. If multiple identifiers exist (e.g. Express Scripts generated identifier as well as a client provided identifier) both of these will be available on the Coverage resource.

Health Plan clients should be aware that if their member identifiers are not unique across all of their plans or if a shared membership identifier is used for both the subscriber and their beneficiaries (e.g. household), the possibility does exist that the above Coverage inquiry may match multiple Coverage resources.

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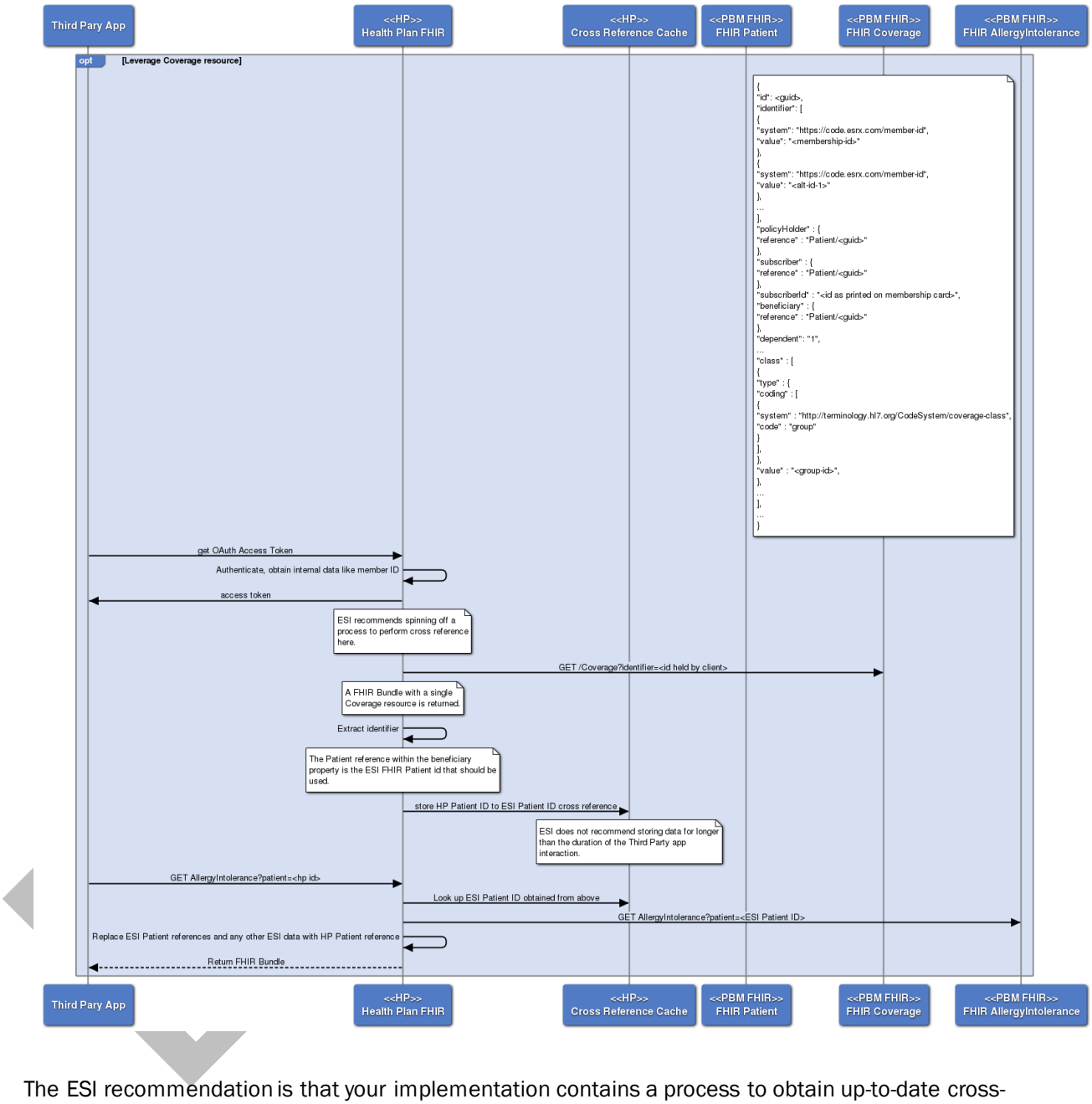
### Use Case #1: Single Coverage resource match

In this use case, the identifier used to perform the Coverage inquiry matches a single Coverage resource. For example, in the case of Medicare Advantage Part D plans, there should only be a single Coverage resource as these plans are assigned to individuals, not households.




The ESI recommendation is that your implementation contains a process to obtain up-to-date cross-reference information at the time the third-party application authenticates and obtains an access token.

The key steps shown in the sequence diagram above are:

1. Perform a Coverage inquiry using the membership ID for the individual which you have in your systems.



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2. Store the corresponding Patient resource ID from the "beneficiary" attribute of the Coverage resource returned in a cross-reference cache.
3. When the third-party application requests data, replace your FHIR Patient resource ID with the ESI Patient resource ID from the cross-reference cache, and call the ESI FHIR server.
4. Manipulate the ESI response so the data returned to the third-party application has your FHIR Patient resource ID instead of the ESI data. Other properties may also need to be modified as well.

#### Use Case #2: Membership ID assigned to household, subscriber is end user

If you assign membership IDs at a household level, you may receive a FHIR response bundle containing multiple Coverage resources, one for each party in the household. In this case, the ESI recommendation is to store cross-referential information for all members of the household that the end user is allowed to access (e.g. minor dependents, or adult beneficiaries where you have HIPAA sharing agreement from the parties involved).

#### Use Case #3: Member ID assigned to household, non-subscriber is end user

If you assign membership IDs at a household level, you may receive a FHIR response bundle containing multiple Coverage resources, one for each party in the household. Where the end user is not the subscriber and HIPAA sharing agreements for other beneficiaries are not in place, that end user must only be able to access their own data. In this situation, you should only store the cross-referential information for the specific individual in your cache.

#### Use Case #4: Membership ID is not unique across client plans

If your membership IDs are not unique across all of your plans, then you may receive a FHIR response bundle containing multiple Coverage resources which may contain individuals for which there is no relationship whatsoever.

**Demographic-based Cross Reference (fallback)**

In the event that a suitable shared key is not available, a demographic-based cross reference is recommended. Rather than a search by identifier alone, the health plan server should perform a search using name and birthdate. This search behavior is required to be supported by the US Core implementation guide and will be supported by the Express Scripts PBM FHIR server.

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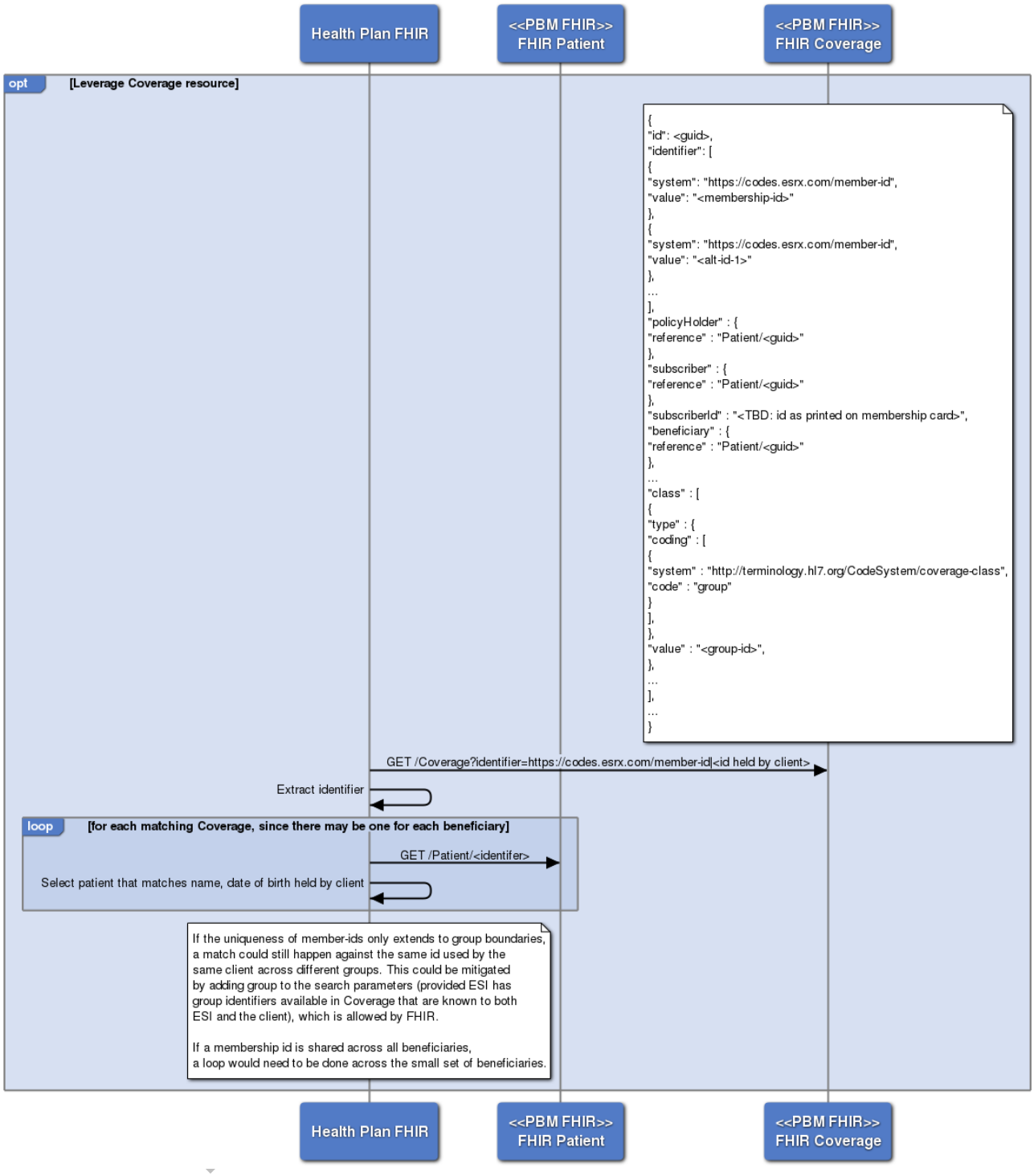


In the above example, if the patient's name is John Doe with a birthdate of January 1, 1950, the query to use is:

```
GET {baseURL}/Patient?name=John%20Doe&birthdate=1950-01-01
```

You will receive a FHIR response bundle that may return multiple matching results. For example (some portions of response removed for brevity):



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```
{
  "resourceType": "Bundle",
        "id": "73ab1c82-cfbe-422d-8a58-e354f37109c7",
        "type": "searchset",
        "total": 2,
        "entry": [
                {
                        "fullUrl": "https://api-uat.express-scripts.io/fhir/v4/resources/Patient/31191928-6acb-
                        4d73-931c-e601cc3a13fa",
                        "resource": {
                                "resourceType": "Patient",
                                "id": "31191928-6acb-4d73-931c-e601cc3a13fa",
                                "identifier": [
                                        {
                                                "system": "https://github.com/synthetichealth/synthea",
                                                "value": "2b083021-e93f-4991-bf49-fd4f20060ef8"
                                        },
                                ],
                                "name": [
                                        {
                                                "text": "John Doe",
                                                "family": "Doe",
                                                "given": [
                                                        "John"
                                                ]
                                        }
                                ],
                                "telecom": [
                                        {
                                                "system": "phone",
                                                "value": "555-598-9552",
                                                "use": "home"
                                        }
                                ],
                                "gender": "male",
                                "birthDate": "1950-01-01",
                                "address": [
                                        {
                                                "line": [
                                                        "892 Hoppe Annex"
                                                ],
                                                "city": "Wakefield",
                                                "state": "MA",
                                                "postalCode": "01880",
                                                "country": "US"
                                        }
                                ]

                        },
                        "search": {
                                "mode": "match"
                        }
                },
                {
                        "fullUrl": "https://api-uat.express-scripts.io/fhir/v4/resources/Patient/5cbc121b-cd71-
                        4428-b8b7-31e53eba8184",
                        "resource": {
                                "resourceType": "Patient",
                                "id": "5cbc121b-cd71-4428-b8b7-31e53eba8184",
                                "identifier": [
                                        {
                                                "system": "https://github.com/synthetichealth/synthea",
                                                "value": "2fa15bc7-8866-461a-9000-f739e425860a"
                                        },
                                ],
                                "name": [
                                        {
                                                "text": "Mr. John Doe",
                                                "family": "Doe",
                                                "given": [
                                                        "John"
                                                ],
                                                "prefix": [
                                                        "Mr."
                                                ]
                                        }
                                ],
                                "telecom": [
                                        {
                                                "system": "phone",
                                                "value": "555-677-3119",
                                                "use": "home"
```


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```
                                        }
                                ],

                                "gender": "male",
                                "birthDate": "1950-01-01",
                                "address": [
                                        {
                                                "line": [
                                                        "894 Brakus Bypass"
                                                ],
                                                "city": "Tauton",
                                                "state": "MA",
                                                "postalCode": "02718",
                                                "country": "US"
                                        }
                                ]
                        },
                        "search": {
                                "mode": "match"
                        }
                }
        ]
}
```


In this example, the search query returns two patients named John Doe, both born on 01/01/1950, from your member base. John Doe #1 lives in Wakefield, MA, while John Doe #2 lives in Taunton, MA. This address information, as well as the phone number information can be compared against information held in your FHIR server and allow you to make a determination.

Express Scripts strongly recommends that you follow your organization's patient matching procedures in deciding whether or not a match can be made with high confidence. Express Scripts will only return patients from your member population.

**Patient Resource based cross reference**

Express Scripts will populate an MGP (membership id, group id, person number) based business identifier in its Patient resource. This is based on ESI generated identifiers and not on client-provided information. In some situations (uncommon), a client may have this information, in which case this approach may be possible. To do so, begin with a FHIR Patient search:

```
GET {baseURL}/Patient?identifer=<mgp-id>
```

The <mgp-id> is a concatenation of the ESI generated member identifier, the group number, and the person number, separated by a "_" character. For example:

Member Identifier: A123456789
Group Identifier: ABCD1234
Person number: 001

The inquiry to be used would be:

```
GET {baseURL}/Patient?identifier=A123456789_ABCD1234_001
```

Assuming a match is found, Express Scripts will provide a FHIR response bundle with a single FHIR Patient resource. The FHIR Patient resource will contain the ESI logical id for the Patient that can then be used in subsequent inquiries, as shown below:


```
{
        "resourceType": "Bundle",
        "id": "bundle-example",
        "type": "searchset",
        "total": 1,
        …
        "entry": [
                {
```


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```
                        "fullUrl": "{baseURL}/Patient/8154eb7b-994c-4405-8eba-d00a7e539027",
                        "resource": {
                                "resourceType": "Patient",
                                "id": "8154eb7b-994c-4405-8eba-d00a7e539027",
                                "identifier": [
                                        {
                                                "system": "http://code.esrx.com/mgp",
                                                "value": "A123456789_ABCD1234_001"
                                        },
                                ...
                        }
                },
                "search": {
                        "mode": "match"
                }
        ]
}
```


It is important that you maintain a cache of the cross-reference between your patient identifier and the Express Scripts logical identifier. This cache only needs to be maintained for the duration of your member's interaction with a third-party application.

### Manipulating FHIR responses

Responses from the ESI FHIR servers should normally not be provided directly to third party apps without some data modification. FHIR extensively leverages references to other resources as part of its information model and these references typically only make sense within the context of a single FHIR server. If a party does not have access to that FHIR server, they will not be able to make inquiries to resolve those references.

Below is an example scenario for reference:

John Doe, a Medicare Advantage member with Great HealthPlan, Inc., is using a third-party application called MyHealth. He has gone through the process of granting access to his Great HealthPlan health data to the MyHealth application. The MyHealth application is now trying to retrieve DocumentReference resources for this member. The application knows that the Great HealthPlan patient identifier for John Doe is "99999999-99z9-99z9-zzzz-99z999zz9z9z", and calls Great HealthPlan FHIR server with the query below:

```
GET https://fhir.greathealthplan.com/DocumentReference?patient=99999999-99z9-99z9-zzzz-99z999zz9z9z
```

The Great HealthPlan FHIR server retrieves the data it has on file, but also needs to see what data Express Scripts has on file for John Doe. Great HealthPlan then looks up the shared identifier for John Doe, ghp-esi-john-doe-mgp-id, and performs the patient lookup to the ESI FHIR server:

```
GET {baseURL}/Patient?identifer=<ghp-esi-john-doe-mgp-id>
```

Within response from the ESI FHIR server query, the Great HealthPlan FHIR server is now able to obtain the ESI logical id for John Doe, "11111111-11a1-11a1-aaaa-11a111aa1a1a", and use to make any subsequent queries. (Note: Express Scripts uses GUIDs for its FHIR logical ids, so there is no concern that our identifiers will conflict with your identifiers.)

```
GET {baseURL}/DocumentReference?subject=11111111-11a1-11a1-aaaa-11a111aa1a1a
```

At this point, assume both parties hold a single DocumentReference resource for the member. Below is a side-by-side comparison of the two resources as they could exist in each parties' FHIR server (Great HealthPlan and ESI). A "recorded" property has been included for illustration purposes only - ESI will not be providing this property in our responses. Additionally, some properties have been omitted for readability.

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| Great HealthPlan resource | ESI resource |
|---|---|


```
{
    "resourceType": "DocumentReference",
    "id": "9999xxx9-x999-9999-x9x9-xxxx999999xx",
    "meta": {
        "versionId": "3",
        "lastUpdated": "2021-03-
02T21:21:49.463+00:00",
        "source": "#9jGLJeAQ9goGRuNo",
        "profile": [

"https://hl7.org/fhir/us/core/StructureDefinition-us-
core-documentreference.html"
        ]
    },
    "identifier": [
        {
            "system":
"https://code.greathealth.com/id",
            "value": "9999xxx9-x999-9999-x9x9-
xxxx999999xx"
        }
    ],
    "status": "current",
    "type": {
        "coding": [
            {
                "system": "https://loinc.org/",
                "code": "11488-4",
                "display": "Consultation Note"
            }
        ]
    },
    "category": [
        {
            "coding": [
                {
                    "system":
"http://hl7.org/fhir/us/core/CodeSystem/us-core-
documentreference-category",
                    "code": "clinical-note",
                    "display": "Clinical Note"
                }
            ]
        }
    ],
    "subject": {
        "reference": "Patient/99999999-99z9-99z9-zzzz-
99z999zz9z9z"
    },
    "content": [
        {
            "attachment": {
                "contentType": "text/plain",
                "data":
"VGhpcyBpcyBhIHNldCBvZiBzYW1wbGUgdGV4dCBmb3IgdGhlIERvY
3VtZW50UmVmZXJlbmNlIHJlc291cmNlIAgQ2xpbmljYWwgbm90ZXM
gd2lsbCBiZSBzaG93biBoZXJlIGluIFByb2R1Y3Rpb24u"
            }
        }
    ],
    "context": {
        "encounter": [
            {
                "reference": "Encounter/999y9y99-99y9-
99y9-9999-y9yyy9yyyy9y"
            }
        ],
        "period": {
            "start": "2020-01-28"
        }
    }
}
```



```
{
    "resourceType": "DocumentReference",
    "id": "1111ccc1-c111-1111-c1c1-cccc111111cc",
    "meta": {
        "versionId": "3",
        "lastUpdated": "2021-03-
02T21:21:49.463+00:00",
        "source": "#9jGLJeAQ9goGRuNo",
        "profile": [

"https://hl7.org/fhir/us/core/StructureDefinition-us-
core-documentreference.html"
        ]
    },
    "identifier": [
        {
            "system": "https://code.esrx.com/esi-id",
            "value": "1111ccc1-c111-1111-c1c1-
cccc111111cc"
        }
    ],
    "status": "current",
    "type": {
        "coding": [
            {
                "system": "https://loinc.org/",
                "code": "11488-4",
                "display": "Consultation Note"
            }
        ]
    },
    "category": [
        {
            "coding": [
                {
                    "system":
"http://hl7.org/fhir/us/core/CodeSystem/us-core-
documentreference-category",
                    "code": "clinical-note",
                    "display": "Clinical Note"
                }
            ]
        }
    ],
    "subject": {
        "reference": "Patient/11111111-11a1-11a1-aaaa-
11a111aa1a1a"
    },
    "content": [
        {
            "attachment": {
                "contentType": "text/plain",
                "data":
"VGhpcyBpcyBhIHNldCBvZiBzYW1wbGUgdGV4dCBmb3IgdGhlIERvY
3VtZW50UmVmZXJlbmNlIHJlc291cmNlIAgQ2xpbmljYWwgbm90ZXM
gd2lsbCBiZSBzaG93biBoZXJlIGluIFByb2R1Y3Rpb24u"
            }
        }
    ],
    "context": {
        "encounter": [
            {
                "reference": "Encounter/111b1b11-11b1-
11b1-1111-b1bbb1bbbb1b"
            }
        ],
        "period": {
            "start": "2020-02-17"
        }
    }
}
```


The bolded sections show two references in this DocumentReference resource, one for the subject/patient (FHIR Patient reference) and one for the encounter (FHIR Encounter). While both of these records are for

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the same patient and the same encounter, because one came from the Great HealthPlan FHIR server and the other came from the ESI PBM FHIR server, they each have their own identifiers. If ESI data were to be sent back to the MyHealth app, the MyHealth app will view both identifiers as valid within the Great HealthPlan FHIR server. This creates two problems:

1. The DocumentReference resource from Express Scripts has a patient reference that does not match the requested patient id from the MyHealth app:

   MyHealth sent: “Patient/99999999-99z9-99z9-zzzz-99z999zz9z9z",
   while the ESI resource contains “Patient/11111111-11a1-11a1-aaaa-11a111aa1a1a”.

2. The DocumentReference resource uses ESI logical identifiers, both for the resource itself, as well as any referenced resources (Patient/ and Encounter/).

If the MyHealth app tries to use these identifiers in a subsequent request like below, the Great HealthPlan FHIR server will receive this id and return an error since it does not have an Encounter resource with this id.

```
GET https://fhir.greathealthplan.com/Encounter/111b1b11-11b1-11b1-1111-
b1bbb1bbbb1b
```

There are three options you can take to help maintain referential integrity within your systems:

**Option 1: Store resources locally upon retrieval, including referenced resources**

Upon receipt of data from the Express Scripts FHIR server, you can choose to store these resources locally within your own server, assigning new ids that are known to your server, while keeping the ESI logical ID available as a business identifier. In addition, any resources referenced by the Express Scripts FHIR server must also be retrieved and stored.

When storing a resource, a duplication check should be performed first. Building from the example above, the Great HealthPlan FHIR server would receive the Express Scripts resource shown on the right in the table, and do two things:

1. Determine if it already has this resource in storage by performing this inquiry:

   ```
   GET {baseURL}/DocumentReference?identifier=1111ccc1-c111-1111-c1c1-cccc111111cc
   ```

   If not, retrieve the referenced resources, except for the Patient resource. For this specific example, you can use the Encounter query similar to below:

   ```
   GET {baseURL}/Encounter/111b1b11-11b1-11b1-1111-b1bbb1bbbb1b
   ```

2. Store this in your FHIR server using the query below with a modified payload. Your server will then return a newly assigned logical identifier.

   ```
   POST https://fhir.greathealthplan.com/Encounter
   ```

   ```
   {
     "resourceType": "Encounter",
     "identifier": {
       "system": "https://code.esrx.com/esi-id",
       "value": "111b1b11-11b1-11b1-1111-b1bbb1bbbb1b",
     },
     …
   }
   ```

Once you have your own logical identifiers for referenced resources that are linked to the ESI resources, you can now store the DocumentReference resource like this:

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```
POST https://fhir.greathealthplan.com/DocumentReference
```

```
{
    "resourceType": "DocumentReference",
    "id": "9999xxx9-x999-9999-x9x9-xxxx999999xx",
    "meta": {
        "versionId": "3",
        "lastUpdated": "2021-03-02T21:21:49.463+00:00",
        "source": "#9jGLJeAQ9goGRuNo",
        "profile": [
            "https://hl7.org/fhir/us/core/StructureDefinition-us-core-documentreference.html"
        ]
    },
    "identifier": [
        {
            "system": "https://code.greathealth.com/id",
            "value": "9999xxx9-x999-9999-x9x9-xxxx999999xx"
        },
        {
            "system": "https://code.esrx.com/esi-id",
            "value": "1111ccc1-c111-1111-c1c1-cccc111111cc"
        }
    ],
    "status": "current",
    "type": {
        "coding": [
            {
                "system": "https://loinc.org/",
                "code": "11488-4",
                "display": "Consultation Note"
            }
        ]
    },
    "category": [
        {
            "coding": [
                {
                    "system": "http://hl7.org/fhir/us/core/CodeSystem/us-core-documentreference-category",
                    "code": "clinical-note",
                    "display": "Clinical Note"
                }
            ]
        }
    ],
    "subject": {
        "reference": "Patient/99999999-99z9-99z9-zzzz-99z999zz9z9z"
    },
    "content": [
        {
            "attachment": {
                "contentType": "text/plain",
                "data":
"VGhpcyBpcyBhIHNldCBvZiBzYW1wbGUgdGV4dCBmb3IgdGhlIERvY3VtZW50UmVmZXJlbmNlIHJlc291cmNlLiAgQ2xpbmljYWwgbm90ZXMgd2lsbCBiZSBzaG93biBoZXJlIGluIFByb2R1Y3Rpb24u"
            }
        }
    ],
    "context": {
        "encounter": [
            {
                "reference": "Encounter/999y9y99-99y9-99y9-9999-y9yyy9yyyy9y"
            }
        ],
        "period": {
            "start": "2020-01-28"
        }
    }
}
```

Keep in mind, de-duplication checks should be performed. You may already have stored these referenced resources previously and in the case of master data, such as Encounter, you would have equivalent data from your own sources. It is recommended that you add the ESI logical identifier to the business identifier collection on your master resources so it can be used for future cross-referencing purposes.

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**Option 2: Rewrite references**

In this approach, your server will need to modify the data returned by Express Scripts with an indicator allowing your FHIR server to know the reference is an Express Scripts identifier. For example, using the same sample DocumentReference resource:


```
{
    "resourceType": "DocumentReference",
    "id": "1111ccc1-c111-1111-c1c1-cccc111111cc",
    "meta": {
        "versionId": "3",
        "lastUpdated": "2021-03-02T21:21:49.463+00:00",
        "source": "#9jGLJeAQ9goGRuNo",
        "profile": [
            "https://hl7.org/fhir/us/core/StructureDefinition-us-core-documentreference.html"
        ]
    },
    "identifier": [
        {
            "system": "https://code.esrx.com/esi-id",
            "value": "1111ccc1-c111-1111-c1c1-cccc111111cc"
        }
    ],
    "status": "current",
    "type": {
        "coding": [
            {
                "system": "https://loinc.org/",
                "code": "11488-4",
                "display": "Consultation Note"
            }
        ]
    },
    "category": [
        {
            "coding": [
                {
                    "system": "http://hl7.org/fhir/us/core/CodeSystem/us-core-documentreference-category",
                    "code": "clinical-note",
                    "display": "Clinical Note"
                }
            ]
        }
    ],
    "subject": {
        "reference": "Patient/11111111-11a1-11a1-aaaa-11a111aa1a1a"
    },
...
```


Your server then would modify the resource by appending a prefix to the logical ID and send it to the third-party app (MyHealth application) similar to below:


```
{
    "resourceType": "DocumentReference",
    "id": "ESRX-1111ccc1-c111-1111-c1c1-cccc111111cc",
    "meta": {
        "versionId": "3",
        "lastUpdated": "2021-03-02T21:21:49.463+00:00",
        "source": "#9jGLJeAQ9goGRuNo",
        "profile": [
            "https://hl7.org/fhir/us/core/StructureDefinition-us-core-documentreference.html"
        ]
    },
    "identifier": [
        {
            "system": "https://code.esrx.com/esi-id",
            "value": "ESRX-1111ccc1-c111-1111-c1c1-cccc111111cc"
        }
    ],
    "status": "current",
    "type": {
        "coding": [
            {
                "system": "https://loinc.org/",
                "code": "11488-4",
                "display": "Consultation Note"
            }
```


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```
        ]
    },
    "category": [
        {
            "coding": [
                {
                    "system": "http://hl7.org/fhir/us/core/CodeSystem/us-core-documentreference-category",
                    "code": "clinical-note",
                    "display": "Clinical Note"
                }
            ]
        }
    ],
    "subject": {
        "reference": "Patient/ESRX-11111111-11a1-11a1-aaaa-11a111aa1a1a"
    },
...
```

There are three modifications needed in this option.

1. The resource ID itself must be modified with a prefix, suffix, or some other indicator that will be unique to ESI provided IDs if they are sent back to your server. In the example above, if the MyHealth app sends:

   ```
   GET https://fhir.greathealthplan.com/DocumentReference/ESRX-1111ccc1-c111-1111-c1c1-cccc111111cc
   ```

   The Great HealthPlan FHIR server can be configured to recognize the ESRX prefix and instead route this request (minus the "ESRX-" prefix) to the ESI FHIR server.

2. Because your FHIR server already has performed the cross-reference between Express Scripts' Patient resource and yours, you can safely replace this with your Patient resource logical id, since this is what was originally sent by the MyHealth app.

3. For other referenced resources, the ids provided must also be augmented with a prefix, suffix, or some other indicator of your choosing, just as with the ID of the resource itself. In the example above, the Encounter reference was changed to "ESRX-111b1b11-11b1-11b1-1111-b1bbb1bbbb1b". This is an activity that must occur on your server.

   Because Express Scripts will not be aware of the algorithm used by your server to assign identifiers, only you will know what string will result in something that you can unequivocally know to route to the Express Scripts FHIR server.

   For example, ESI utilizes GUIDs for its FHIR logical IDs. If you are doing the same, you would not be able to determine whether a given GUID passed in from the third-party app was assigned by your server or by the Express Scripts FHIR server.

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**Option 3: Bulk FHIR API**

Another option you may also consider would be performing a request of all information for a patient at the time of granting authorization or refreshing the access token for the application. This would allow you to obtain the information from Express Scripts out-of-band from a real-time patient request.

For additional information around this option, please refer the Bulk FHIR API Interaction Guide available on the ESI Developer Portal or reach out to your ESI Account Management team.



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### Patient Access Data Sensitivity

For scenarios where a parent or guardian may log into a 3rd party application on behalf of their minor child or dependent adult, it may be necessary to filter specific data sets.

As of 7/1, the Express Scripts Condition resource will be tagged as either "N" (for normal) or "R" (for restricted). Resources flagged with the "R" (for restricted) data will have ICD codes related to one of the following 6 disease states:

- HIV/AIDs
- STD
- Alcohol/Drug Abuse
- Abortion
- Mental Health
- Contraception

Express Scripts is still analyzing other code sets and will be working on similar tags for other resources (like AllergyIntolerance, Observation, and ExplanationOfBenefit) where this may also apply. Until this solution is extended beyond the Condition resource, all other resources may either contain no security tags or will be defaulted to an "N" (for normal) security flag.

Below are two examples of how to retrieve all "N" (normal) resources using the _security query parameter:

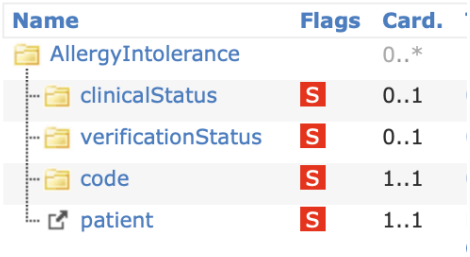
```
{baseURL}/Condition?_security= http://terminology.hl7.org/CodeSystem/v3-
Confidentiality|N
```

OR

```
{baseURL}/Condition?_security:not=http://terminology.hl7.org/CodeSystem/v3-
Confidentiality|R
```

### Supported Properties

Where the implementation guide classifies a property as supported, there are two possibilities as demonstrated in this example from AllergyIntolerance:




In the above example, items with the white "S" on the red background are ones that must be supported to be conformant with the profile in this implementation guide, but the cardinality of those properties must be taken into consideration.

For "must support" items with a cardinality of 1..1 or 1..*, the Express Scripts FHIR server will always return values for these properties or include a DataAbsentReason. For supported items with a cardinality of 0..1 or 0..*, the Express Scripts FHIR server will only return values for these properties if our practices have captured this information.

Building on this example, since we most typically receive Allergy Intolerance information from a patient, the clinical status or the verification status may be values we do not have on hand. In those cases, those properties would not be provided, but this is allowed, given the cardinality of 0..1.

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### Value Set Binding Strengths

Express Scripts PBM FHIR server conforms to the binding strengths as specified by the profile. Our interpretation is consistent with the following from http://hl7.org/fhir/R4/terminologies.html#strength.

| | |
|---|---|
| Required | To be conformant, the concept in this element SHALL be from the specified value set.<br><br>Express Scripts will use the specified value set. |
| Extensible | To be conformant, the concept in this element SHALL be from the specified value set if any of the codes within the value set can apply to the concept being communicated. If the value set does not cover the concept (based on human review), alternate codings (or, data type allowing, text) may be included instead.<br><br>Express Scripts will use the specified value set whenever we can accurately map our data to the specified value set. Only where human review indicates that there is no applicable concept in the value set will we utilize our own value set for the value. If this situation occurs, Express Scripts value sets will be fully documented and made available, at a minimum, in this document and via our developer portal. |
| Preferred | Instances are encouraged to draw from the specified codes for interoperability purposes but are not required to do so to be considered conformant.<br><br>Express Scripts will use the specified value set if it is already in use, or if doing so does not create significant risk. |
| Example | Instances are not expected or even encouraged to draw from the specified value set. The value set merely provides examples of the types of concepts intended to be included.<br><br>If this situation occurs, Express Scripts will use our current value sets in use for this information. Express Scripts value sets will be fully documented and made available, at a minimum, in this document and via our developer portal. |

### Search Parameters

Express Scripts, in general, will support all search criteria that are listed as "SHALL" or "MUST"[1] within the US Core Implementation Guide. Please consult the guidance for each profile for detailed support information for specific search parameters. Any other search criteria supported by our implementation, whether they are recommended by the Implementation Guide (parameters listed as "SHOULD" support) or added search parameters allowed by the FHIR spec but not explicitly specified within the US Core Implementation Guide will be listed within the details for each profile. This also holds true for the `_includes` and `_revincludes` parameters.

Search parameters outlined in each profile will fall into one the following 4 categories for support:

1. Supported, response expected – The search parameter can be requested and a full response is expected back, matching the query request.
2. Supported, empty bundle expected – The search parameter can be requested but an empty bundle will be returned in the response.
3. Partial support – The search parameter can be requested but may only return a response under certain conditions.

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[1] The "MUST" term is not an official conformance verb, but its use does appear in the current state of the Implementation Guides.

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4. Unsupported – The search parameter can be requested but a 4xx error message is to be expected.

## Additional Operations

### $everything Operation

The operation $everything will not be supported within the ESI FHIR Server.

## Retrieval Patterns

Individual FHIR resources can be retrieved by performing a patient lookup as described earlier, and then performing a direct inquiry for the clinical resources involved using the ESI Patient logical id as a search parameter, such as:

```
GET {baseURL}/AllergyIntolerance?patient=11111111-11a1-11a1-aaaa-11a111aa1a1a
```

An alternate mechanism that can be used (pending ESI support) is to do a direct inquiry to the resource with the shared identifier for the patient using the `:identifier` modifier.

```
GET {baseURL}/AllergyIntolerance?patient:identifer=111111111_AA1111111AAAA1A_001
```

Note: The use of the `:identifier` modifier for reference-based inquiries is not yet supported by the ESI PBM FHIR server.

The resource returned will conform to a superset of the four implementation guides required for CMS, as some resources are included in multiple implementation guides.

## Compartment-based Access

Patient compartment-based search, such as the following, is not supported at this time, but will be evaluated for future support in 2021. Compartment-based searching is not required by the US Core Implementation guide.

```
GET {baseURL}/Patient/11111111-11a1-11a1-aaaa-11a111aa1a1a/AllergyIntolerance
```

Note: Per FHIR specifications, a patient compartment search may not always return the same results as a search performed with a patient query parameter. If a resource can hold multiple references to a Patient, the results for the compartment-based search may return more records. For example, the query below will return Condition resources where either the patient or the asserter properties reference this patient resource, while the query parameter approach only returns Condition resources where the patient property matches.

```
GET {baseURL}/Patient/11111111-11a1-11a1-aaaa-11a111aa1a1a/Condition
```

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### CARIN Implementation Guide for Blue Button®

The CARIN Implementation Guide for Blue Button®, also known as CARIN Consumer Directed Payer Data Exchange is the mechanism by which payers can provide their information to consumers/patients via a FHIR API. The data set associated with it is known as the Common Payer Consumer Data Set (CPCDS).

It is important to know that the profiles associated with this are focused on payer to consumer exchange, not payer to payer exchange or provider to payer exchange. As a result, some FHIR resources in the administrative domain are not included in the profiles for this Implementation Guide (e.g. Claim and ClaimResponse).

There are eight resource profiles associated with this Implementation Guide, as well as one "Abstract Profile", C4BB ExplanationOfBenefit. For the purposes of this document, only the resource profiles are documented.

### Patient Access API – DaVinci Payer Data Exchange Formulary

The DaVinci Payer Data Exchange US Drug Formulary implementation guide specifies two profiles: CoveragePlan, leveraging the FHIR List resource, and FormularyDrug, leveraging the FHIR MedicationKnowledge resource. While this API is under the Patient Access API, neither of these profiles require a Patient resource reference. Express Scripts will not take any patient ID information as part of the interactions with these two profiles.

Express Scripts will ensure that any client accessing this API only has access to Formularies associated with those plans. If a Health Plan client chooses to restrict access to a particular application acting on behalf of a member/patient, it is the Health Plan's responsibility to determine the correct plan identifier for that member.

#### Plan Data Availability

Per our interpretation of the rules, Formulary information will only be made available for Medicare and Medicaid plans. It will not be available for Qualified Health Plans (QHPs) on the Federally Funded Exchanges (FFEs).

Formulary information via the FHIR server will also not be available for plans outside of CMS oversight (e.g. Commercial Plans) at this time.

#### Server implementation Guidance

The Express Scripts PBM FHIR server is based on the DaVinci Payer Data Exchange US Drug Formulary Implementation Guide, v1.0.0: STU1. (http://hl7.org/fhir/us/davinci-drug-formulary/). Express Scripts does not claim full conformance to this Implementation Guide, however, we have made every effort to be conformant where possible.

The key area where this applies is in providing metadata about the plan itself, such as the marketing URL. Express Scripts is not the plan sponsor for these plans, and as such, we strongly recommended that Health Plan clients populate this information themselves, rather than relying on information that Express Scripts may provide as part of our responses from our FHIR server. There may be situations where Express Scripts does not hold information required for conformance. It is the responsibility of the Health Plan to add in this required information prior to delivery back to requesting application. More details are provided within the profile-specific documentation.

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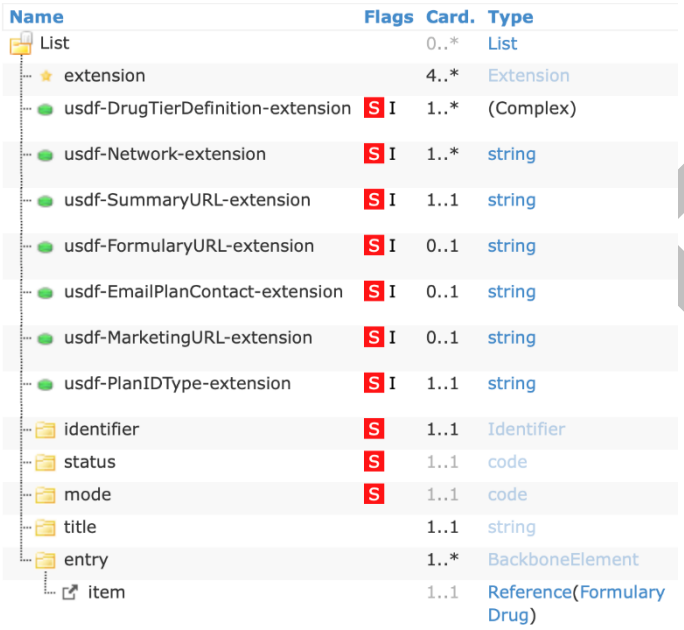
**Supported Properties**

Where the implementation guide classifies a property as supported, there are two possibilities as demonstrated in this example CoveragePlan (List):



| Name | Flags | Card. | Type |
|---|---|---|---|
| List | | 0..* | List |
| extension | | 4..* | Extension |
| usdf-DrugTierDefinition-extension | S I | 1..* | (Complex) |
| usdf-Network-extension | S I | 1..* | string |
| usdf-SummaryURL-extension | S I | 1..1 | string |
| usdf-FormularyURL-extension | S I | 0..1 | string |
| usdf-EmailPlanContact-extension | S I | 0..1 | string |
| usdf-MarketingURL-extension | S I | 0..1 | string |
| usdf-PlanIDType-extension | S I | 1..1 | string |
| identifier | S | 1..1 | Identifier |
| status | S | 1..1 | code |
| mode | S | 1..1 | code |
| title | | 1..1 | string |
| entry | | 1..* | BackboneElement |
| item | | 1..1 | Reference(Formulary Drug) |

In the above example, items with the white "S" on the red background are considered "supported" by the implementation guide, but the cardinality of those properties must be taken into consideration.

Our general approach for support properties is this:

- For supported items with a cardinality of 1..1 or 1..*, the Express Scripts FHIR server will return values for these properties or a DataAbsentReason.
- For supported items with a cardinality of 0..1 or 0..*, the Express Scripts FHIR server will only return values for these properties if our practices have captured this information.

As mentioned earlier, however, in the case of this Implementation Guide, Express Scripts may not have the required information for some supported properties with a cardinality of 1..1 or 1..*. For example, Express Scripts does not hold values for usdf-SummaryURL-extension in our systems. Properties falling into this situation will be highlighted in the documentation for each profile, and it is the responsibility of the Health Plan client to populate these values to ensure a compliant response is provided to the requesting third party application.

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This implementation guide outlines the FHIR profiles that Health Plans must make publicly available to any third party application that wishes to access it.

| Data Area | Link | Current Guide Version | ESI Supported Version |
|---|---|---|---|
| Provider Directory | http://hl7.org/fhir/us/davinci-pdex-plan-net/ | STU1<br>Release 1.0.0 | STU1<br>Release 1.0.0 |

For Medicare Advantage Part-D plans only, Health Plans must include Pharmacy Network information as part of the information they make available. This is where Express Scripts' role comes into play. Express Scripts will make Pharmacy network information available to our Health Plan clients for Medicare Advantage Part-D plans only. Pharmacy network information for plans outside of Medicare Advantage Part-D will not be available through our FHIR API at this time.

Furthermore, Express Scripts does not have any obligation to making this directly available to third parties. Express Scripts will make this information available to our health plan clients and will require client authentication prior to access. Health Plan clients will only have access to information about their own plans. It is the responsibility of the health plans to take this information and make it publicly available to third parties.

CMS requires an open, public API for provider directory information. Express Scripts will support this Implementation Guide for the purposes of providing clients Pharmacy Network information for their plans. Express Scripts will not provide an API that is directly accessible by the public, this will remain the responsibility of the Health Plan client. This API is solely intended to be used behind the scenes by the Health Plan for the retrieval of Pharmacy Network information.

### Server implementation Guidance

The Express Scripts PBM FHIR server is based on the DaVinci PDEX PlanNet Implementation Guide, v1.0.0: STU1. (http://hl7.org/fhir/us/davinci-pdex-plan-net/index.html). Express Scripts does not claim full conformance to this Implementation Guide, however, we have made every effort to be conformant where possible.

The key area where this applies is in providing metadata about the plan itself, such as the marketing URL. Express Scripts is not the plan sponsor for these plans, and as such, we strongly recommended that Health Plan clients populate this information themselves, rather than relying on information that Express Scripts may provide as part of our responses from our FHIR server. There may be situations where Express Scripts does not hold information required for conformance. It is the responsibility of the Health Plan to add in this required information prior to delivery back to requesting application. More details are provided within the profile-specific documentation.

### Supported Properties

Where the implementation guide classifies a property as supported, there are two possibilities as demonstrated in this example Location:

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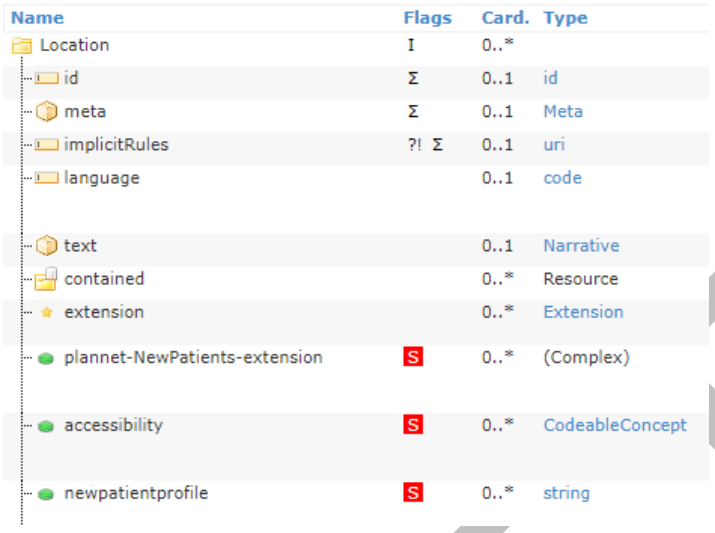

| Name | Flags | Card. | Type |
|---|---|---|---|
| Location | I | 0..* | |
| id | Σ | 0..1 | id |
| meta | Σ | 0..1 | Meta |
| implicitRules | ?! Σ | 0..1 | uri |
| language | | 0..1 | code |
| text | | 0..1 | Narrative |
| contained | | 0..* | Resource |
| extension | | 0..* | Extension |
| plannet-NewPatients-extension | S | 0..* | (Complex) |
| accessibility | S | 0..* | CodeableConcept |
| newpatientprofile | S | 0..* | string |

In the above example, items with the white "S" on the red background are considered "supported" by the implementation guide, but the cardinality of those properties must be taken into consideration.

Our general approach for support properties is this:

- For supported items with a cardinality of 1..1 or 1..*, the Express Scripts FHIR server will return values for these properties or a DataAbsentReason.
- For supported items with a cardinality of 0..1 or 0..*, the Express Scripts FHIR server will only return values for these properties if our practices have captured this information.

As mentioned earlier, however, in the case of this Implementation Guide, Express Scripts may not have the required information for some supported properties with a cardinality of 1..1 or 1..*. Properties falling into this situation will be highlighted in the documentation for each profile, and it is the responsibility of the Health Plan client to populate these values to ensure a compliant response is provided to the requesting third party application.

### Value Set Binding Strengths

Express Scripts PBM FHIR server conforms to the binding strengths as specified by the profile. Our interpretation is consistent with the following from http://hl7.org/fhir/R4/terminologies.html#strength.

| | |
|---|---|
| Required | To be conformant, the concept in this element SHALL be from the specified value set.<br><br>Express Scripts will use the specified value set. |
| Extensible | To be conformant, the concept in this element SHALL be from the specified value set if any of the codes within the value set can apply to the concept being communicated. If the value set does not cover the concept (based on human review), alternate codings (or, data type allowing, text) may be included instead.<br><br>Express Scripts will use the specified value set whenever we can accurately map our data to the specified value set. Only where human review indicates that there is no applicable concept in the value set will we utilize our own value set for the value. If this situation occurs, Express Scripts value sets will be fully documented and made available, at a minimum, in this document and via our developer portal. |

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| | |
|---|---|
| Preferred | Instances are encouraged to draw from the specified codes for interoperability purposes but are not required to do so to be considered conformant.<br><br>Express Scripts will use the specified value set if it is already in use, or if doing so does not create significant risk. |
| Example | Instances are not expected or even encouraged to draw from the specified value set. The value set merely provides examples of the types of concepts intended to be included.<br><br>If this situation occurs, Express Scripts will use our current value sets in use for this information. Express Scripts value sets will be fully documented and made available, at a minimum, in this document and via our developer portal. |

### Search Parameters

Express Scripts, in general, will support all search criteria that are listed as "SHALL" or "MUST"[2] within the DaVinci Implementation Guide. Please consult the guidance for each profile for detailed support information for specific search parameters. Any other search criteria supported by our implementation, whether they are recommended by the Implementation Guide (parameters listed as "SHOULD" support) or added search parameters allowed by the FHIR spec but not explicitly specified within the DaVinci Implementation Guide will be listed within the details for each profile.

Search parameters outlined in each profile will fall into one the following 4 categories for support:

1. Supported, response expected – The search parameter can be requested and a full response is expected back, matching the query request.
2. Supported, empty bundle expected – The search parameter can be requested but an empty bundle will be returned in the response.
3. Partial support – The search parameter can be requested but may only return a response under certain conditions.
4. Unsupported – The search parameter can be requested but a 4xx error message is to be expected.

### Plan Data Availability

Per our interpretation of the rules, Pharmacy Network information will only be made available for Medicare Advantage Part D (MAPD) plans. It will not be available for Medicaid plans, CHIP plans, or Qualified Health Plans (QHPs) on the Federally Funded Exchanges (FFEs).

Pharmacy Network information via the FHIR server will also not be available for plans outside of CMS oversight (e.g. Commercial Plans) at this time.

[2] The "MUST" term is not an official conformance verb, but its use does appear in the current state of the Implementation Guides.

Confidential Information

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### Use Cases and Sequence Diagrams

The DaVinci PDEX Provider Directory implementation guide makes it clear that the intent of the Provider Directory API is to provide support for "plan shoppers." In the context of a Pharmacy Network, this comes down to two major use cases:

1) Given a desired pharmacy by individual, find the insurance plans that have it within their pharmacy network.
2) Given a location and an insurance plan, find nearby pharmacies that are within the pharmacy network.

### Provider Directory Search

An expected interaction from a Health Plan client when searching for "Pharmacy Chain A" by the CMS Contract Plan ID would be a query similar to below using the InsurancePlan resource.

```
GET {baseURL}/InsurancePlan?identifier=H1234-001
```

It is important to note that InsurancePlan resources will provide the minimal set of information required for correlation between the HealthPlan's own InsurancePlan resource and the Express Scripts representation. The InsurancePlan resource will not be fully conformant with the DaVinci PDEX Plan Net implementation guide, and as such, the Express Scripts resource should never be returned directly to third party applications. Its intended use is solely as a correlation point for access to the related resources that represent the actual pharmacy network.

Assuming a match is found from the query above, this will return a FHIR Bundle with the matching results.

The `id` for the Network Organization can then be used in a subsequent inquiry for an OrganizationAffiliation resource:

```
GET {baseURL}/OrganizationAffiliation?network=<network-resource-id>
```

The OrganizationAffiliation resources that match will hold references to the Organization resources which in turn allows access to the named pharmacy as well as additional information around the affiliation.

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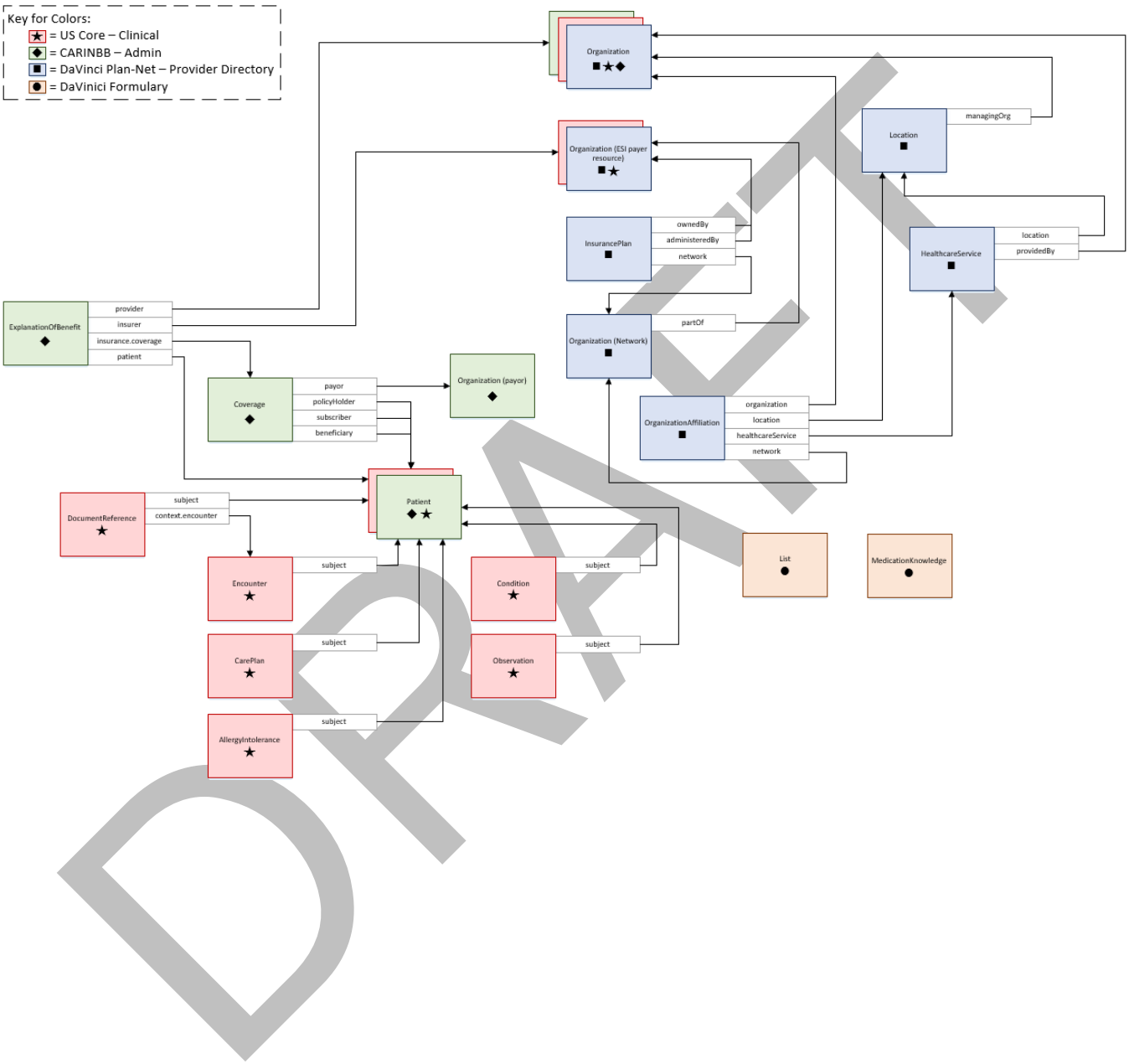
# ESI FHIR Profile Information

## Cross-Referential Diagram



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## US Core AllergyIntolerance Profile

Express Scripts may hold allergy intolerance information for members, typically collected as part of a health access questionnaire at the time of first use of the Express Scripts Pharmacy. Because this information is used in Durg Utilization Review (DUR) checks for retail claims, it is subject to CMS rules even if it was originally collected as part of an Express Scripts Pharmacy (home delivery) interaction.

**Properties**

| Required by Implementation Guide | |
|---|---|
| Property | ESI Support |
| id | Express Scripts logical identifier for this resource |
| clinicalStatus | Supported. ESI resources will only leverage the "active" and "inactive" values, we do not currently use the "resolved" value. Resources with a value of "inactive" indicate resources that are on file but are not used within our business processes anymore. |
| verificationStatus | Supported. |
| code | Supported, specified using SnomedCT coding. |
| patient | Supported. |
| reaction | Not supported. While this is marked as supported by the Implementation Guide, it has a cardinality of 0..*, so the absence of data is allowed in situations where the server has no data. Express Scripts does not hold this information for our Allergy Intolerance information at this time. |
| Others properties that may be populated | |
| identifier | This will be populated with the ESI logical id, using http://code.esrx.com/esi-id as the system. This is provided for situations where a consumer chooses to replicate our resource in their own FHIR server but wants to maintain a cross reference. |
| type | If known, this will be populated. |
| category | If known, this will be populated. |
| criticality | If known, this will be populated. |
| recordedDate | If known, this will be populated. |
| recorder | If known, this will be populated. For patient-reported medications, this will be a reference to the FHIR Patient resource. |
| asserter | If known, this will be populated. For patient-reported medications, this will be a reference to the FHIR Patient resource. |
| onset | If known, this will be populated, typically using onsetDateTime. |
| encounter | Not supported. |

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| | |
|---|---|
| lastOccurrence | Not supported. |
| note | Not supported. |

### Searching

| SHALL Support from Implementation Guide | | |
|---|---|---|
| Name | Support | Description |
| patient | Supported, response expected | Pass in the ESI logical id for the FHIR Patient resource in the ESI server as the value for this parameter.<br>Sample: `GET {baseURL}/AllergyIntolerance?patient=ceebb8e4-8e98-4b38-a8b2-d4f043563c2c` |
| SHOULD Support | | |
| patient + clinical-status | Supported, response expected | Pass in the ESI logical id for the FHIR Patient resource and the system\|code value combination for the status of the record ('active' or 'inactive' is supported)<br>Sample: `GET {baseURL}/AllergyIntolerance?patient=ceebb8e4-8e98-4b38-a8b2-d4f043563c2c&clinical-status=http://hl7.org/fhir/ValueSet/allergy-clinical-status\|active` |
| FHIR Allowed | | |
| asserter | TBD | Support for this has not yet been verified. |
| category | TBD | Support for this has not yet been verified. |
| clinical-status | TBD | Support for this has not yet been verified. |
| code | TBD | Support for this has not yet been verified. |
| criticality | TBD | Support for this has not yet been verified. |
| date | TBD | Support for this has not yet been verified. |
| identifier | Unsupported | Express Scripts does not plan on assigning business identifiers to AllergyIntolerance resources. |
| manifestation | Unsupported | Express Scripts AllergyIntolerance resources will not support the reaction property, so this search parameter will not be supported. |
| onset | Unsupported | Express Scripts AllergyIntolerance resources will not support the reaction or onset properties, so this search parameter will not be supported. |
| recorder | Unsupported | Express Scripts AllergyIntolerance resources will not support the recorder property, so this search parameter will not be supported. |
| route | Unsupported | Express Scripts AllergyIntolerance resources will not support the reaction property, so this search parameter will not be supported. |

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| | | |
|---|---|---|
| severity | Unsupported | Express Scripts AllergyIntolerance resources will not support the reaction property, so this search parameter will not be supported. |
| type | TBD | Support for this has not yet been verified. |

### Recommended Client Behavior for CMS support

- "id" property must be augmented to ensure a subject request for it can be recognized by the client's FHIR server and routed to the Express Scripts PBM FHIR server.
- "patient" property must be modified to point to the corresponding Patient resource on the client's FHIR server.

### Sample

NOTE: The sample data below comes from our PBM UAT server loaded with "canned data" as opposed to data that has flowed through our full pipeline. These samples are representations of our expected implementation.

Request:

```
GET {baseURL}/AllergyIntolerance/ee11e111-e111-111e-1e1e-11e1e111e1e1
```

Response:


```
{
    "resourceType": "AllergyIntolerance",
    "id": "ee11e111-e111-111e-1e1e-11e1e111e1e1",
    "meta": {
        "versionId": "3",
        "lastUpdated": "2021-03-02T18:34:58.994+00:00",
        "profile": [
            "https://www.hl7.org/fhir/us/core/StructureDefinition-us-core-
allergyintolerance.html"
        ]
    },
    "identifier": [
        {
            "system": "https://code.esrx.com/esi-id",
            "value": "ee11e111-e111-111e-1e1e-11e1e111e1e1"
        }
    ],
    "clinicalStatus": {
        "coding": [
            {
                "system": "http://hl7.org/fhir/ValueSet/allergy-clinical-status",
                "code": "active",
                "display": "active"
            }
        ],
        "text": "Active"
    },
    "verificationStatus": {
        "coding": [
            {
                "system": "http://hl7.org/fhir/ValueSet/allergy-verification-status",
```


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```
                "code": "unconfirmed",
                "display": "unconfirmed"
            }
        ],
        "text": "Unconfirmed"
    },
    "code": {
        "coding": [
            {
                "system": "http://snomed.info/sct",
                "code": "373270004",
                "display": "Substance with penicillin structure and antibacterial
mechanism of action (substance)",
                "userSelected": false
            }
        ]
    },
    "patient": {
        "reference": "Patient/11111111-11a1-11a1-aaaa-11a111aa1a1a"
    },
    "onsetDateTime": "2008-09-22",
    "recordedDate": "2013-10-24T22:20:27.056863Z",
    "recorder": {
        "reference": "Patient/11111111-11a1-11a1-aaaa-11a111aa1a1a"
    },
    "asserter": {
        "reference": "Patient/11111111-11a1-11a1-aaaa-11a111aa1a1a"
    }
}
```


## US Core CarePlan Profile

From the perspective of the Express Scripts PBM, CarePlan is only included for clients that are leveraging our MTM (Medication Therapy Management) product. There are two data sets collected as a result of this:

- Patient Plan: Our clinical team has reviewed this information and this information will be made available via the FHIR CarePlan profile.
- SOAP Notes: Our interpretation is that the notes from the interaction constitute a Consultation Note and will be made available via the DocumentReference profile.

Outside of MTM, Express Scripts does not expect to have CarePlan resources for PBM members on file that fall within the scope of CMS. This means that if you do not leverage the Express Scripts MTM product, you should not expect to receive CarePlan resources from the Express Scripts PBM FHIR server for your members.

### Properties

| Required by Implementation Guide | |
|---|---|
| Property | ESI Support |
| id | Express Scripts logical identifier for this resource. |
| text | This will contain the text from the MTM interaction. |

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| | |
|---|---|
| text.status | This will be populated with “additional” as it represents raw information from the MTM assessment, and not data generated from the core elements in the resource. |
| status | This will be populated with “unknown” as Express Scripts does not have information to populate this with one of the other allowed values. |
| intent | This will be populated with “proposal”. |
| category | This will have a fixed value of “assess-plan”. |
| subject | A reference to a Patient resource within the ESI PBM FHIR server. |
| Others properties that may be populated | |
| identifier | This will be populated with the ESI logical id, using http://code.esrx.com/esi-id as the system. This is provided for situations where a consumer chooses to replicate our resource in their own FHIR server but wants to maintain a cross reference. |
| created | Populated with the date of the MTM assessment. |
| All not explicitly specified | Any property not explicitly mentioned above should be considered unsupported. |

### Searching

| SHALL Support from Implementation Guide | | |
|---|---|---|
| Name | Support | Description |
| patient + category | Supported, response expected | Pass in the ESI logical id for the FHIR Patient resource in the ESI server as the value for the patient parameter and the system\|code value combination for the CarePlan categorization.<br>Sample: `GET {baseURL}/CarePlan?patient=ceebb8e4-8e98-4b38-a8b2-d4f043563c2c&category=http://hl7.org/fhir/us/core/CodeSystem/careplan-category\|assess-plan` |
| SHOULD Support | | |
| patient + category + date | Supported, response expected | Pass in the ESI logical id for the FHIR Patient resource, the system\|code value combination for the CarePlan categorization, and the record created date.<br>Sample: `GET {baseURL}/CarePlan?patient=ceebb8e4-8e98-4b38-a8b2-d4f043563c2c&category=http://hl7.org/fhir/us/core/CodeSystem/careplan-category\|assess-plan&date=2020-05-21` |
| patient + category + status | Supported, response expected | Pass in the ESI logical id for the FHIR Patient resource, the system\|code value combination for the CarePlan categorization, and the record status (only ‘unknown’ is supported at this time).<br>Sample: `GET {baseURL}/CarePlan?patient=ceebb8e4-8e98-4b38-a8b2-d4f043563c2c&` |

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| | | |
|---|---|---|
| | | `category=http://hl7.org/fhir/us/core/CodeSystem/careplan-category\|assess-plan&status=unknown` |
| patient + category + status + date | Supported, response expected | Pass in the ESI logical id for the FHIR Patient resource, the system\|code value combination for the CarePlan categorization, the record status (only 'unknown' is supported at this time), and the record created date.<br><br>Sample: `GET {baseURL}/CarePlan?patient=ceebb8e4-8e98-4b38-a8b2-d4f043563c2c&category=http://hl7.org/fhir/us/core/CodeSystem/careplan-category\|assess-plan&status=unknown&date=2020-05-21` |
| FHIR Allowed | | |
| activity-code | TBD | |
| activity-date | TBD | |
| activity-reference | TBD | |
| based-on | TBD | |
| care-team | TBD | |
| category | TBD | |
| condition | TBD | |
| date | TBD | |
| encounter | TBD | |
| goal | TBD | |
| instantiates-canoncial | TBD | |
| intent | TBD | |
| part-of | TBD | |
| patient | Supported, response expected | The logical id for the Patient resource assigned by the ESI PBM FHIR server must be used. |
| performer | TBD | |
| replaces | TBD | |
| status | TBD | |
| subject | Partial support | Only supported for Patient resources. The use of the patient search parameter is preferred. The logical id for the Patient resource assigned by the ESI PBM FHIR server must be used. |

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### Recommended Client Behavior for CMS support

- "id" property must be augmented to ensure a subject request for it can be recognized by the client's FHIR server and routed to the Express Scripts PBM FHIR server.
- "patient" property must be modified to point to the corresponding Patient resource on the client's FHIR server.

### Sample

NOTE: The sample data below comes from our PBM UAT server loaded with "canned data" as opposed to data that has flowed through our full pipeline. These samples are representations of our expected implementation.

Request:

```
GET {baseURL}/CarePlan/ff1111f1-f11f-1fff-1f11-111ff111f1f1
```

Response:


```
{
    "resourceType": "CarePlan",
    "id": "ff1111f1-f11f-1fff-1f11-111ff111f1f1",
    "meta": {
        "versionId": "3",
        "lastUpdated": "2021-03-02T18:35:10.494+00:00",
        "profile": [
            "http://hl7.org/fhir/us/core/StructureDefinition/us-core-careplan"
        ]
    },
    "text": {
        "status": "additional",
        "div": "<div xmlns=\"http://www.w3.org/1999/xhtml\">These are the string CarePlan
notes available.</div>"
    },
    "identifier": [
        {
            "system": "https://code.esrx.com/esi-id",
            "value": "ff1111f1-f11f-1fff-1f11-111ff111f1f1"
        }
    ],
    "status": "unknown",
    "intent": "proposal",
    "category": [
        {
            "coding": [
                {
                    "system": "http://hl7.org/fhir/us/core/CodeSystem/careplan-category",
                    "code": "assess-plan",
                    "display": "Assessment and Plan of Treatment"
                }
            ]
        }
    ],
    "subject": {
        "reference": "Patient/11111111-11a1-11a1-aaaa-11a111aa1a1a"
    },
    "created": "2020-05-21T00:00:00Z"
}
```


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## US Core CareTeam Profile

Express Scripts does not currently hold Care Team information as part of its PBM operations.

The PBM FHIR server will not return any data for an individual for this profile.

## US Core Condition Profile

Express Scripts may hold Condition information for members, potentially collected as part of a prior authorization decisions or utilization management determinations.

**Properties**

| Required by Implementation Guide | |
|---|---|
| Property | ESI Support |
| clinicalStatus | This will typically only contain a value of "active". |
| verificationStatus | For patient-reported conditions, this will contain a value of "unconfirmed." |
| category | TBD |
| code | Coding adheres to the IG requirements, using either SNOMED CT, ICD-10, or ICD-9. |
| subject | This will contain a reference to the FHIR Patient resource in the ESI PBM FHIR server. |
| **Other properties that may be populated** | |
| identifier | This will be populated with the ESI logical id, using http://code.esrx.com/esi-id as the system. This is provided for situations where a consumer chooses to replicate our resource in their own FHIR server but wants to maintain a cross reference. |
| recordedDate | Express Scripts will populate this when known. For self-reported conditions obtain through a health assessment questionnaire, this will typically be the date the questionnaire was received by Express Scripts. |
| recorder | Express Scripts will populate this when known. Many ESI resources are self-reported conditions in which case this will contain a reference to the Patient resource. |
| asserter | Express Scripts will populate this when known. For patient-reported conditions, this will contain a reference to the Patient resource. |
| onsetDateTime | Express Scripts will populate this value when known. |
| All not explicitly specified | Any property not explicitly mentioned above should be considered unsupported. Although, the general policy is that Express Scripts may populate other properties of the Condition resource where it can be determined with high confidence from our systems of record. |

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### Searching

| SHALL Support from Implementation Guide | | |
|---|---|---|
| Name | Support | Description |
| patient | Supported, response expected | Pass in the ESI logical id for the FHIR Patient resource in the ESI server as the value for the patient parameter.<br>Sample: `GET {baseURL}/Condition?patient=ceebb8e4-8e98-4b38-a8b2-d4f043563c2c` |
| SHOULD Support | | |
| patient + clinical-status | Supported, response expected | Pass in the ESI logical id for the FHIR Patient resource and the system\|code value combination for the clinical status ('active', 'recurrence', 'relapse', 'inactive', 'remission', 'resolved' supported).<br>Sample: `GET {baseURL}Condition?patient=ceebb8e4-8e98-4b38-a8b2-d4f043563c2c&clinical-status=http://hl7.org/fhir/ValueSet/condition-clinical\|active` |
| patient + category | Supported, response expected | Pass in the ESI logical id for the FHIR Patient resource and the system\|code value combination for the condition category ('problem-list-item', 'encounter-diagnosis', 'health-concern' supported).<br>Sample: `GET {baseURL}Condition?patient=ceebb8e4-8e98-4b38-a8b2-d4f043563c2c&category=http://hl7.org/fhir/us/core/ValueSet/us-core-condition-category\|encounter-diagnosis` |
| patient + code | Supported, response expected | Pass in the ESI logical id for the FHIR Patient resource and the system\|code value combination for the identification of the condition, problem or diagnosis.<br>Sample: `GET {baseURL}Condition?patient=ceebb8e4-8e98-4b38-a8b2-d4f043563c2c&code=http://hl7.org/fhir/sid/icd-10-cm\|K21.9` |
| patient + onset-date | Supported, response expected | Pass in the ESI logical id for the FHIR Patient resource and the condition onset date.<br>Sample: `GET {baseURL}Condition?patient=ceebb8e4-8e98-4b38-a8b2-d4f043563c2c&onset-date=2016-07-25` |
| FHIR Allowed | | |
| abatement-age | TBD | |
| abatement-date | TBD | |
| abatement-string | TBD | |
| asserter | TBD | |

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| | | |
|---|---|---|
| body-site | TBD | |
| category | TBD | |
| clinical-status | TBD | |
| code | TBD | |
| encounter | TBD | |
| evidence | TBD | |
| evidence-detail | TBD | |
| identifier | TBD | The only business identifier assigned by Express Scripts is also the logical identifier, so the use of this is redundant with an _id search. |
| onset-age | TBD | |
| onset-date | TBD | |
| onset-info | TBD | |
| recorded-date | TBD | |
| severity | TBD | |
| stage | TBD | |
| subject | TBD | Express Scripts Condition resources will only have Patient resources as the subject, the use of the patient query parameter is preferred. |
| verification-status | TBD | |

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### Recommended Client Behavior for CMS support

- "id" property must be augmented to ensure a subject request for it can be recognized by the client's FHIR server and routed to the Express Scripts PBM FHIR server.
- "subject" property must be modified to point to the corresponding Patient resource on the client's FHIR server.

### Sample

NOTE: The sample data below comes from our PBM UAT server loaded with "canned data" as opposed to data that has flowed through our full pipeline. These samples are representations of our expected implementation.

Request:

```
GET {baseURL}/Condition/1d11111d-d11d-1d11-1111-d1d1d11d1d1d
```



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Response:


```
{
    "resourceType": "Condition",
    "id": "1d11111d-d11d-1d11-1111-d1d1d11d1d1d",
    "meta": {
        "versionId": "3",
        "lastUpdated": "2021-03-02T18:35:14.328+00:00",
        "profile": [
            "https://www.hl7.org/fhir/condition.html"
        ]
    },
    "identifier": [
        {
            "system": "https://code.esrx.com/esi-id",
            "value": "1d11111d-d11d-1d11-1111-d1d1d11d1d1d"
        }
    ],
    "clinicalStatus": {
        "coding": [
            {
                "system": "http://hl7.org/fhir/ValueSet/condition-clinical",
                "code": "active",
                "display": "Active"
            }
        ],
        "text": "Active"
    },
    "verificationStatus": {
        "coding": [
            {
                "system": "http://hl7.org/fhir/ValueSet/condition-ver-status",
                "code": "unconfirmed",
                "display": "Unconfirmed"
            }
        ],
        "text": "Unconfirmed"
    },
    "category": [
        {
            "coding": [
                {
                    "system": "http://hl7.org/fhir/us/core/ValueSet/us-core-condition-
category",
                    "code": "encounter-diagnosis",
                    "display": "Encounter Diagnosis",
                    "userSelected": false
                }
            ],
            "text": "Encounter Diagnosis"
        }
    ],
    "code": {
        "coding": [
            {
                "system": "http://hl7.org/fhir/sid/icd-10-cm",
                "version": "ICD10",
                "code": "E11.22",
                "display": "TYPE 2 DIAB W DB CHRONIC KIDNEY DISEASE",
                "userSelected": false
            }
        ]
    },
```


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```
    "subject": {
        "reference": "Patient/11111111-11a1-11a1-aaaa-11a111aa1a1a"
    },
    "onsetDateTime": "2020-04-01",
    "recordedDate": "2020-07-20T12:26:56.078335Z"
}
```


## US Core DiagnosticReport Profile for Laboratory Results Reporting

Express Scripts does not currently hold information associated with this profile as part of its PBM operations.

The PBM FHIR server will not return any data for an individual for this profile.

## US Core DiagnosticReport Profile for Report and Note exchange

Express Scripts does not currently hold information associated with this profile as part of its PBM operations.

The PBM FHIR server will not return any data for an individual for this profile.

## US Core DocumentReference Profile

From the Express Scripts' perspective, Document Reference is only included for clients that are leveraging our MTM (Medication Therapy Management) product. There are two data sets collected as a result of this:

- Patient Plan: Our clinical team has reviewed this information and this information will be made available via the FHIR CarePlan profile.
- SOAP Notes: Our interpretation is that the notes from the interaction constitute a Consulation Note and will be made available via the DocumentReference profile. The SOAP Notes will not be stored as a separate binary file referenced by a DocumentReference resource, but instead be included directly within the DocumentReference resource itself using base-64 encoding.

Outside of MTM, Express Scripts does not expect to have DocumentReference resources for PBM members on file that fall within the scope of CMS. This means that if you do not leverage the Express Scripts MTM product, you should not expect to receive DocumentReference resources from the Express Scripts PBM FHIR server for your members.

**Properties**

| Required by Implementation Guide | |
|---|---|
| Property | ESI Support |
| identifier | This will be populated with the ESI logical id, using http://code.esrx.com/esi-id as the system. This is provided for situations where a consumer chooses to replicate our resource in their own FHIR server but wants to maintain a cross reference. |

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| | |
|---|---|
| status | This will normally be populated with a value of “current”. |
| type | For MTM data, this will normally be populated with a LOINC coded value for “Consultation Note” (code: 11488-4). |
| category | This will have a fixed value of “clinical-note”. |
| subject | This will be a reference to a Patient resource in the Express Scripts PBM FHIR server. |
| date | This field will not be populated. While it is a must support field, it has a cardinality of 0..1 and is not data held by Express Scripts. |
| author | This field will not be populated. While it is a must support field, it has a cardinality of 0..* and is not data held by Express Scripts. |
| custodian | This field will not be populated. While it is a must support field, it has a cardinality of 0..1 and is not data held by Express Scripts. |
| content | This will contain a base-64 encoded version of the text from the MTM consultation, provided directly in the “data” property of content. content.contentType will be text/plain. |
| context | This will be populated with a reference to the Encounter resource from the MTM interaction that resulted in this DocumentReference resource. The period property will be the date (for both start and end, if available) that the MTM consultation took place. |
| Other properties that may be populated | |
| | No other properties from the base resource will be populated. |

### Searching

| SHALL Support from Implementation Guide | | |
|---|---|---|
| Name | Support | Description |
| patient | Supported, response expected | Pass in the ESI logical id for the FHIR Patient resource in the ESI server as the value for the patient parameter.<br>Sample: `GET {baseURL}/DocumentReference?patient=ceebb8e4-8e98-4b38-a8b2-d4f043563c2c` |
| patient + category | Supported, response expected | Pass in the ESI logical id for the FHIR Patient resource and the system\|code value combination for the category property.<br>Sample: `GET {baseURL}/DocumentReference?patient=ceebb8e4-8e98-4b38-a8b2-d4f043563c2c&category=http://hl7.org/fhir/us/core/CodeSystem/us-core-documentreference-category\|clinical-note` |
| patient + category + date | Supported, response expected | Pass in the ESI logical id for the FHIR Patient resource, the system\|code value combination for the category property, and the period date.<br>Sample: `GET {baseURL}/DocumentReference?patient=ceebb8e4-8e98-4b38-a8b2-` |

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| | | |
|---|---|---|
| | | d4f043563c2c&category=http://hl7.org/fhir/us/core/CodeSystem/us-core-documentreference-category\|clinical-note&period=ge2019-07-23 |
| patient + type | Supported, response expected | Pass in the ESI logical id for the FHIR Patient resource and the system\|code value combination for the LOINC note type.<br><br>Sample: GET {baseURL}/DocumentReference?patient=ceebb8e4-8e98-4b38-a8b2-d4f043563c2c&type=http://loinc.org\|18842-5 |
| SHOULD Support | | |
| patient + status | Supported, response expected | Pass in the ESI logical id for the FHIR Patient resource and the document status (only 'current' is supported at this time).<br><br>Sample: GET {baseURL}/DocumentReference?patient=ceebb8e4-8e98-4b38-a8b2-d4f043563c2c&status=current |
| patient + type + period | Supported, response expected | Pass in the ESI logical id for the FHIR Patient resource and the system\|code value combination for the LOINC note type and the period date.<br><br>Sample: GET {baseURL}/DocumentReference?patient=ceebb8e4-8e98-4b38-a8b2-d4f043563c2c&type=http://loinc.org\|18842-5&period=ge2019-07-23 |
| FHIR Allowed | | |
| authenticator | TBD | |
| author | TBD | |
| category | TBD | |
| contenttype | TBD | |
| custodian | TBD | |
| date | TBD | |
| encounter | TBD | |
| event | TBD | |
| facility | TBD | |
| format | TBD | |
| identifier | TBD | |
| language | TBD | |
| location | TBD | |
| period | TBD | |

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| | | |
|---|---|---|
| related | TBD | |
| relatesto | TBD | |
| relation | TBD | |
| relationship | TBD | |
| security-label | TBD | |
| setting | TBD | |
| status | TBD | |
| subject | TBD | |
| type | TBD | |

### Recommended Client Behavior for CMS support

- "id" property must be augmented to ensure a subject request for it can be recognized by the client's FHIR server and routed to the Express Scripts PBM FHIR server.
- "subject" property must be modified to point to the corresponding Patient resource on the client's FHIR server.
- "encounter" property must be modified to point to the corresponding Encounter resource on the client's FHIR server.

### Sample

NOTE: The sample data below comes from our PBM UAT server loaded with "canned data" as opposed to data that has flowed through our full pipeline. These samples are representations of our expected implementation.

Request:

```
GET {baseURL}/DocumentReference/1111ccc1-c111-1111-c1c1-cccc111111cc
```

Response:

```
{
    "resourceType": "DocumentReference",
    "id": "1111ccc1-c111-1111-c1c1-cccc111111cc",
    "meta": {
        "versionId": "3",
        "lastUpdated": "2021-03-02T21:21:49.463+00:00",
        "source": "#9jGLJeAQ9goGRuNo",
        "profile": [
            "https://hl7.org/fhir/us/core/StructureDefinition-us-core-
documentreference.html"
```

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```
        ]
    },
    "identifier": [
        {
            "system": "https://code.esrx.com/esi-id",
            "value": "1111ccc1-c111-1111-c1c1-cccc111111cc"
        }
    ],
    "status": "current",
    "type": {
        "coding": [
            {
                "system": "https://loinc.org/",
                "code": "11488-4",
                "display": "Consultation Note"
            }
        ]
    },
    "category": [
        {
            "coding": [
                {
                    "system": "http://hl7.org/fhir/us/core/CodeSystem/us-core-
documentreference-category",
                    "code": "clinical-note",
                    "display": "Clinical Note"
                }
            ]
        }
    ],
    "subject": {
        "reference": "Patient/11111111-11a1-11a1-aaaa-11a111aa1a1a"
    },
    "content": [
        {
            "attachment": {
                "contentType": "text/plain",
                "data":
"VGhpcyBpcyBhIHNldCBvZiBzYW1wbGUgdGV4dCBmb3IgdGhlIERvY3VtZW50UmVmZXJlbmNlIHJlc291cmNlLiAg
Q2xpbmljYWwgbm90ZXMgd2lsbCBiZSBzaG93biBoZXJlIGluIFByb2R1Y3Rpb24u"
            }
        }
    ],
    "context": {
        "encounter": [
            {
                "reference": "Encounter/111b1b11-11b1-11b1-1111-b1bbb1bbbb1b"
            }
        ],
        "period": {
            "start": "2020-02-17"
        }
    }
```


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```
}
```

**POST and $docref functions:**

Support of these functions are still being determined.

## US Core Encounter Profile

Express Scripts creates Encounter resources as a result of interactions associated with the MTM (Medication Therapy Management) product. No other PBM activities currently create Encounter interactions. Note: If you are interested in Encounter activities associated with pharmacy interactions (not part of data available for CMS-related interactions), this will be supported in the future by our pharmacy operations FHIR servers.

**Properties**

| Required by Implementation Guide | |
|---|---|
| Property | ESI Support |
| identifier | This will be populated with the ESI logical id, using http://code.esrx.com/esi-id as the system. This is provided for situations where a consumer chooses to replicate our resource in their own FHIR server but wants to maintain a cross reference. |
| status | For Encounters tied to MTM interactions, the value for this will always be "finished." |
| class | For Encounters tied to MTM interactions, the value for this will always be "virtual." |
| type | For Encounters tied to MTM interactions, this will be coded as a Telephone Encounter with appropriate SNOMED CT coding. |
| subject | This will be populated with a reference to the FHIR Patient resource representing the patient involved with the encounter. |
| participant | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| period | This will be populated with the date of the encounter, for both the start and end date values. |
| reasonCode | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| hospitalization | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| location | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |

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| Other properties that may be populated | |
|---|---|
| N/A | No other optional properties are planned to be supported at this time. |

### Searching

| SHALL Support from Implementation Guide | | |
|---|---|---|
| Name | Support | Description |
| patient | Supported, response expected | Pass in the ESI logical id for the FHIR Patient resource in the ESI server as the value for the patient parameter.<br>Sample: `GET {baseURL}/Encounter?patient=ceebb8e4-8e98-4b38-a8b2-d4f043563c2c` |
| date + patient | Supported, response expected | Pass in the Encounter date and the ESI logical id for the FHIR Patient resource in the ESI server as the value for the patient parameter.<br>Sample: `GET {baseURL}/Encounter?date=ge2020-07-01&patient=ceebb8e4-8e98-4b38-a8b2-d4f043563c2c` |
| SHOULD Support | | |
| identifier | Supported, response expected | Pass in the system\|code value combination for an identifier set.<br>Sample: `GET {baseURL}/Encounter?identifier=https://code.esrx.com/esi-id\|4a753aff-1254-4b3e-9b3b-5fd75c74b8aa` |
| class + patient | Supported, response expected | Pass in the system\|code value combination for the Encounter class and the ESI logical id for the FHIR Patient resource.<br>Sample: `GET {baseURL}/Encounter?class=http://terminology.hl7.org/CodeSystem/v3-ActCode\|VR&patient=ceebb8e4-8e98-4b38-a8b2-d4f043563c2c` |
| patient + type | Supported, response expected | Pass in the ESI logical id for the FHIR Patient resource and the system\|code value combination for the Encounter type.<br>Sample: `GET {baseURL}/Encounter?patient=ceebb8e4-8e98-4b38-a8b2-d4f043563c2c&type=http://snomed.info/sct\|185317003` |
| patient + status | Supported, response expected | Pass in the ESI logical id for the FHIR Patient resource and the status of the Encounter (only 'finished' is supported at this time).<br>Sample: `GET {baseURL}/Encounter?patient=ceebb8e4-8e98-4b38-a8b2-d4f043563c2c&status=finished` |
| FHIR Allowed | | |
| account | TBD | |
| appointment | TBD | |

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| | | |
|---|---|---|
| based-on | TBD | |
| class | TBD | |
| date | TBD | |
| diagnosis | TBD | |
| episode-of-care | TBD | |
| length | TBD | |
| location | TBD | |
| location-period | TBD | |
| part-of | TBD | |
| participant | Unsupported | Express Scripts does not populate the participant property. |
| participant-type | Unsupported | Express Scripts does not populate the participant property. |
| practitioner | Unsupported | Express Scripts does not populate participants other than the Patient. |
| reason-code | TBD | |
| reason-reference | TBD | |
| service-provider | TBD | |
| special-arrangement | TBD | |
| status | TBD | |
| subject | TBD | |
| type | TBD | |

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**Recommended Client Behavior for CMS support**

- "id" property must be augmented to ensure a subject request for it can be recognized by the client's FHIR server and routed to the Express Scripts PBM FHIR server.
- "subject" property must be modified to point to the corresponding Patient resource on the client's FHIR server.



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### Sample

NOTE: The sample data below comes from our PBM UAT server loaded with “canned data” as opposed to data that has flowed through our full pipeline. These samples are representations of our expected implementation.

Request

```
GET {baseURL}/Encounter/111b1b11-11b1-11b1-1111-b1bbb1bbbb1b
```

Response


```
{
    "resourceType": "Encounter",
    "id": "111b1b11-11b1-11b1-1111-b1bbb1bbbb1b",
    "meta": {
        "versionId": "3",
        "lastUpdated": "2021-03-02T18:35:35.36+00:00",
        "profile": [
            "https://hl7.org/fhir/us/core/StructureDefinition-us-core-encounter.html"
        ]
    },
    "identifier": [
        {
            "system": "https://code.esrx.com/esi-id",
            "value": "111b1b11-11b1-11b1-1111-b1bbb1bbbb1b"
        }
    ],
    "status": "finished",
    "class": {
        "system": "http://terminology.hl7.org/CodeSystem/v3-ActCode",
        "code": "VR",
        "display": "virtual"
    },
    "type": [
        {
            "coding": [
                {
                    "system": "http://snomed.info/sct",
                    "code": "185317003",
                    "display": "Telephone encounter"
                }
            ]
        }
    ],
    "subject": {
        "reference": "Patient/11111111-11a1-11a1-aaaa-11a111aa1a1a"
    },
    "period": {
        "start": "2020-02-17"
    }
}
```


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## US Core Goal Profile



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Express Scripts does not currently hold information associated with this profile as part of its PBM operations.

The PBM FHIR server will not return any data for an individual for this profile.

## US Core Immunization Profile

Express Scripts does not currently hold immunization information as part of its PBM operations. While we may hold claims information for medication typically associated with immunizations, we do not hold actual immunization records as assigned by a provider.

The PBM FHIR server will not return any data for an individual for this profile.

## US Core Implantable Device Profile

Express Scripts does not currently hold information associated with this profile as part of its PBM operations.

The PBM FHIR server will not return any data for an individual for this profile.

## US Core Laboratory Result Observation Profile

Express Scripts may hold laboratory results for members, potentially collected as part of a prior authorization decisions/utilization management determinations. The PBM FHIR server will return these as FHIR Observation resources.

**Properties**

| Required by Implementation Guide | |
|---|---|
| Property | ESI Support |
| id | This will be populated with the ESI logical id, using http://code.esrx.com/esi-id as the system. This is provided for situations where a consumer chooses to replicate our resource in their own FHIR server but wants to maintain a cross reference. |
| status | This will have a fixed value of “unknown”. |
| category | This will have a fixed value of “laboratory”. |
| code | Supported, this will contain a LOINC Code value. |
| subject | This will be populated with a reference to the FHIR Patient resource representing the patient involved in the observation. |
| effectiveDateTime | Supported. Will normally be expressed as a single timestamp. |

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| | |
|---|---|
| value | Supported. |
| issued | Supported. Will normally be expressed as a single timestamp. |
| Other properties that may be populated | |
| identifier | This will be populated with the ESI logical id, using http://code.esrx.com/esi-id as the system. This is provided for situations where a consumer chooses to replicate our resource in their own FHIR server but wants to maintain a cross reference. |
| referenceRange | Based on the laboratory result, referenceRange may be populated to reflect information on the observation. |

### Searching

| SHALL Support from Implementation Guide | | |
|---|---|---|
| Name | Support | Description |
| patient + category | Supported, response expected | Pass in the ESI logical id for the FHIR Patient resource and the system\|value code combination for the categorization of the Observation.<br>Sample: `GET {baseURL}/Observation?patient=ceebb8e4-8e98-4b38-a8b2-d4f043563c2c&category=http://terminology.hl7.org/CodeSystem/observation-category\|laboratory` |
| patient + category + date | Supported, response expected | Pass in the ESI logical id for the FHIR Patient resource, the system\|value code combination for the categorization of the Observation, and a date with an appropriate modifier for the date parameter.<br>Sample: `GET {baseURL}/Observation?patient=ceebb8e4-8e98-4b38-a8b2-d4f043563c2c&category=http://terminology.hl7.org/CodeSystem/observation-category\|laboratory&date=ge2018-03-14` |
| patient + code | Supported, response expected | Pass in the ESI logical id for the FHIR Patient and the system\|value code combination with one or more LOINC codes (comma-delimited) representing the desired observation codes.<br>Sample: `GET {baseURL}/Observation?patient=ceebb8e4-8e98-4b38-a8b2-d4f043563c2c&code=http://loinc.org\|2339-0` |
| SHOULD Support | | |
| patient + category + status | Supported, response expected | Pass in the ESI logical id for the FHIR Patient resource, the system\|value code combination for the categorization of the Observation, and the status of the Observation ('unknown', 'amended', and 'cancelled' supported at this time).<br>Sample: `GET {baseURL}/Observation?patient=ceebb8e4-8e98-4b38-a8b2-d4f043563c2c&category=http://terminology.hl7.org/CodeSystem/observation-category\|laboratory&status=unknown` |
| patient + code + date | Supported, response expected | Pass in the ESI logical id for the FHIR Patient, the system\|value code combination with one or more LOINC codes (comma-delimited) representing the desired observation codes, and a date with an appropriate modifier for the date parameter. |

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| | | |
|---|---|---|
| | | Sample: `GET {baseURL}/Observation?patient=ceebb8e4-8e98-4b38-a8b2-d4f043563c2c&code=http://loinc.org\|2339-0&date=ge2018-03-14` |
| FHIR Allowed | | |
| TBD | | |

### Recommended Client Behavior for CMS support

- "id" property must be augmented to ensure a subject request for it can be recognized by the client's FHIR server and routed to the Express Scripts PBM FHIR server.
- "subject" property must be modified to point to the corresponding Patient resource on the client's FHIR server.

### Sample

NOTE: The sample data below comes from our PBM UAT server loaded with "canned data" as opposed to data that has flowed through our full pipeline. These samples are representations of our expected implementation.

Request:

```
GET {baseURL}/Observation/1qq11111-q11q-11q1-q111-1q1q1qqq1111
```

Response:


```
{
    "resourceType": "Observation",
    "id": "1qq11111-q11q-11q1-q111-1q1q1qqq1111",
    "meta": {
        "versionId": "3",
        "lastUpdated": "2021-03-02T18:35:51.358+00:00",
        "profile": [
            "https://www.hl7.org/fhir/observation.html"
        ]
    },
    "identifier": [
        {
            "system": "https://code.esrx.com/esi-id",
            "value": "1qq11111-q11q-11q1-q111-1q1q1qqq1111"
        }
    ],
    "status": "unknown",
    "category": [
        {
            "coding": [
                {
                    "system": "http://terminology.hl7.org/CodeSystem/observation-
category",
                    "code": "laboratory",
                    "display": "Laboratory",
                    "userSelected": false
                }
            ]
        }
    ],
```


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```
    "code": {
        "coding": [
            {
                "system": "https://loinc.org",
                "code": "2571-8",
                "display": "Triglyceride [Mass/volume] in Serum or Plasma",
                "userSelected": false
            }
        ],
        "text": "Triglyceride [Mass/volume] in Serum or Plasma"
    },
    "subject": {
        "reference": "Patient/11111111-11a1-11a1-aaaa-11a111aa1a1a"
    },
    "effectiveDateTime": "2019-09-17T04:00:00Z",
    "issued": "2019-09-17T04:00:00+00:00",
    "valueString": "132 mg/dL",
    "referenceRange": [
        {
            "low": {
                "value": 0.0
            },
            "high": {
                "value": 149.0
            }
        }
    ]
}
```


## US Core Location Profile

Location resources are accessed as a result of being referenced by some other primary resource. Express Scripts will be returning results that require referenced locations, and as such, our PBM FHIR server will return Location resources.

*Important: Location appears in both US Core and in DaVinci PDEX PlanNet (ProviderDirectory). When querying our FHIR server for a given context, be sure to include the _profile query parameter, or check this value within your query results, to ensure you do not receive unexpected Location resources associated with other Implementation Guide profiles. For example, Provider Directory uses Location resources for individual pharmacy locations.*

### Properties

| Required by Implementation Guide | |
|---|---|
| Property | ESI Support |
| status | This will normally be populated with a value of “active”. |
| name | Supported. |

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| | |
|---|---|
| telecom | Will contain the telecom values associated to the location. |
| address | Will contain the address values associated to the location. |
| managingOrganization | This will be populated with a reference to the FHIR Organization resource representing the managing organization for the location. |
| Other properties that may be populated | |
| identifier | This will be populated with the ESI logical id, using http://code.esrx.com/esi-id as the system. This is provided for situations where a consumer chooses to replicate our resource in their own FHIR server but wants to maintain a cross reference. |

### Searching

| SHALL Support from Implementation Guide | | |
|---|---|---|
| Name | Support | Description |
| name | Supported, response expected | Pass in the US Core _profile parameter and all, or a portion, of the name of the location.<br>Sample: `GET {baseURL}/Location?_profile=http://hl7.org/fhir/us/core/StructureDefinition/us-core-location&name=Pharmacy%20Name` |
| address | Supported, response expected | US Core _profile parameter and all, or a portion, of the street address information for the location.<br>Sample: `GET {baseURL}/Location?_profile=http://hl7.org/fhir/us/core/StructureDefinition/us-core-location&address=Main%20St` |
| SHOULD Support | | |
| address-city | Supported, response expected | US Core _profile parameter and all, or a portion, of a city name for the location.<br>Sample: `GET {baseURL}/Location?_profile=http://hl7.org/fhir/us/core/StructureDefinition/us-core-location&address-city=Boston` |
| address-state | Supported, response expected | US Core _profile parameter and a state code for the location.<br>Sample: `GET {baseURL}/Location?_profile=http://hl7.org/fhir/us/core/StructureDefinition/us-core-location&address-state=MA` |
| address-postalcode | Supported, response expected | US Core _profile parameter and all, or a portion, of the postal code for the location.<br>Sample: `GET {baseURL}/Location?_profile=http://hl7.org/fhir/us/core/StructureDefinition/us-core-location&address-postalcode=02101` |

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| FHIR Allowed | | |
|---|---|---|
| N/A | | |

### Recommended Client Behavior for CMS support

- "id" property must be augmented to ensure a subject request for it can be recognized by the client's FHIR server and routed to the Express Scripts PBM FHIR server.
- "managingOrganzation" property must be augmented to ensure a subject request for it can be recognized by the client's FHIR server and routed to the Express Scripts PBM FHIR server.

### Sample

NOTE: The sample data below comes from our PBM UAT server loaded with "canned data" as opposed to data that has flowed through our full pipeline. These samples are representations of our expected implementation.

Request:

```
GET {baseURL}/Location/66ff666f-6666-66f6-6f66-f6fff666f66f
```

Response:


```
{
    "resourceType": "Location",
    "id": "66ff666f-6666-66f6-6f66-f6fff666f66f",
    "meta": {
        "versionId": "4",
        "lastUpdated": "2021-04-07T13:38:59.203+00:00",
        "profile": [
            "http://hl7.org/fhir/us/davinci-pdex-plan-net/StructureDefinition/plannet-
Location",
            "http://hl7.org/fhir/us/core/StructureDefinition/us-core-location"
        ]
    },
    "identifier": [
        {
            "system": "https://code.esrx.com/esi-id",
            "value": "66ff666f-6666-66f6-6f66-f6fff666f66f"
        }
    ],
    "status": "active",
    "name": "LOCATION NAME",
    "alias": [
        "location name alias"
    ],
    "type": [
        {
            "coding": [
                {
                    "system": "http://terminology.hl7.org/CodeSystem/v3-RoleCode",
                    "code": "PHARM",
                    "display": "Pharmacy"
                }
            ]
        }
```


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```
    ],
    "telecom": [
        {
            "value": "7777777777"
        },
        {
            "value": "8888888888"
        }
    ],
    "address": {
        "line": [
            "999 NORTH BROADWAY"
        ],
        "city": "SOMEWHERE",
        "state": "MO",
        "postalCode": "12345-6789",
        "country": "US"
    },
    "managingOrganization": {
        "reference": "Organization/e6ee666d-d66e-6d66-ee6e-666ee66e66e6",
        "display": "organization name"
    }
}
```


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## US Core Medication Profile

While Medication resources can be referenced in the MedicationRequest resource, Express Scripts has chosen to leverage the medicationCodeableConcept in that resource for specifying medications by RxNorm value. As a result, the Express Scripts PBM FHIR server will not provide access to Medication resources.

The PBM FHIR server will not return any data for an individual for this profile.

## US Core MedicationRequest Profile

Claims information will be available via the ExplanationOfBenefit resources. As such, Express Scripts does not expect to return MedicationRequest resources from its PBM FHIR server at this time. Analysis is still underway to see if there are other sources of prescription information besides claims history in use by PBM operations that may need to be represented with this resource.

The PBM FHIR server will not return any data for an individual for this profile.

## US Core Organization Profile

Organization resources are accessed as a result of being referenced by some other primary resource. Express Scripts will be returning results that require referenced organizations, and as such, our PBM FHIR server will return Organization resources.



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*Important: Organization appears in several of the implementation guides. When querying our FHIR server for a given context, be sure to include the _profile query parameter to ensure you do not receive Organization resources for other profiles. For example, CARIN IG for Blue Button® will have Organization resources that represent individual physical pharmacy locations, while Provider Directory only uses Organization resources for parent pharmacy organizations, instead relying on Location resources for individual pharmacy locations. Additionally, Provider Directory also uses Organization for a representation of the Organization for a plan sponsor.*

**Properties**

| Required by Implementation Guide | |
|---|---|
| Property | ESI Support |
| identifier | This will be populated with the ESI logical id, using http://code.esrx.com/esi-id as the system. This is provided for situations where a consumer chooses to replicate our resource in their own FHIR server but wants to maintain a cross reference.<br><br>In addition, the NPI (National Provider Identifier) will be provided in this attribute. |
| active | This will normally be set to "true". |
| name | Supported. |
| telecom | Will contain the telecom values associated to the organization. |
| address | Will contain the address values associated to the organization. |
| Other properties that may be populated | |
| type | As Organization appears in several implementation guides and may overlap, the "type" attribute may be populated and contain the organization type codes. |

**Searching**

| SHALL Support from Implementation Guide | | |
|---|---|---|
| Name | Support | Description |
| name | TBD | Pass in the US Core _profile parameter and all, or a portion, of the name of the organization. |
| address | TBD | Pass in the US Core _profile parameter and all, or a portion, of the street address of the organization. |
| SHOULD Support | | |
| N/A | | |
| FHIR Allowed | | |

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| | | |
|---|---|---|
| TBD | | |

### Recommended Client Behavior for CMS support

- "id" property must be augmented to ensure a subject request for it can be recognized by the client's FHIR server and routed to the Express Scripts PBM FHIR server.

### Sample

NOTE: The sample data below comes from our PBM UAT server loaded with "canned data" as opposed to data that has flowed through our full pipeline. These samples are representations of our expected implementation.

Request:

```
GET {baseURL}/Organization/e6ee666d-d66e-6d66-ee6e-666ee66e66e6
```

Response:


```
{
    "resourceType": "Organization",
    "id": "e6ee666d-d66e-6d66-ee6e-666ee66e66e6",
    "meta": {
        "versionId": "4",
        "lastUpdated": "2021-04-07T13:36:44.334+00:00",
        "profile": [
            "http://hl7.org/fhir/us/davinci-pdex-plan-net/StructureDefinition/plannet-
Organization",
            "http://hl7.org/fhir/us/carin-bb/StructureDefinition/C4BB-Organization",
            "https://www.hl7.org/fhir/us/core/StructureDefinition-us-core-
organization.html"
        ]
    },
    "identifier": [
        {
            "system": "https://code.esrx.com/esi-id",
            "value": "e6ee666d-d66e-6d66-ee6e-666ee66e66e6"
        },
        {
            "type": {
                "coding": [
                    {
                        "system": "http://hl7.org/fhir/us/carin-
bb/CodeSystem/C4BBIdentifierType",
                        "code": "npi",
                        "display": "National Provider Identifier"
                    }
                ]
            },
            "system": "http://hl7.org/fhir/sid/us-npi",
            "value": "1234567890"
        }
    ],
    "active": true,
    "type": [
        {
            "coding": [
```


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```
                {
                    "system": "http://hl7.org/fhir/us/davinci-pdex-plan-
net/CodeSystem/OrgTypeCS",
                    "code": "prvgrp",
                    "display": "Provider Group"
                },
                {
                    "system": "http://hl7.org/fhir/us/carin-
bb/CodeSystem/C4BBIdentifierType",
                    "code": "fac",
                    "display": "FACILITY"
                }
            ]
        }
    ],
    "name": "ORGANIZATION NAME",
    "alias": [
        "ORGANIZATION NAME ALIAS"
    ],
    "telecom": [
        {
            "value": "5555555555"
        },
        {
            "value": "6666666666"
        }
    ],
    "address": [
        {
            "line": [
                "123 MAIN STREET N"
            ],
            "city": "ANYWHERE",
            "state": "MO",
            "postalCode": "12345-6789",
            "country": "US"
        }
    ]
}
```


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## US Core Patient Profile

Express Scripts will hold patient/member information. The PBM FHIR server will return these as FHIR Patient resources.

### Properties



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| Required by Implementation Guide | |
|---|---|
| Property | ESI Support |
| us-core-race | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| us-core-ethnicity | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| us-core-birthsex | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| identifier | This will be populated with the ESI logical id, using http://code.esrx.com/esi-id as the system. This is provided for situations where a consumer chooses to replicate our resource in their own FHIR server but wants to maintain a cross reference.<br><br>This will also contain a value for mgp-id based cross-referencing, if you have access to the ESI member, group, and person number identifiers in your system. See the earlier section on patient cross-referencing for more information. |
| name | Supported. |
| telecom | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| gender | Supported. |
| birthDate | Supported. |
| address | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| communication | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |

### Searching

| SHALL Support from Implementation Guide | | |
|---|---|---|
| Name | Support | Description |
| _id | Supported, response expected | Pass in the ESI logical id for the FHIR Patient resource.<br><br>Sample: `GET {baseURL}/Patient?_id= ceebb8e4-8e98-4b38-a8b2-d4f043563c2c` |
| identifier | Supported, response expected | Pass in the system\|value code combination for an identifier for a Patient.<br><br>Sample: `GET {baseURL}/Patient?identifier=https://code.esrx.com/mgp\|A123456789_ABCD1234_001` |

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| | | |
|---|---|---|
| name | Supported, response expected | Pass in all, or a portion, of a patient's name (first or last name is accepted).<br>Sample: `GET {baseURL}/Patient?name=John` |
| birthdate + name | Supported, response expected | Pass in the birthdate and all, or a portion, of a patient's name (first or last name is accepted).<br>Sample: `GET {baseURL}/Patient?birthdate=1970-01-01&name=John` |
| gender + name | Supported, response expected | Pass in the gender and all, or a portion, of a patient's name (first or last name is accepted).<br>Sample: `GET {baseURL}/Patient?gender=male&name=John` |
| SHOULD Support | | |
| birthdate + family | Supported, response expected | Pass in the birthdate and all, or a portion, of a patient's family name (last name).<br>Sample: `GET {baseURL}/Patient?birthdate=1970-01-01&family=Doe` |
| family + gender | Supported, response expected | Pass in all, or a portion, of a patient's family name (last name) and the patient's gender.<br>`Sample: GET {baseURL}/Patient?family=Doe&gender=male` |
| FHIR Allowed | | |
| TBD | | |

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### Recommended Client Behavior for CMS support

- "id" property must be augmented to ensure a subject request for it can be recognized by the client's FHIR server and routed to the Express Scripts PBM FHIR server.

### Sample

NOTE: The sample data below comes from our PBM UAT server loaded with "canned data" as opposed to data that has flowed through our full pipeline. These samples are representations of our expected implementation.

Request:

```
GET {baseURL}/Patient/11111111-11a1-11a1-aaaa-11a111aa1a1a
```

Response:

```
{
    "resourceType": "Patient",
    "id": "11111111-11a1-11a1-aaaa-11a111aa1a1a",
    "meta": {
```



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```
        "versionId": "3",
        "lastUpdated": "2021-03-02T21:21:52.294+00:00",
        "source": "#DXvXUZ6SbQkEzzQ7",
        "profile": [
            "http://hl7.org/fhir/us/carin-bb/StructureDefinition/C4BB-Patient",
            "http://hl7.org/fhir/us/core/StructureDefinition/us-core-patient"
        ]
    },
    "identifier": [
        {
            "system": "https://code.esrx.com/esi-id",
            "value": "11111111-11a1-11a1-aaaa-11a111aa1a1a"
        },
        {
            "system": "https://code.esrx.com/mgp",
            "value": "111111111_AA1111111AAAA1A_001"
        }
    ],
    "name": [
        {
            "text": "JOHN SMITH",
            "family": "SMITH",
            "given": [
                "JOHN"
            ]
        }
    ],
    "gender": "male",
    "birthDate": "1971-01-23"
}
```


## US Core Pediatric BMI for Age Observation Profile

Express Scripts does not currently hold this information as part of its PBM operations.

The PBM FHIR server will not return any data for an individual for this profile.

## US Core Pediatric Weight for Height Observation Profile

Express Scripts does not currently hold this information as part of its PBM operations.

The PBM FHIR server will not return any data for an individual for this profile.

## US Core Practitioner Profile

Express Scripts may hold information as a part of its PBM operations.

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The PBM FHIR server will not return any data for and individual for this profile as no other supported profile references this profile for 7/1/2021.

## US Core PractitionerRole Profile

Express Scripts does not currently hold information associated with this profile as part of its PBM operations.

The PBM FHIR server will not return any data for an individual for this profile.

## US Core Procedure Profile

Express Scripts may hold procedure data in situations where we are receiving medical claims data from health plans (either directly from our health plan clients, or from the health plans of our commercial clients). Situations where this may occur include clients that leverage some of our clinical products, such as RationalMed and ScreenRx, however it may also occur as a result of clinical reviews or other scenarios outside of these products.

While we are committed to making this data available within the FHIR server, this data is not yet available within our FHIR server.

## US Core Provenance Profile

The US Core implementation Guide states that all resources associated with the US Core Implementation Guide will have a corresponding Provenance resource associated with them.

### Properties

| Required by Implementation Guide | |
|---|---|
| Property | ESI Support |
| target | This will be populated with a reference to the US Core resource and resource ID the Provenance record is associated to |
| recorded | Supported, will be populated with a single datetime stamp |
| agent | Supported, will make reference to Express Scripts as the author and transmitter of the information |

### Searching

| SHALL Support from Implementation Guide | | |
|---|---|---|
| Name | Support | Description |

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| | | |
|---|---|---|
| patient and _revinclude | Supported, response expected | This can be used to search with the Patient logical _id the _revinclude search parameter<br><br>Sample: GET [base]/Patient?_id=[id]&_revinclude=Provenance:target |
| _id & _revinclude (for all US Core Profiles) | Supported, response expected | This can be used to search with any US Core Profile _id and the _revinclude search parameter<br><br>Sample: GET [base]/[Resource]?_id=[id]&_revinclude=Provenance:target |
| id | Supported, no response expected | Provenance is not a stored resources on this server, therefore there is no stored id to reference<br><br>Stored Provenance timeline is TBD |
| SHOULD Support | | |
| TBD | | |
| FHIR Allowed | | |
| TBD | | |

### Recommended Client Behavior for CMS support

- "_id" property must be augmented to ensure a subject request for it can be recognized by the client's FHIR server and routed to the Express Scripts PBM FHIR server.

### Sample

NOTE: The sample data below comes from our PBM UAT server loaded with "canned data" as opposed to data that has flowed through our full pipeline. These samples are representations of our expected implementation.

Request:

```
GET {baseURL}/Patient?_id=22222222-22a2-22a2-aaaa-
22a222aa2a2a&_revinclude=Provenance:target
```

Response:

```
{
  "resourceType": "Bundle",
  "id": "b631e146-c353-4ae7-919f-fac33b3c2d6c",
  "meta": {
    "lastUpdated": "2021-11-05T20:15:45.890+00:00"
  },
  "type": "searchset",
  "total": 1,
  "link": [
    {
```

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```
      "url": "https://api-uat.express-
scripts.io/fhir/v4/resources/Patient?_id=22222222-22a2-22a2-aaaa-
22a222aa2a2a&_revinclude=Provenance%3Atarget",
      "relation": "self"
    }
  ],
  "entry": [
    {
      "fullUrl": "https://api-uat.express-
scripts.io/fhir/v4/resources/Patient/22222222-22a2-22a2-aaaa-
22a222aa2a2a/_history/3",
      "resource": {
        "resourceType": "Patient",
        "id": "22222222-22a2-22a2-aaaa-22a222aa2a2a",
        "meta": {
          "versionId": "3",
          "lastUpdated": "2021-03-02T21:21:52.787+00:00",
          "source": "#qu96D5CJ1yV5v1qO",
          "profile": [
            "http://hl7.org/fhir/us/core/StructureDefinition/us-core-patient",
            "http://hl7.org/fhir/us/carin-bb/StructureDefinition/C4BB-Patient"
          ]
        },
        "identifier": [
          {
            "system": "https://code.esrx.com/esi-id",
            "value": "22222222-22a2-22a2-aaaa-22a222aa2a2a"
          },
          {
            "system": "https://code.esrx.com/mgp",
            "value": "222222222_BB2222222BBBB2B_001"
          }
        ],
        "name": [
          {
            "text": "ROBERT BROWN",
            "family": "BROWN",
            "given": [
              "ROBERT"
            ]
          }
        ],
        "gender": "male",
        "birthDate": "1992-02-17"
      },
      "search": {
        "mode": "match"
      }
    },
    {
      "fullUrl": "https://api-uat.express-
scripts.io/fhir/v4/resources/Provenance/h2h2h2h2-h222-2h22-2222-
h222h222222h/_history/2",
      "resource": {
        "resourceType": "Provenance",
        "id": "h2h2h2h2-h222-2h22-2222-h222h222222h",
        "meta": {
          "versionId": "2",
          "lastUpdated": "2021-04-07T13:49:16.710+00:00",
          "source": "#ooSjOQhc6GwjY15B"
        },
        "target": [
          {
```


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```
            "reference": "Patient/22222222-22a2-22a2-aaaa-22a222aa2a2a"
          }
        ],
        "recorded": "2021-02-02T09:18:48.79+00:00",
        "agent": [
          {
            "type": {
              "coding": [
                {
                  "system": "https://terminology.hl7.org/1.0.0//CodeSystem-
provenance-participant-type.html",
                  "code": "author",
                  "display": "author"
                }
              ]
            },
            "who": {
              "display": "Express Scripts"
            }
          },
          {
            "type": {
              "coding": [
                {
                  "system": "http://hl7.org/fhir/us/core/STU3.1.1/CodeSystem-us-core-
provenance-participant-type.html",
                  "code": "transmitter",
                  "display": "transmitter"
                }
              ]
            },
            "who": {
              "display": "Express Scripts"
            }
          }
        ]
      },
      "search": {
        "mode": "match"
      }
    }
  ]
}
```


## US Core Pulse Oximetry Profile

Express Scripts does not currently hold information associated with this profile as part of its PBM operations.

The PBM FHIR server will not return any data for an individual for this profile.

## US Core Smoking Status Observation Profile

Express Scripts does not currently hold this information as part of its PBM operations.

The PBM FHIR server will not return any data for an individual for this profile.

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## US Core Vital Signs Profile

Express Scripts does maintain data associated with the Vital Signs profile as part of its PBM operations.

As a result of normal PBM operations (i.e. not tied to any particular product), Express Scripts may have data for the following Vital Signs profiles in our FHIR server:

- Respiratory rate (rare)
- Heart rate
- Oxygen saturation
- Body temperature (rare)
- Body height
- Body weight
- BMI
- Diastolic blood pressure
- Systolic blood pressure

Express Scripts PBM data does not include:

- Head Occipital-frontal circumference
- Vital Signs panel
- Blood Pressure panel

Please note, however, we do expect to begin having Blood Pressure Panel, even though it is not currently populated.

This was determined by profiling records from our clinical repository. "Rare" means there were less than 100 records found, for comparison, most other observations had tens of thousands of records.

### Properties

| Required by Implementation Guide | |
|---|---|
| Property | ESI Support |
| status | This will have a fixed value of "unknown". |
| category | This will have a fixed value of "vital-signs". |
| code | Supported, this will contain a LOINC Code value. |
| subject | This will be populated with a reference to the FHIR Patient resource representing the patient involved in the observation. |

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| | |
|---|---|
| effectiveDateTime | Supported. Will normally be expressed as a single timestamp. |
| issued | Supported. Will normally be expressed as a single timestamp. |
| value | Supported. |
| Other properties that may be populated | |
| identifier | This will be populated with the ESI logical id, using http://code.esrx.com/esi-id as the system. This is provided for situations where a consumer chooses to replicate our resource in their own FHIR server but wants to maintain a cross reference. |
| interpretation | If present, will contain an observation interpretation code |
| referenceRange | Based on the vital sign taken, referenceRange may be populated to reflect information on the observation. |

### Searching

| SHALL Support from Implementation Guide | | |
|---|---|---|
| Name | Support | Description |
| TBD | | |
| SHOULD Support | | |
| TBD | | |
| FHIR Allowed | | |
| TBD | | |

### Recommended Client Behavior for CMS support

- "id" property must be augmented to ensure a subject request for it can be recognized by the client's FHIR server and routed to the Express Scripts PBM FHIR server.

### Sample

NOTE: The sample data below comes from our PBM UAT server loaded with "canned data" as opposed to data that has flowed through our full pipeline. These samples are representations of our expected implementation.

Request:

```
GET {baseURL}/Observation/1gg1gg11-g111-1g11-1g11-11g1gggg11gg
```

Response:

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```
{
    "resourceType": "Observation",
    "id": "1gg1gg11-g111-1g11-1g11-11g1gggg11gg",
    "meta": {
        "versionId": "3",
        "lastUpdated": "2021-03-02T18:35:50.715+00:00",
        "profile": [
            "https://www.hl7.org/fhir/observation.html"
        ]
    },
    "identifier": [
        {
            "system": "https://code.esrx.com/esi-id",
            "value": "1gg1gg11-g111-1g11-1g11-11g1gggg11gg"
        }
    ],
    "status": "unknown",
    "category": [
        {
            "coding": [
                {
                    "system": "http://terminology.hl7.org/CodeSystem/observation-
category",
                    "code": "vital-signs",
                    "display": "Vital Signs",
                    "userSelected": false
                }
            ]
        }
    ],
    "code": {
        "coding": [
            {
                "system": "http://loinc.org",
                "code": "8480-6",
                "display": "Systolic blood pressure",
                "userSelected": false
            }
        ],
        "text": "Systolic blood pressure"
    },
    "subject": {
        "reference": "Patient/11111111-11a1-11a1-aaaa-11a111aa1a1a"
    },
    "effectiveDateTime": "2020-01-10T20:50:58.125730Z",
    "issued": "2020-01-10T20:50:58.12573+00:00",
    "valueQuantity": {
        "value": 165.0
    },
    "interpretation": [
        {
            "text": "Normal"
        }
    ],
    "referenceRange": [
        {
            "low": {
                "value": 0.0
            },
            "high": {
                "value": 0.0
            }
        }
```


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```
        ]
}
```

## C4BB Coverage Profile

Express Scripts will provide resources for this profile. It will be populated from eligibility information held by Express Scripts. ExplanationOfBenefit resources will contain references to Coverage resources.

### Properties

| Supported | |
|---|---|
| Property | ESI Support |
| meta | Contains the metadata information related to the resource (lastUpdated and profile). |
| identifier | This will be populated with the ESI logical id, using http://code.esrx.com/esi-id as the system. This is provided for situations where a consumer chooses to replicate our resource in their own FHIR server but wants to maintain a cross reference.<br><br>This will also be populated with membership identifiers available for the individual, including alternate IDs that are obtained from eligibility information. These are populated using a system value of https://code.esrx.com/member-id. |
| status | This will have a fixed value of "active". |
| subscriberId | This will be populated with a reference to the FHIR Patient resource representing the patient subscriber for the coverage. |
| beneficiary | This will be populated with a reference to the FHIR Patient resource representing the patient beneficiary for the coverage. This may not be the subscriber or policy holder. |
| relationship | Will be populated with the relationship of the beneficiary Patient to the subscriber. |
| period | A datetime stamp for the period of the coverage. May contain start, end, or both. |
| payor | This will be populated with a reference to the FHIR Organization resource representing the payor organization for the coverage. |

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| | |
|---|---|
| class:group | This slice will be populated with the ESI Eligibility Group identifier. This group identifier may or may not be shared knowledge, please work with your Account Team for verification. |
| class:plan | This slice will not be provided by Express Scripts. It is the responsibility of the Health Plan client to either populate this value if "passing through" a modified version of the ESI resource, or to choose to use their own Coverage resource when responding to Patient Access API requests. |
| Other properties that may be populated | |
| type | This will be populated with the coverage category. |
| policyHolder | This will be populated with a reference to the FHIR Patient resource representing the patient subscriber for the coverage. |
| subscriber | This will be populated with a reference to the FHIR Patient resource representing the patient subscriber for the coverage. |
| dependent | This will be populated with the 3-digit ESI assigned person number. This is assigned based on a set of rules around the patient's demographics including, but not limited to, their name, relationship code to the subscriber, date of birth, and gender. |

### Searching

The CARIN Implementation Guide for Blue Button® does not mandate any required search parameters on the Coverage profile. In order to support the Patient/Member cross reference approach documented earlier, the Express Scripts PBM FHIR server will support:

| Name | Support | Description |
|---|---|---|
| identifier | Supported, response expected | This can be used to perform a member identifier-based search. Member identifiers exchanged through eligibility exchanges will be supported.<br>Sample: `GET {baseURL}/Coverage?identifier=https://code.esrx.com/member-id\|<member-id>` |
| _include (payor) | Supported, response expected | This can be used to perform a search (such as the member identifier-based search or resource id specific) and include the payor organization record associated to the specific Coverage in the response.<br>Sample: `GET {baseURL}/Coverage?identifier=https://code.esrx.com/member-id\|<member-id>&_include=Coverage:payor` |

### Recommended Client Behavior for CMS support

- In general, it is recommended that Health Plan clients use their own Coverage resource so that all ExplanationOfBenefit resources associated with the plans that fall under the CMS rules reference a common Coverage resource.

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- “id” property must be augmented to ensure a subject request for it can be recognized by the client’s FHIR server and routed to the Express Scripts PBM FHIR server.
- “policyHolder” property must be augmented to ensure a subject request for it can be recognized by the client’s FHIR server and routed to the Express Scripts PBM FHIR server.
- “subcriber” property must be augmented to ensure a subject request for it can be recognized by the client’s FHIR server and routed to the Express Scripts PBM FHIR server.
- “beneficiary” property must be augmented to ensure a subject request for it can be recognized by the client’s FHIR server and routed to the Express Scripts PBM FHIR server.
- “payor” property must be augmented to ensure a subject request for it can be recognized by the client’s FHIR server and routed to the Express Scripts PBM FHIR server.

### Sample

NOTE: The sample data below comes from our PBM UAT server loaded with “canned data” as opposed to data that has flowed through our full pipeline. These samples are representations of our expected implementation.

Request:

```
GET {baseURL}/Coverage/11ooo1o1-1o1o-11oo-111o-o11o11oo1111
```

Response:


```
{
    "resourceType": "Coverage",
    "id": "11ooo1o1-1o1o-11oo-111o-o11o11oo1111",
    "meta": {
        "versionId": "3",
        "lastUpdated": "2021-03-02T18:35:25.395+00:00",
        "profile": [
            "http://hl7.org/fhir/us/carin-bb/StructureDefinition/C4BB-Coverage"
        ]
    },
    "identifier": [
        {
            "system": "https://code.esrx.com/esi-id",
            "value": "11ooo1o1-1o1o-11oo-111o-o11o11oo1111"
        },
        {
            "system": "https://code.esrx.com/member-id",
            "value": "111111111"
        },
        {
            "system": "https://code.esrx.com/mgp",
            "value": "111111111_AA1111111AAAA1A_001"
        }
    ],
    "status": "active",
    "type": {
        "coding": [
            {
                "system": "http://terminology.hl7.org/CodeSystem/v3-ActCode",
                "code": "drugpol",
```


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```
                "display": "drug policy"
            }
        ]
    },
    "policyHolder": {
        "reference": "Patient/11111111-11a1-11a1-aaaa-11a111aa1a1a"
    },
    "subscriber": {
        "reference": "Patient/11111111-11a1-11a1-aaaa-11a111aa1a1a"
    },
    "subscriberId": "111111111",
    "beneficiary": {
        "reference": "Patient/11111111-11a1-11a1-aaaa-11a111aa1a1a"
    },
    "dependent": "001",
    "relationship": {
        "coding": [
            {
                "system": "http://terminology.hl7.org/CodeSystem/subscriber-
relationship",
                "code": "self"
            }
        ]
    },
    "period": {
        "start": "2020-03-23"
    },
    "payor": [
        {
            "reference": "Organization/p11pp1pp-1111-1pp1-1111-1111111111p1"
        }
    ],
    "class": [
        {
            "type": {
                "coding": [
                    {
                        "system": "http://terminology.hl7.org/CodeSystem/coverage-
class",
                        "code": "group",
                        "display": "Group"
                    }
                ],
                "text": "An employee group"
            },
            "value": "AA1111111AAAA1A",
            "name": "AA1111111AAAA1A"
        }
    ]
}
```


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## C4BB ExplanationOfBenefit Inpatient Institutional Profile

Express Scripts will not provide resources for this profile as we do not process claims of this type.



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The PBM FHIR server will not return any data for an individual for this profile.

## C4BB ExplanationOfBenefit Outpatient Institutional Profile

Express Scripts will not provide resources for this profile as we do not process claims of this type.

The PBM FHIR server will not return any data for an individual for this profile.

## C4BB ExplanationOfBenefit Pharmacy Profile

Express Scripts will provide resources for this profile. Each Pharmacy Claim we process will have an equivalent resource of this type. Only paid and adjusted claims will be available via this profile. Rejected claims and reversal claim records will not be available as ExplanationOfBenefit resources.

**Properties**

| Required by Implementation Guide | |
|---|---|
| Property | ESI Support |
| created | This will be populated with a datetime stamp for the response creation date. |
| supportingInfo | ESI will be populating the data we hold in our servers for the following supportingInfo slices as outlined by the implementation guide.<br>• dayssupply<br>• dawcode<br>• refillNum<br>• billingnetworkcontractingstatus<br>• brandgenericcode<br>• rxoriginCode<br>• clmrecvdate<br>• compoundcode |
| item.productOrService | This will contain the NDC and brand name for the prescription associated to the claim. |
| item.serviced[x] | This will contain the date of the service or prescription delivery. |
| item.quantity | This will contain the count of the prescription associated to the claim. |
| item.adjudication | ESI will be populating the data we hold in our server for the adjudiciationamounttype item.adjudication slice as outlined by the implementation guide. |

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| | |
|---|---|
| | For denialreason, while flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| item.detail | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| total | ESI will be populating the data we hold in our servers for the following total slices as outlined by the implementation guide.<br>• adjudicationamouunttype<br>• inoutnetwork<br>• And others |
| payment | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| processNote | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| Other properties that may be populated | |
| identifier | This will be populated with the ESI logical id, using http://code.esrx.com/esi-id as the system. This is provided for situations where a consumer chooses to replicate our resource in their own FHIR server but wants to maintain a cross reference.<br>In addition, the ESI Original Claim ID will be populated using https://code.esrx.com/esi-claim-id as the system. |
| status | This will have a fixed value of "active". |
| type | This will have a fixed value of "pharmacy". |
| use | This will have a fixed value of "claim". |
| patient | This will be populated with a reference to the FHIR Patient resource representing the patient associated to the claim. |
| billablePeriod | This will be populated with the relevant timeframe for the claim as a datetime stamp. |
| insurer | This will be populated with a reference to the Express Scripts payor organization resource. |
| provider | This will be populated with a reference to the FHIR Organization resource representing the provider organization involved in the claim. |
| prescription | Will be populated with the RxNorm code for the prescription associated to the claim. |
| originalPrescription | Will be populated with the RxNorm code for the prescription associated to the claim. |
| payee | This will be populated with a reference to the FHIR Patient resource representing the patient beneficiary involved in the claim. |
| outcome | This will contain the outcome of the claim. |

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| | |
|---|---|
| insurance | This will be populated with a reference to the FHIR Coverage resource representing the coverage associated to the claim. |

### Searching

| Name | Support | Description |
|---|---|---|
| identifier | Supported, response expected | This can be used to search with the ESI resource logical ID or the original ESI claim ID.<br>Sample: `GET {baseURL}/ExplanationOfBenefit?identifier=<ESI Logical ID or ESI original claim ID>` |
| patient | Supported, response expected | This can be used to search for any claims associated to a specific patient using the ESI Patient logical resource ID.<br>Sample: `GET {baseURL}/ExplanationOfBenefit?patient=<ESI Patient logical resource ID>` |
| type | Unsupported | |
| service-date | Unsupported | |
| _include (patient) | Unsupported | |
| _include (provider) | Unsupported | |
| _include (care-team) | Unsupported | |
| _include (coverage) | Supported, response expected | This search can be used to get an ExplanationOfBenefit response as well as the associated Coverage resources referenced within the ExplanationOfBenefit response.<br>Sample: `GET {baseURL}/ExplanationOfBenefit?<EOB search parameter&_include=ExplanationOfBenefit:coverage` |
| _include (insurer) | Unsupported | |
| _include (*) | Unsupported | |

### Recommended Client Behavior for CMS support

- "id" property must be augmented to ensure a subject request for it can be recognized by the client's FHIR server and routed to the Express Scripts PBM FHIR server.
- "patient" property must be augmented to ensure a subject request for it can be recognized by the client's FHIR server and routed to the Express Scripts PBM FHIR server.

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- "insurer" property must be augmented to ensure a subject request for it can be recognized by the client's FHIR server and routed to the Express Scripts PBM FHIR server.
- "provider" property must be augmented to ensure a subject request for it can be recognized by the client's FHIR server and routed to the Express Scripts PBM FHIR server.
- "payee" property must be augmented to ensure a subject request for it can be recognized by the client's FHIR server and routed to the Express Scripts PBM FHIR server.
- "insurance" property must be augmented to ensure a subject request for it can be recognized by the client's FHIR server and routed to the Express Scripts PBM FHIR server.

### Sample

NOTE: The sample data below comes from our PBM UAT server loaded with "canned data" as opposed to data that has flowed through our full pipeline. These samples are representations of our expected implementation.

Request:

```
GET {baseURL}/ExplanationOfBenefit?_id=12345678910112131
```

Response:

Due to the size of the ExplanationOfBenefit response, it is recommended to use the above sample request within the ESI PBM UAT environment or request the sample response from your ESI Account Team.

## C4BB ExplanationOfBenefit Professional NonClinical Profile

Express Scripts will not provide resources for this profile as we do not process claims of this type.

The PBM FHIR server will not return any data for an individual for this profile.

## C4BB Organization Profile

Express Scripts will provide Organization resources, specifically to represent the pharmacy associated with a ExplanationOfBenefit resource conforming to the C4BB EOB Pharmacy profile.

*Important! Organization appears in several of the implementation guides. When querying our FHIR server for a given context, be sure to include the _profile query parameter to ensure you do not receive Organization resources for other profiles. For example, CARIN IG for Blue Button® will have Organization resources that represent individual physical pharmacy locations, while Provider Directory only uses*

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*Organization resources for parent pharmacy organizations, instead relying on Location resources for individual pharmacy locations.*

### Properties

| Required by Implementation Guide | |
|---|---|
| Property | ESI Support |
| meta | Contains the metadata information related to the resource (lastUpdated and profile). |
| identifier:tax | This will be populated with the ESI logical id, using http://code.esrx.com/esi-id as the system. This is provided for situations where a consumer chooses to replicate our resource in their own FHIR server but wants to maintain a cross reference. |
| identifier:payerid | This will be populated with the payer ID as defined within ESI. |
| Identifier:naiccode | This will be populated with the ESI logical id, using http://code.esrx.com/esi-id as the system. This is provided for situations where a consumer chooses to replicate our resource in their own FHIR server but wants to maintain a cross reference. |
| Other properties that may be populated | |
| identifier | This will be populated with the ESI logical id, using http://code.esrx.com/esi-id as the system. This is provided for situations where a consumer chooses to replicate our resource in their own FHIR server but wants to maintain a cross reference. |
| type | This will have a fixed value of "pay". |
| name | When available, this will have the name of the payor organization. |

### Searching

| Name | Support | Description |
|---|---|---|
| name | Supported, response expected | Pass in the CarinBB _profile parameter and all, or a portion, of the name of the organization.<br><br>Sample: `GET {baseURL}/Organization?_profile=http://hl7.org/fhir/us/carin-bb/StructureDefinition/C4BB-Organization&name=Organization%20Name` |
| address | Supported, response expected | Pass in the CarinBB _profile parameter and all, or a portion, of the street address of the organization.<br><br>Sample: `GET {baseURL}/Organization?_profile=http://hl7.org/fhir/us/carin-bb/StructureDefinition/C4BB-Organization&address=Main%20St` |

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### Recommended Client Behavior for CMS support

- "id" property must be augmented to ensure a subject request for it can be recognized by the client's FHIR server and routed to the Express Scripts PBM FHIR server.
- "identifier" property may need to be augmented to ensure a subject request for it can be recognized by the client's FHIR server and routed to the Express Scripts PBM FHIR server.

### Sample

NOTE: The sample data below comes from our PBM UAT server loaded with "canned data" as opposed to data that has flowed through our full pipeline. These samples are representations of our expected implementation.

Request:

```
GET {baseURL}/Organization/p11pp1pp-1111-1pp1-1111-1111111111p1
```

Response:

```
{
    "resourceType": "Organization",
    "id": "p11pp1pp-1111-1pp1-1111-1111111111p1",
    "meta": {
        "versionId": "4",
        "lastUpdated": "2021-04-07T13:38:21.112+00:00",
        "profile": [
            "http://hl7.org/fhir/us/carin-bb/StructureDefinition/C4BB-Organization"
        ]
    },
    "identifier": [
        {
            "type": {
                "coding": [
                    {
                        "system": "http://hl7.org/fhir/us/carin-
bb/CodeSystem/C4BBIdentifierType",
                        "code": "payerId",
                        "display": "Payer ID"
                    }
                ],
                "text": "Payer ID"
            },
            "system": "https://code.esrx.com/esi-payer-id",
            "value": "99999"
        },
        {
            "system": "https://code.esrx.com/esi-id",
            "value": "p11pp1pp-1111-1pp1-1111-1111111111p1"
        }
    ],
    "active": true,
    "type": [
        {
            "coding": [
                {
                    "system": "http://terminology.hl7.org/CodeSystem/organization-
type",
                    "code": "pay"
                }
            ]
```

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```
        }
    ],
    "name": "PAYOR ORGANIZATION NAME"
}
```

## C4BB Patient Profile

Express Scripts will provide Patient resources for this profile. These are the same Patient resources that are returned for the US Core Patient profile, our Patient resources will support a superset of what is required for both profiles.

*The Patient profile is also used by the CARIN Implementation Guide for Blue Button®. That profile is built on this US Core profile. Unlike the situation for Location and Organization, the overall scope of data is consistent between US Core and CARIN IG for Blue Button®. That is, any Patient resource that could be used in a US Core context could also appear in a CARIN IG for Blue Button® context, so there is normally no reason to utilize profile metadata when working with this resource type.*

### Properties

| Supported | |
|---|---|
| Property | ESI Support |
| identifier | This will be populated with the ESI logical id, using http://code.esrx.com/esi-id as the system. This is provided for situations where a consumer chooses to replicate our resource in their own FHIR server but wants to maintain a cross reference.<br><br>This will also contain a value for mgp based cross-referencing, if you have access to the ESI member, group, and person number identifiers in your system. See the earlier section on patient cross-referencing for more information. |
| us-core-race | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| us-core-ethnicity | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| us-core-birthsex | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| name | Supported. |
| telecom | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| gender | Supported. |
| birthDate | Supported. |

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| | |
|---|---|
| address | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| communication | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |

### Searching

The CARIN IG for Blue Button® does not require any additional search parameters beyond those specified within the US Core Patient profile. Please consult the US Core Patient profile section for information on supported search parameters.

### Recommended Client Behavior for CMS support

- "id" property must be augmented to ensure a subject request for it can be recognized by the client's FHIR server and routed to the Express Scripts PBM FHIR server.

### Sample

Please consult the US Core Patient profile section for the sample.

## C4BB Practitioner Profile

Express Scripts may hold information as a part of its PBM operations.

The PBM FHIR server will not return any data for and individual for this profile as no other supported profile references this profile for 7/1/2021.

As stated in the implementation guide, "the CoveragePlan resource represents a health plan health plan and contains links to administrative information, a list of formulary drugs covered under that plan, and a definition of drug tiers and their associated cost-sharing models."

CoveragePlan resources are represented by the FHIR List resource, utilizing the profile property in the meta information to indicate that a particular List resource represents a CoveragePlan.

CoveragePlan is meant to contain information about the plan, in addition to a collection of MedicationKnowledge resources. While Express Scripts can be considered the "master" of formulary information for many of our clients, we are not the master of the plan information. There is information about your plans that Express Scripts does not hold in our systems and it is your responsibility to populate this information prior to responding to third party application requests.

### Additional Comments

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The implementation guide makes no mention of how to determine the correct coverage plan for the patient using their application, as there is no direct correlation to the Patient or their current coverage specified as part of the implementation guide. The anticipated client queries would allow a third-party application to first determine all possible CoveragePlans, present them to a user, and then based on user selection, execute a query for the specific CoveragePlan desired. This lack of clarity does not impact the features of the FHIR server, however, it is noted here, since this could result in third party app developers reaching out the developer support channels for the Health Plan for guidance. It is left to the discretion of each Health Plan to decide whether they want to limit third party access to only the Coverage Plan resource that corresponds to the patient's active coverage.

**Properties**

| Required by Implementation Guide | |
|---|---|
| Property | ESI Support |
| id | Express Scripts will populate this with the logical id from our server. |
| identifier | Express Scripts will populate a business identifier with the agreed upon values for the plans that fall under the CMS rules.<br><br>In the case of Medicare Advantage Part-D plans, this will consist of the CMS Contract ID and the CMS PBP (Plan Benefit Package) ID, for example H1234-001.<br><br>For other plans under the CMS rules, IDs have been determined for each client. Please see the Plan Identifier section below for more information or contact your ESI Account Team if you have questions on this. |
| usdf-DrugTierDefinition-extension | Supported. |
| usdf-Network-extension | Supported. |
| usdf-SummaryURL-extension | Express Scripts will not populate this information but will instead send the DataAbsentReason.<br><br>As this is a must support field with a Cardinaltiy of 1..1, it is the Health Plan's responsibility for augmenting the ESI response with this information if you choose to use the ESI FHIR resource as the basis for what is provided to a third party application. |
| usdf-FormularyURL-extension | Express Scripts will not populate this information. While it is must support, it has a cardinality of 0..1 which allows us to leave this property unpopulated when we do not hold data for it. The Health Plan can choose to augment our response with this information at their discretion. |
| usdf-MarketingURL-extension | Express Scripts will not populate this information. While it is must support, it has a cardinality of 0..1 which allows us to leave this property unpopulated when we do not hold data for it. The Health Plan can choose to augment our response with this information at their discretion. |
| usdf-PlanIDType-extension | This will have a fixed value of "CMSContractId-CMSPlanID". |

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### Searching

The IG does not formally identify any search parameters for this profile in the "search parameters" portion of the implementation guide. However, on the home page of the implementation guide, it clearly calls out use cases that involve search parameters on CoveragePlan. We have listed those parameters here.

| SHALL Support from Implementation Guide | | |
|---|---|---|
| Name | Support | Description |
| _profile | Supported, response expected | This allows a search on the FHIR List resource for List resources adhering to the CoveragePlan profile. We put this in the SHALL support category, since without support for this, querying for a full list of plans could be very challenging should Express Scripts ever have List resources in our server for other purposes.<br><br>Sample: `GET {baseURL}/List?_profile=http://hl7.org/fhir/us/davinci-drug-formulary/StructureDefinition/usdf-CoveragePlan` |
| identifier | Supported, response expected | Pass in the _profile (see above) and the identifier value for the CoveragePlan. Plan ID should be specified using values as agreed upon with Express Scripts. See the "identifier" description in the properties section for information on allowed values for this operation.<br><br>Sample: `GET {baseURL}/List?_profile=http://hl7.org/fhir/us/davinci-drug-formulary/StructureDefinition/usdf-CoveragePlan&identifier=H9460-001` |
| item | Supported, response expected | Pass in the _profile (see above) and the item MedicationKnowledge resource id, if known.<br><br>Sample: `GET {baseURL}/List?_profile=http://hl7.org/fhir/us/davinci-drug-formulary/StructureDefinition/usdf-CoveragePlan&item=55c78bb4-c0d5-421f-972f-c8c05e467395` |
| status | Supported, response expected | Pass in the _profile (see above) and the CoveragePlan status ('current', 'retired', and 'entered-in-error' supported at this time).<br><br>Sample: `GET {baseURL}/List?_profile=http://hl7.org/fhir/us/davinci-drug-formulary/StructureDefinition/usdf-CoveragePlan&status=current` |
| SHOULD Support | | |
| _history | Unsupported | |
| FHIR Allowed | | |
| TBD | | |

### Recommended Client Behavior for CMS support

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#### Plan Identifier

The implementation guide is in conflict with the CMS rules as it currently stands.

The implementation guide indicates that the Plan ID should be a "unique, 14-character, HIOS-generated Plan ID number." Unfortunately, not all plans required by CMS have HIOS IDs. As a result, Express Scripts has worked with each of our clients to identify agreed upon identifiers that can be used for this value. For Medication Advantage Part D plans, this will be a concatenation of the CMS Contract ID and the CMS PBP (Plan Benefit Package) ID, such as H1234-001 For the remaining plans (Medicare, QHP on FFE, CHIP), use the agreed upon values. These may be HIOS Plan IDs, but may also be identifiers only of meaning to each client.

Remember that you need to document the behavior of your FHIR server accurately. If you have HIOS Plan IDs available in your systems, but are using an internal identifier for the exchange with Express Scripts, you will need to replace our identifier with your HIOS Plan ID prior to returning this to third party applications.

#### Medication Knowledge Collection

A Formulary can contain many medications, likely tens of thousands. While these are only references within the collection, it does make for a very large CoveragePlan object. As a result, if you perform a search for all CoveragePlans, the results will be paginated and will only contain one CoveragePlan resource per result page. Pagination is implementing using the native before of the FHIR server.

### Sample

NOTE: The sample data below comes from our PBM UAT server loaded with "canned data" as opposed to data that has flowed through our full pipeline. These samples are representations of our expected implementation.

> Due to the size of the List response, it is recommended to use a sample within the ESI PBM UAT environment or request the sample response from your ESI Account Team.

## DaVinci FormularyDrug Profile

As stated in the implementation guide, "the FormularyDrug resource represents a drug that is part of a drug formulary. A drug formulary is a list of brand-name and generic prescription drugs a health insurer agrees to pay for, at least partially, as part of health insurance coverage. In addition to identifying the drug by its RxNorm code, and the PlanID of the formulary, the FormularyDrug entry provides information on prescribing limitations, and optionally drug classification and alternatives."

FormularyDrugs are represented by the FHIR MedicationKnowledge resource, utilizing the profile property in the meta information to indicate that a particular MedicationKnowledge resource represents a FormularyDrug.

A given FormularyDrug resource is specific to a plan. If the same medication is part of a formulary for a different plan, there will be a separate FormularyDrug resource for the relationship between the Medication and the other formulary.

### Additional Comments

While not expected, the binding for coding is considered extensible. If Express Scripts has any medications that cannot be accurately represented using RxNorm, these will not be represented or populated within the MedicationKnowledge resource.

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**Properties**

<table>
<tr><th colspan="2">Required by Implementation Guide</th></tr>
<tr><th>Property</th><th>ESI Support</th></tr>
<tr><td>usdf-PriorAuthorization-extension</td><td>Supported.</td></tr>
<tr><td>usdf-StepTherapyLimit-extension</td><td>Supported.</td></tr>
<tr><td>usdf-QuantityLimit-extension</td><td>Supported.</td></tr>
<tr><td>usdf-PlanID-extenstion</td><td>For Medication Advantage Part D plans, this will be a concatenation of the CMS Contract ID and the CMS PBP (Plan Benefit Package) ID, such as H1234-001 For the remaining plans (Medicare, QHP on FFE, CHIP), use the agreed upon values. These may be HIOS Plan IDs, but may also be identifiers only of meaning to each client.</td></tr>
<tr><td>usdf-DrugTierID-extension</td><td>Supported. There are some codes that ESI will support beyond the implementation guide. See below for the Drug Tiers and the associated system that can be expected.
<table>
<tr><th>Drug Tier</th><th>System</th></tr>
<tr><td>formulary-medication</td><td>https://code.esrx.com/esi-drug-tier</td></tr>
<tr><td>generic</td><td>http://hl7.org/fhir/us/davinci-drug-formulary/CodeSystem/usdf-DrugTierCS</td></tr>
<tr><td>non-preferred-brand</td><td>http://hl7.org/fhir/us/davinci-drug-formulary/CodeSystem/usdf-DrugTierCS</td></tr>
<tr><td>non-preferred-drug</td><td>https://code.esrx.com/esi-drug-tier</td></tr>
<tr><td>preferred-brand</td><td>http://hl7.org/fhir/us/davinci-drug-formulary/CodeSystem/usdf-DrugTierCS</td></tr>
<tr><td>preferred-brand-generic</td><td>https://code.esrx.com/esi-drug-tier</td></tr>
<tr><td>preferred-generic</td><td>http://hl7.org/fhir/us/davinci-drug-formulary/CodeSystem/usdf-DrugTierCS</td></tr>
<tr><td>select-care</td><td>https://code.esrx.com/esi-drug-tier</td></tr>
<tr><td>select-care-drugs</td><td>https://code.esrx.com/esi-drug-tier</td></tr>
<tr><td>select-diabetic</td><td>https://code.esrx.com/esi-drug-tier</td></tr>
<tr><td>specialty</td><td>http://hl7.org/fhir/us/davinci-drug-formulary/CodeSystem/usdf-DrugTierCS</td></tr>
</table>
</td></tr>
</table>

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| | | | |
|---|---|---|---|
| | | tier-1 | https://code.esrx.com/esi-drug-tier |
| code | Where data is available within our servers, this will be populated with the RxNorm code and display name. When not available, a resource will not be populated. | | |

### Plan Identifier

As with CoveragePlan, a given FormularyDrug is required to have the PlanID extension, and the Plan ID is intended to be the 14-character HIOS Plan identifier. As this information may not be held by Express Scripts, if it is necessary to utilize a separate identifier agreed upon by Express Scripts and its clients, ESI will make this separate identifier(s) using a separate ESI specific FHIR extension:

```
https://code.esrx.com/fhir/extensions/davinci-drug-formulary/StructureDefinition/esrx-ESRXPlanID-extension
```

The value assigned to this property would need to be the same as the value available in the `identifier` collection on the CoveragePlan resource. The `identifier` property within the FormularyDrug (MedicationKnowledge) cannot be used in this situation, since we need to include the identifier for the Plan, not an alternate identifier for the Formulary Drug.

### Searching

Four different search use cases are called out in the anticipated clients' queries in the implementation guide:

- Find all FormularyDrugs in a CoveragePlan
- Find all FormularyDrugs in a Specific Tier of a CoveragePlan
- Find a FormularyDrug by code in a CoveragePlan
- Find a FormularyDrug by code across all CoveragePlans

All of these use cases will be supported, however, CoveragePlans must be specified using the Express Scripts custom extension for a shared plan ID, rather than the HIOS Plan ID as specified in the Implementation Guide.

In addition, the search parameters section of the implementation guide also calls out that DrugName can be used as a search parameter. Express Scripts will support this search, which will be evaluated against the "display" value within the coded value (using RxNorm) for the FormularyDrug resource.

At this time, the Express Scripts PBM FHIR server does not hold any MedicationKnowledge resources outside of the FormularyDrug profile.

| Name | Support | Description |
|---|---|---|
| _profile | TBD | |
| _id | Supported, response expected | Pass in the MedicationKnowledge resource id, can be found within the CoveragePlan searches.<br>Sample: `GET {baseURL}/MedicationKnowledge?_id=[resource_id]` |

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| | | |
|---|---|---|
| DrugName | Supported, response expected | Pass in the string query (starts with or contains) for the drug name associated with the RxNorm code.<br>Sample: `GET {baseURL}/MedicationKnowledge?DrugName=Lisinopril` |
| DrugTier | TBD | |
| DrugPlan | Supported, response expected | For Medication Advantage Part D plans, pass in the concatenation of the CMS Contract ID and the CMS PBP (Plan Benefit Package) ID, such as H1234-001<br>Sample: `GET {baseURL}/MedicationKnowledge?DrugPlan=H1234-001`<br>For the remaining plans (Medicare, QHP on FFE, CHIP), use the agreed upon values. These may be HIOS Plan IDs, but may also be identifiers only of meaning to each client. |
| code | Supported, response expected | Pass in the _profile (see above) and the RX Norm code.<br>Sample: `GET {baseURL}/MedicationKnowledge?_profile=http://hl7.org/fhir/us/Davinci-drug-formulary/StructureDefinition/usdf-FormularyDrug&code=898362` |
| _history | Unsupported | |

### Direct retrieval

Express Scripts will support the direct retrieval of individual FormularyDrug resources by the Express Scripts logical id for the resource.

```
GET {baseURL}/MedicationKnowledge/[ESILogicalResourceID]
```

## DaVinci PlanNet Endpoint Profile

Express Scripts does not currently plan on providing any Endpoint resources as part of our support for Provider Directory.

The PBM FHIR server will not return any data for an individual for this profile.

## DaVinci PlanNet HealthcareService Profile

This profile, realized through the FHIR HealthcareService resource, will be provided by the Express Scripts PBM FHIR server. Express Scripts will only provide HealthcareService resources that represent pharmacy services with relationships to the physical locations where those services are provided. The responsibility for providing resources that represent non-pharmacy providers is the responsibility of the Health Plan.

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A HealthcareService resource, on its own, is independent of any particular Pharmacy Network. As such, properties like specialty represent the entire list of specialties that can be provided by the particular HealthcareService. Plannet OrganizationalAffiliation also holds a list of specialties, but these would only be the specialties allowed in the context of the network.

A HealthcareService resource will be created for each parent pharmacy organization, i.e. at the chain level.

### Properties

| Required by Implementation Guide | |
|---|---|
| Property | ESI Support |
| plannet-NetPatients-extension | TBD |
| identifier | This will be populated with the ESI logical id, using http://code.esrx.com/esi-id as the system. This is provided for situations where a consumer chooses to replicate our resource in their own FHIR server but wants to maintain a cross reference. |
| active | This will have a fixed value of "true". |
| providedBy | This will be populated with a reference to the FHIR Organization resource representing the associated plannet Organization. |
| category | ESI will always populate this property with a coded value of "pharm". |
| type | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| specialty | ESI will populate this property where we hold this categorization, specifically these possible values. (Additional specialty codes are still being verified): |

| | |
|---|---|
| 332000000X | Military/U.S. Coast Guard Pharmacy |
| 332100000X | Department of Veterans Affairs (VA) Pharmacy |
| 332800000X | Indian Health Service/Tribal/Urban Indian Health (I/T/U) Pharmacy |
| 333600000X | Pharmacy |
| 3336C0002X | Clinic Pharmacy |
| 3336C0004X | Compounding Pharmacy |
| 3336H0001X | Home Infusion Therapy Pharmacy |
| 3336I0012X | Institutional Pharmacy |
| 3336L0003X | Long Term Care Pharmacy |

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| | |
|---|---|
| | 3336M0002X Mail Order Pharmacy<br>3336S0011X Specialty Pharmacy |
| location | This will be populated with a reference to the FHIR Location resource representing the associated plannet Location. |
| name | Name of the healthcare service. |
| comment | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| extraDetails | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| photo | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| telecom | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| coverageArea | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it.<br><br>Express Scripts interpretation of this property is that this would hold a reference to one or more Location resources that represent a geographic region whose residents are allowed to receive healthcare services in this resource from the specified locations. This is not information Express Scripts holds, nor is it even an offering of our pharmacy network. |
| serviceProvisionCode | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| eligibility | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| program | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| characteristic | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| communication | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| referralMethod | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| appointmentRequired | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| availableTime | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |

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| | |
|---|---|
| notAvailable | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| availabilityExceptions | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| endpoint | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |

### Searching

| SHALL Support from Implementation Guide | | |
|---|---|---|
| Name | Support | Description |
| location | Supported, response expected | Pass in a location resource id to pull an associated HealthcareService record.<br>Sample: `GET {baseURL}/HealthcareService?location=7e254b3a-3e56-4e0c-bb81-81d47e2398da` |
| coverage-area | Supported, empty bundle expected | |
| organization | Supported, response expected | Pass in a provided-by organization resource id to pull an associated HealthcareService record.<br>Sample: `GET {baseURL}/HealthcareService?organization=d1ae3375-de02-49e6-9144-11817f875a43` |
| endpoint | Supported, empty bundle expected | |
| name | Supported, response expected | Pass in all, or a portion, of a healthcare service's name.<br>Sample: `GET {baseURL}/HealthcareService?name=Main%Street%Pharmacy` |
| service-category | Supported, response expected | Pass in a system\|code value combination for the service available (only 'PHARM' is supported at this time).<br>Sample: `GET {baseURL}/HealthcareService?service-category=http://hl7.org/fhir/us/davinci-pdex-plan-net/CodeSystem/HealthcareServiceCategoryCS\|PHARM` |
| service-type | Supported, empty bundle expected | |

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| | | |
|---|---|---|
| specialty | Supported, response expected | Pass in a system\|code value combination for a specialty type for the healthcare service (codes outlined in the 'specialty' property in the supported properties table above).<br><br>Sample: `GET {baseURL}/HealthcareService?specialty=http://nucc.org/provider-taxonomy\|333600000X` |
| FHIR Allowed | | |
| TBD | | |

## DaVinci PlanNet InsurancePlan Profile

Express Scripts will provide an InsurancePlan resource for each plan offered by clients that is subject to the CMS rules. Express Scripts will not be providing access to Pharmacy Networks associated with commercial plans at this time.

InsurancePlan resources will provide the minimal set of information required for correlation between the HealthPlan's own InsurancePlan resource and the Express Scripts representation, specifically the CMS plan identifier. The InsurancePlan resource will not be fully conformant with the DaVinci PDEX Plan Net implementation guide, and as such, the Express Scripts resource should never be returned directly to third party applications. Its intended use is solely as a correlation point for access to the related resources that represent the actual pharmacy network.

**Properties:**

| Required by Implementation Guide | |
|---|---|
| Property | ESI Support |
| status | This will always be populated with "active". |
| type | This will populated with implementation guide approved values from our ESI InsurancePlan crosswalk. If not identified, default values will be "medid" for Medicare and "medi" for Medicaid or CHIP plans. |
| name | This will be populated if specified on our ESI InsurancePlan crosswalk. Outside of the crosswalk, this will not be populated as ESI does not hold this data. |
| alias | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| ownedBy | This will be populated with a reference to the FHIR Organization resource representing the payor organization. |
| administeredBy | This will be populated with a reference to the FHIR Organization resource representing the payor organization. |
| coverageArea | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |

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| | |
|---|---|
| | Express Scripts interpretation of this property is that this would hold a reference to one or more Location resources that represent a geographic region whose residents are allowed to receive healthcare services in this resource from the specified locations. This is not information Express Scripts holds, nor is it even an offering of our pharmacy network. |
| contact | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| endpoint | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| network | This will be populated by Express Scripts with references to the network resources that are associated with the plan. |

Regarding the network property, we recommend that the Health Plan keep pharmacy networks separate from provider networks. In an InsurancePlan response to a third-party application, the Health Plan's FHIR server should complement its own provider network references with references to the pharmacy networks provided by Express Scripts with appropriate augmentation (see "Manipulating FHIR responses" section) of the references to allow them to be recognized by your FHIR server and routed to Express Scripts should the third-party application use them in a subsequent inquiry.

### Searching

| SHALL Support from Implementation Guide | | |
|---|---|---|
| Name | Supported | Description |
| identifier | Supported, response expected | Pass in an identifier system\|code value combination.<br>Sample: `GET {baseURL}InsurancePlan?identifier=https://code.esrx.com/cms-contract-plan-id\|H1000-001` |
| administered-by | Supported, empty bundle expected | |
| owned-by | Supported, empty bundle expected | |
| coverage-area | Supported, empty bundle expected | |
| name | Supported, response expected | Pass in all, or a portion, of the name of the InsurancePlan.<br>Sample: `GET {baseURL}InsurancePlan?name=Plan%A` |
| plan-type | Supported, empty bundle expected | |

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| | | |
|---|---|---|
| type | Supported, response expected | Pass in an insurance plan type system\|code value combination (only 'Drug' supported at this time)<br>Sample: `GET {baseURL}InsurancePlan?type=http://terminology.hl7.org/CodeSystem/insurance-plan-type\|Drug` |
| FHIR Allowed | | |
| TBD | | |

## DaVinvi PlanNet Location Profile

Express Scripts will provide a FHIR Location resource for each physical location where pharmacy services can be obtained by a member. The Location resource will hold a reference to its parent organization via the managingOrganization reference.

### Properties

| Required by Implementation Guide | |
|---|---|
| Property | ESI Support |
| plannet-NewPatients-extension | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| accessibility | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| newpatientprofile | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| identifier | This will be populated with the ESI logical id, using http://code.esrx.com/esi-id as the system. This is provided for situations where a consumer chooses to replicate our resource in their own FHIR server but wants to maintain a cross reference. |
| alias | Will hold the alias name for the Location. |
| description | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| type | This will have a fixed value of "pharm". |
| physicalType | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |

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| | |
|---|---|
| position | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| managingOrganization | This will be populated with a reference to the FHIR Organzation resource representing the managing plannet Organization associated. |
| partOf | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| hoursOfOperation | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| availabilityExceptions | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| endpoint | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |

### Searching

| SHALL Support from Implementation Guide | | |
|---|---|---|
| Name | Supported | Description |
| partof | Supported, empty bundle expected | |
| organization | Supported, response expected | Pass in the PDEX _profile parameter and the managingOrganization resource id.<br>Sample: `GET {baseURL}Location?_profile=http://hl7.org/fhir/us/davinci-pdex-plan-net/StructureDefinition/plannet-Location&organization=85d82b9b-5991-4c35-bdbb-cf93c91c22bc` |
| endpoint | Supported, empty bundle expected | |
| address | Supported, response expected | Pass in the PDEX _profile parameter and all, or a portion of, the street address of the location.<br>Sample: `GET {baseURL}Location?_profile=http://hl7.org/fhir/us/davinci-pdex-plan-net/StructureDefinition/plannet-Location&address=Main%20St` |
| address-city | Supported, response expected | Pass in the PDEX _profile parameter and all, or a portion of, the city of the location.<br>Sample: `GET {baseURL}Location?_profile=http://hl7.org/fhir/us/davinci-` |

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| | | |
|---|---|---|
| | | pdex-plan-net/StructureDefinition/plannet-Location&address-city=boston |
| address-state | Supported, response expected | Pass in the PDEX _profile parameter and the state code for the location.<br>Sample: GET {baseURL}Location?_profile=http://hl7.org/fhir/us/davinci-pdex-plan-net/StructureDefinition/plannet-Location&address-state=MA |
| address-postalcode | Supported, response expected | Pass in the PDEX _profile parameter and the postal code for the location.<br>Sample: GET {baseURL}Location?_profile=http://hl7.org/fhir/us/davinci-pdex-plan-net/StructureDefinition/plannet-Location&address-postalcode=02101 |
| type | Supported, response expected | Pass in the PDEX _profile parameter and the system\|code value combination for the location role code (only 'PHARM' is supported at this time).<br>Sample: GET {baseURL}Location?_profile=http://hl7.org/fhir/us/davinci-pdex-plan-net/StructureDefinition/plannet-Location&type=http://terminology.hl7.org/CodeSystem/v3-RoleCode\|PHARM |
| FHIR Allowed | | |
| TBD | | |

## DaVinci PlanNet Network Profile

Express Scripts will provide a FHIR Organization resource, consistent with the PlannetNetwork profile, for each InsurancePlan as the organization point for all pharmacies that are available to the plan.

Please consult the PlanNet Organization Profile section for formatting.

## DaVinci PlanNet Organization Profile

Express Scripts will provide a FHIR Organization resource, conforming to the PlannetOrganization profile, for each parent pharmacy organization. This includes Organization resources that have a one to one mapping with a single pharmacy location, as well as Organization resources that represent a parent organization, such as a chain or superchain.

Express Scripts will not provide Organization resources that represents the Health Plan client (ownedBy and administeredBy properties of the InsurancePlan resource). It is the responsibility of the Health Plan client to populate this information.

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*Important! Organization appears in several of the implementation guides. When querying our FHIR server for a given context, be sure to include the _profile query parameter to ensure you do not receive Organization resources for other profiles. For example, CARIN IG for Blue Button® will have Organization resources that represent individual physical pharmacy locations, while Provider Directory only uses Organization resources for parent pharmacy organizations, instead relying on Location resources for individual pharmacy locations.*

**Properties**

| Required by Implementation Guide | |
|---|---|
| Property | ESI Support |
| meta | |
| identifier.npi | This will be populated with the NPI code associated to the Organization. |
| identifier.tax | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| identifier.payerid | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| identifier.naiccode | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| active | This will have a fixed value of "true". |
| name | This will populate with the name of the Organization as held by the Express Scripts source systems. |
| alias | This will populate with the name alias of the Organization as held by the Express Scripts source systems. |
| telecom | This will populate with the telecom information of the Organization as held by the Express Scripts source systems. |
| address | This will populate with the address information of the Organization as held by the Express Scripts source systems. |
| Other properties that may be populated | |
| identifier | This will be populated with the ESI logical id, using http://code.esrx.com/esi-id as the system. This is provided for situations where a consumer chooses to replicate our resource in their own FHIR server but wants to maintain a cross reference. |
| type | This will be populated with the Organization type.<br>• Independent pharmacies will hold types = "prvgrp" and "fac"<br>• Retail pharmacies will hold a type of "fac"<br>• Chain (parent) pharmacies will hold a type of "prvgrp" |

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**Searching**

| SHALL Support from Implementation Guide | | |
|---|---|---|
| Name | Support | Description |
| partof | Supported, response expected | Pass in the part of organization resource ID (only supporting 1 organization resource ID for Express Scripts at this time). Please note, the ID in the sample below is not the assigned Production ID.<br><br>Sample: `GET {baseURL}Organization?partof=c30b8f6f-172f-4157-a1ac-6b6682364d97` |
| endpoint | Supported, empty bundle expected | |
| address | Supported, response expected | Pass in the PDEX _profile query parameter and all, or a portion of, the street address of the organization.<br><br>Sample: `GET {baseURL}Organization?_profile=http://hl7.org/fhir/us/davinci-pdex-plan-net/StructureDefinition/plannet-Organization&address=Main%20St` |
| name | TBD | |
| type | Supported, response expected | Pass in the PDEX _profile query parameter and the system\|code value combination for the organization type.<br><br>Sample: `GET {baseURL}Organization?_profile=http://hl7.org/fhir/us/davinci-pdex-plan-net/StructureDefinition/plannet-Organization&type=http://hl7.org/fhir/us/davinci-pdex-plan-net/CodeSystem/OrgTypeCS\|prvgrp` |
| coverage-area | Supported, empty bundle expected | |
| FHIR Allowed | | |
| TBD | | |

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## DaVinvi PlanNet OrganizationAffiliation Profile

Express Scripts will provide FHIR OrganizationAffiliation resources, conforming to the PlanNet OrganizationAffiliation profile. An OrganizationAffiliation resource holds a relationship to an Organization resource,



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via the participatingOrganization property, that represents the parent pharmacy organization participating in the network.

Physical locations of that pharmacy that are included in the network are represented as references to Location resources. Only the locations included in the network are included in the collection. There can be other locations with relationships to the participating organization that are not included, such as would be the case when only a subset of pharmacy locations from a nationwide pharmacy are included in a network for a regional plan.

The OrganizationAffiliation resource also holds a collection of references to HealthcareService resources. It also holds a list of specialties associated with the participating organization in the context of this network. HealthcareService resources also hold a list of specialties, however, it is the list of specialties within the OrganizationAffiliation resources that represents the allowed specialties in the context of the network.

### Properties

| Required by Implementation Guide | |
|---|---|
| Property | ESI Support |
| active | This will be a fixed value of “true”. |
| period | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| organization | This will be populated with a reference to the FHIR Organization resource representing the PlanNet Organization associated. |
| participatingOrganization | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| network | This will be populated with a reference to the FHIR Organization resource representing the PlanNet Network associated. |
| code | This will hold a fixed value of “pharmacy”. |
| specialty | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| location | This will be populated with a reference to the FHIR Location resource representing the PlanNet Location associated. |
| healthcareService | This will be populated with a reference to the FHIR HealthcareService resource representing the PlanNet HealthcareService associated. |
| telecom | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |
| endpoint | While flagged as must support, cardinality (0..*) allows us to leave this property unpopulated when we do not hold data for it. |

### Searching

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| SHALL Support from Implementation Guide | | |
|---|---|---|
| Name | Support | Description |
| primary-organization | Supported, response expected | Pass in the Organization resource ID associated to the pharmacy chain.<br>Sample: `GET {baseURL}OrganizationAffiliation?primary-organization=5b675f0e-c57b-4c05-9491-86f3961d44a2` |
| participating-organization | Supported, empty bundle expected | |
| location | Supported, response expected | Pass in an associated Location resource ID.<br>Sample: `GET {baseURL}OrganizationAffiliation?location=5b675f0e-c57b-4c05-9491-86f3961d44a2` |
| service | Supported, response expected | Pass in an associated HealthcareService resource ID.<br>Sample: `GET {baseURL}OrganizationAffiliation?service=5b675f0e-c57b-4c05-9491-86f3961d44a2` |
| network | Supported, response expected | Pass in an associated network organization resource ID.<br>Sample: `GET {baseURL}OrganizationAffiliation?network=5b675f0e-c57b-4c05-9491-86f3961d44a2` |
| endpoint | Supported, empty bundle expected | |
| role | Supported, response expected | Pass in the role associated to the organization affiliation (only 'pharmacy' is supported at this time).<br>Sample: `GET {baseURL}OrganizationAffilication?role=pharmacy` |
| specialty | Supported, response expected | Pass in the system\|code value combination for the provider taxonomy code related to the specialty.<br>Sample: `GET {baseURL}OrganizationAffiliation?specialty=http://nucc.org/provider-taxonomy\|333600000X` |
| FHIR Allowed | | |
| TBD | | |

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Express Scripts will not return any FHIR Practitioner resources as part of Provider Directory / Pharmacy Network support. Pharmacy network decisions are based on physical pharmacy locations, not the individual pharmacists or pharmacy technicians within them.

The PBM FHIR server will not return any data for an individual for this profile.

## PlannetPractitionerRole

Express Scripts will not return any FHIR PractitionerRole resources as part of Provider Directory / Pharmacy Network support. Pharmacy network decisions are based on physical pharmacy locations, not the individual pharmacists or pharmacy technicians within them.

The PBM FHIR server will not return any data for an individual for this profile.

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# Appendix

## Express Scripts API Consumer Security Guide

### Introduction

Express Scripts platform APIs, including our FHIR APIs, are secured using OAuth 2.0. This document outlines what steps are required to execute API calls once an API Consumer has been on-boarded. As part of the on-boarding process, the API Consumer is issued a consumer key and secret which should be stored in a secure location. API Consumers use this key and secret to obtain an access token which is then used to invoke ESI APIs.

**TLS is required**

All calls using OAuth 2.0 for security must be made using an encrypted transport layer (HTTPS). **Express Scripts APIs only support TLS 1.2+.** This includes the APIs for retrieving access tokens. Making calls to OAuth 2.0 APIs over HTTP can result in the compromise and abuse of consumer credentials and/or access tokens. Even making an HTTP call that is immediately redirected to HTTPS can compromise security. Take care that all requests are sent over https.

### Step 1: Obtaining an Access Token

API Consumers can use the OAuth 2.0 Client Credentials grant type to obtain an access token using their consumer key and secret. The curl command below shows an example of making this request, by simply posting a form to /v1/auth/oauth2/token.

```
curl --request POST \
  --url https://api.express-scripts.io/v1/auth/oauth2/token \
  --header 'Content-Type: application/x-www-form-urlencoded' \
  --data
'grant_type=client_credentials&client_id=YOUR_CONSUMER_KEY&client_secret=YOUR_CONSUMER_
SECRET'
```

The table below shows the example responses:

**Tip**

All ESI API responses contain a response HTTP header, called esrx-request-Id, regardless of whether the response type (success or failure). Please provide this header value back to ESI when inquiring about a specific API invocation.

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| Response Code | Response Reason | Sample Payload(s) |
|---|---|---|
| 200 | Access Token Returned | <pre>{<br>"access_token": "...",<br>"token_type": "bearer",<br>"expires_in": 3600<br>}</pre> |
| 400 | Missing / Invalid Request Parameter | <pre>{ "error": "unsupported_grant_type" }<br><br>{ "error": "invalid_request" }<br><br>{ "error": "invalid_client" }</pre> |
| 500 | Internal Server Error<br><br>Likely an error in our code. Please report to Express Scripts if this situation occurs. | <pre>{ "error": "server_error" }</pre> |
| 502 | The API Gateway was unable to get a valid HTTP response from the downstream protected resource. This can happen if the downstream resource is not available, for example. | |
| 504 | The API Gateway timed out calling the downstream protected resource. | |

### Step 2 – Invoking APIs

At this point, you have retrieved the access token and can proceed to invoke ESI APIs. Simply send a Bearer-type Authorization header using the access token obtained in step 1 on all API invocations. The curl command below shows an example of making an API request to our Greetings test service.

```
curl --request GET \
  --url https://api.express-scripts.io/v1/greetings \
  --header 'Authorization: Bearer YOUR_ACCESS_TOKEN'
```

**Tip**

When you obtain an access token, the expires_in response attribute notes the number of seconds until the access token expires. When the access token expires, it can no longer be used to invoke ESI APIs - the API Consumer will need to repeat Step 1 to get a new access token. API Consumers can obtain a new access token before the last one has expired. Attempts to obtain a new consumer access token when an active one exists in the system with more than 10 minutes before expiration will yield the existing active token. Attempts to obtain a new consumer access token when no active one exists or an active one exists in the system with less than 10 minutes before expiration will yield a new token.

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HTTP Response Codes & Reasons:

| Response Code | Response Reason | Sample Payload(s) |
|---|---|---|
| 200 | API response is returned | <pre>{<br>"greetings": [<br>{<br>"resourceId": "b7aeb733-cb2b-468f-8953-c7cf9eab7cd7",<br>"text": "Hello",<br>"language": "English"<br>},<br>{<br>"resourceId": "c7240143-2cbe-4385-921a-e1f076244df1",<br>"text": "Hola",<br>"language": "Spanish"<br>},<br>{<br>"resourceId": "df0cd84b-e972-4290-b1f9-823f32e8a8f6",<br>"text": "Bonjour",<br>"language": "French"<br>},<br>{<br>"resourceId": "5a985e62-dca1-4783-8f79-0f81836264be",<br>"text": "Hallo",<br>"language": "German"<br>}<br>]<br>}</pre> |
| 401 | Missing or Invalid Bearer token | <pre>{ "error": "invalid_token" }</pre> |
| 403 | The valid Bearer token lacks a scope (permission) to invoke the requested API. | |
| 404 | Resource not found. | |
| 500 | Internal Server Error<br><br>Likely an error in our code. Please report to Express Scripts if this situation occurs. | <pre>{ "error": "server_error" }<br><br>{<br>"message":"An unexpected error occurred.",<br>"code":"PROCESS_FAILED",<br>"data":null,<br>"id":"e6c8af01-1969-43c8-ad58-b1029880db76"<br>}</pre> |
| 502 | The API Gateway was unable to get a valid HTTP response from the downstream protected resource. This can happen if the downstream resource is not available, for example. | N/A |



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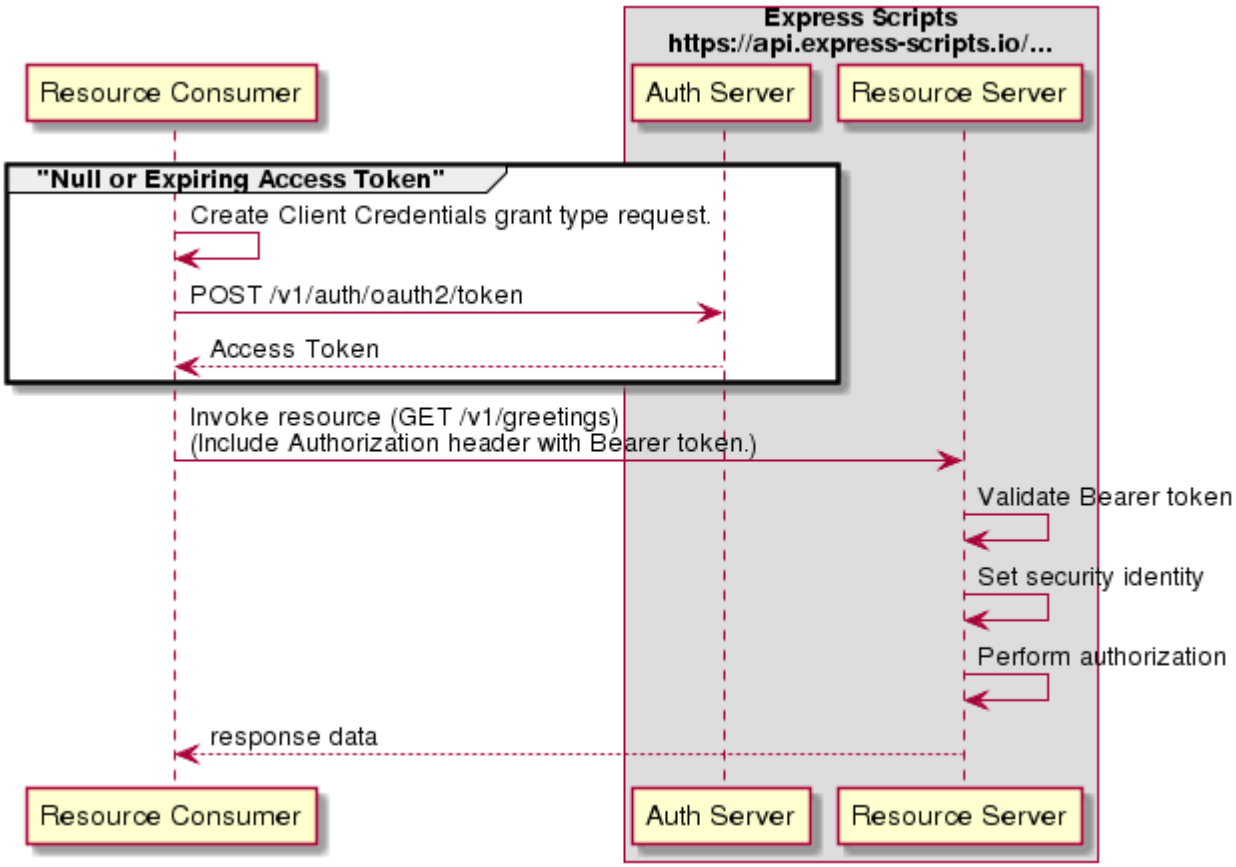
| | | |
|---|---|---|
| 504 | The API Gateway timed out calling the downstream protected resource. | N/A |

### Sequence Diagram

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# Frequently Asked Questions

## ESI FHIR Server

**Q: What is the security model used for accessing the ESI FHIR servers?**

A: Our FHIR servers will leverage OAuth 2 with a client credential grant type (uses a consumer key and secret to obtain an access token). If you already have an OAuth consumer key and secret for accessing our proprietary APIs, whether used for OAuth 1.0a or OAuth 2.0 interactions, the same key and secret can be used. We will need to grant access to the FHIR endpoints for your consumer key. If you would prefer that we issue a new key and secret, we are more than happy to do so.

**Q: When requested keys, will we be able to get multiple keys if different groups are testing?**

A: We can do that, but it is up to the security on the client side what is chosen. If you already have a key and secret from proprietary APIs, you can use your existing credentials. We will still have to enable FHIR endpoints for your consumer key, but the option of using existing credentials is available, even if using OAuth1.

**Q: Is the data in the ESI FHIR server stored in FHIR format or is it converted to FHIR format at the time of request?**

A: The Express Scripts FHIR servers will store their data in FHIR format.

**Q: What is the best practice when using a FHIR repository - real-time calls or a batch pull of clinical data? (Author's note: this question is in the context of support for CMS rules enacted in 2020)**

A: There really isn't any best practice, per se. ESI's first priority is to provide support for the real-time calls. Based on current uptake of digital tools by the member population, we expect that the number of users leveraging third party applications out of the gate will be relatively low, however, this is a big unknown. We don't know how 3rd party applications will be designing their applications – single points of data requested by the patient for a particular purpose or collecting all of the data as would be the case using a tool like Apple Health.

From our perspective, we recognize that some clients want as much data as possible in house to reduce run-time dependencies, and for them, the tradeoff is that they take on the burden of mapping data to FHIR. On the flip side, some clients may want to minimize their work by only requesting data actually requested by end users, which is where the use of our FHIR API will make more sense.

**Q: How granular will the API calls be? Is every profile its own URL? Will there be one call for everything or will each have its own call?**

A: Our model is to mirror exactly how a 3rd party application may be interacting, which today would prevent these types of operations from getting everything. Using US Core as a guide, there is nothing that states a 3rd party application can do a Patient ID $export. Individual API calls will need to be made for each interaction and that is the same thing our server will provide. We will support what is required by the US Core implementation guides.

**Q: Are there plans to publish baseline performance of the FHIR APIs?**

A: The architecture for our solution is to store the data locally in our FHIR server, without any other dependencies as part of fulfilling a request. The uptime of that server is completely dependent just on server itself. If there are availability concerns with our core processing systems, the only impact would be a delay in new data flowing into the FHIR server. Architecturally, we are in a really good position. We are also leveraging the Microsoft Azure FHIR server, which will provide great horizontal scalability for this solution.

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**Q: Can Swagger files be shared with testing teams?**

A: We do not have Swagger files for our FHIR APIs.

## Authorization

**Q: Are you expecting the 3rd party application to be required to authenticate on the client's platform?**

A: Yes. The nature of the CMS rules require that 3rd party applications interact directly with the Health Plan's FHIR server and that the Health Plan (or party they delegate) handle patient authentication and consent. For the purposes of CMS support, 3rd party applications will not have direct access to the ESI FHIR servers.

**Q: Is there any consent filtering before a response to a FHIR request?**

A: Our relationship is with our Health Plan clients, not the patient directly. We are making sure clients can only request information for their specific members. If a patient is hitting your FHIR server and your FHIR server asks ESI for information about another member, it is the client's responsibility to only return data that is appropriate for that patient. ESI is not taking any consent information to do checks on our side.

**Q: What is your stance on privacy consent with requests coming in from our members?**

A: In the Patient Access API, patients are explicitly granting consent to a 3rd party application. It is the Health Plan's responsibility to authenticate the patient and obtain their explicit consent.

The Express Scripts PBM FHIR server will make sure that a given Health Plan client is only able to request their own data from our server. Each Health Plan will only be able to access their own data. Express Scripts does not have a role in the direct patient access to their data from a CMS perspective.

For ONC, a patient can come directly to our privacy office and request their data from our pharmacy. We also have this going through our FHIR server, where applicable, and provide that data directly to them in a machine-readable format.

## Test Environment

**Q: For testing, is there going to be an authentication or security requirement?**

A: We are using client credentials for OAuth 2 and there are security requirements.

**Q: What tools are being used for FHIR testing?**

A: We are using our normal testing tools along with Postman.

**Q: Will there be sample test data available that we will have access to?**

A: Yes. Within our PBM UAT (test) environment there is a non-client specific set of canned data for testing purposes. We are also able to mock this canned data with your test member and plan information if it is provided.

**Q: Will test and production environments be accessible via the Developer Portal?**

A: The Developer Portal only provides access to documentation, not how you request access to specific APIs. We hope to get to that point but it is not yet available. You will be able to access the APIs via your issued key and secret for each environment (test and production).

**Q: How long will it take to get client credentials and test data established for the test server?**

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If all information is provided (email address for credentials, sample member identifiers, and CMS plan ids as they appear on medicare.gov), turnaround time is typically 5 business days.

## Patient Access API

**Q: How are we making the references to Patients?**

A: This is covered in the Patient Identity and Manipulating FHIR Responses section within this document. We are using the logical identifier (FHIR `id` property) as intended which will be an internal identifier to our server. There is information about what will need to be done to manipulate how to return to the 3rd party application.

**Q: Do we match to a single patient resource? What happens when someone moves from plan to plan?**

A: A Patient has to have an active membership to use the Patient Access API. Only the client that currently manages the active coverage for the patient will have access to their data. If a patient changes coverage over their lifetime, we do not create new Patient resources. They will have a single FHIR Patient resource associated with them.

**Q: Once a member term date is reached, will the Patient Access API be "cut off"?**

A: The CMS rules only allow access to the Patient Access API for patients that have active coverage through the Health Plan.

**Q: If a member has a break in coverage and they are currently valid, what would be returned?**

A: Any data associated with the active coverage will be returned – including any past clinical data that would be used in support of claims processing. In the future, Payer-to-Payer Data Exchange requirements will require 5 years of data be exchanged between Health Plans when patient change plans. This may change what data a Health Plan may have access to via the FHIR APIs.

**Q: Is there information available around Utilization Management examples, scenarios, and the ESI testing model around the Formulary and clinical data?**

A: Utilization management (prior authorization) in the context of Formulary is simply a boolean indicator. We will support this in addition to the boolean indicators for quantity limits and step therapy.

Regarding clinical data as a result of an interaction for prior authorization, we are not going to be able to parse out data from interactions with providers by 1/1/2021 due to it being recorded in questionnaire / questionnaire response format. There are also questions about whether that information is required to be provided back to the member - any data that we do collect that is put in our clinical repositories will be returned in the API.

We suggest that clients work with their compliance teams to get their own interpretation on whether this data collected is required.

**Q: In regard to prior authorization data, what resource(s) should we review to determine if our plan should consider? Where should we start looking?**

A: The main 3 clinical resources is a good place to start – Allergy Intolerance, Condition, and Observation. We do have Procedure data for clients that use RationalMed, however, this data comes from the clients themselves so this should be information you already hold. CarePlan comes into play for clients using our MTM (Medication Therapy Management).

**Q: Is MTM (Medication Therapy Management) or comprehensive medical review type of information included in ONC rules? What are you providing to other clients that have to make their own APIs available - pharmacy and retail location or something additional?**

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A: For Provider Directory and Formulary, we will have support for both from a FHIR standpoint. We are collecting information to get CMS Plan IDs into our system so your servers can do inquiries based on Plan ID. For example, through the "specialty" property in some of the resource associations with the Provider Directory profile, we will provide information on whether a particular location is a retail pharmacy.

As far as MTM (Medication Therapy Management) goes, we know that the CarePlan aspect of it is within the scope of US Core. We received direction that it should be included and have made this available. As for the SOAP notes associated to it, we are providing this information through the US Core DocumentReference profile.

**Q: If we are not interested in a real-time patient query, are there other options (flat file, other data, etc.)?**

A: For everything except clinical, there are existing file feeds in place that can be leveraged. To adhere to the timings of the regulation, we are able to change the frequency of the file feed to fit your need. However, we will not be creating any new file extracts but can look into adding you to one of our existing standard reports.

**Q: Are we using the same data to populate the FHIR Servers that create the CWS (Client Web Site) files?**

A: The same underlying sources of data are used to populate the FHIR servers as well as the files that are available on the CWS (Client Web Site).

**Q: Is there documentation on what the difference is between daily claims files vs. the FHIR APIs?**

A: We haven't done a comparison of the CDL (claim detail layout) vs. the FHIR APIs. Our focus has been on building out our FHIR API data sources. We encouraged clients that have performed this analysis on their own to share their results. We have not yet heard from any client that the information contained in existing feeds is adequate, nor have we received confirmation that it is.

## Formulary and Provider Directory

**Q: How will interactions for Formulary and Pharmacy Network take place?**

A: For Formulary and Pharmacy Network queries, the base interaction will be by the plan identifiers.

**Q: With regard to Plan IDs, does ESI have any other thoughts on plan identifiers beyond Medicare (for example, using Plan ID information on the Member ID card)? What about Medicaid and other commercial plans as well?**

A: We settled on the Plan ID as it would appear on Medicare.gov and the HIOS Plan ID (called out in the DaVinci specifications) but have no direction within the Medicaid space yet. We have not through of commercial plans at all for the Formulary and Provider Directory spaces. More work will have to be done on our end to support commercial plans, but this would be post 1/1/2021.

**Q: Is ESI planning on doing anything in the FHIR Responses for Pharmacy Indicators in relation to the Provider Directory? Example: in and out of network or preferred network.**

A: Guidance we gave to the mapping teams was that if we have the data, even if those fields are optional, we will make it available, as long as doing so does not violate any contractual relationships we have with our data suppliers. For example, we have already updated our documentation to reflect that our pharmacy network information will leverage the `specialty` property to indicate the type of pharmacy (see the section on Provider Directory in this document).

**Q: With the Pharmacy Provider Directory FHIR API, how will the "Pharmacy Network Type" values be indicated? For example: "Preferred" or "Non-Preferred".**

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A: Please see the information on Provider Directory in this document. As of right now, based on the examples in the reference implementation, "Preferred" versus "Non-Preferred" seems to only be represented in the name used for the network, rather than any type information. At a minimum, there will be separate PlannetNetwork (FHIR Organization) resources for "Preferred" and "Non-Preferred" pharmacy lists.

**Q: Are the Formulary and Provider Directory endpoints on the ESI FHIR server public?**

A: The Health Plan has the responsibility to provide a public FHIR API for Provider Directory. While the FHIR API for Formulary is part of the Patient Access API, which will require patient consent before a third party can use it. These are the health plan's endpoints, however. For interaction between the Health Plan's FHIR server and the ESI FHIR server, client credentials will always be required regardless of whether the calls are being made in support of the Patient Access API or the Provider Directory API.

We know of at least two clients that plan on exposing separate base URLs for the Patient Access API and the Provider Directory API (for example: https://myfhirserver.org/fhir/v4/PatientAcess and https://myfhirserver.org/fhir/v4/ProviderDirectory) to deal with the separate security models required.

**Q: Does ESI have a run down on what pharmacy information is included in the letter of the law?**

A: Pharmacy data is outside of the scope for CMS unless it is also used for PBM purposes. For ONC, Pharmacy data that falls under US CDI v1 is within scope, however, ONC rules only require that the data be made available in a machine-readable format to authorized requesters and not that a FHIR API be provided. At this time, Express Scripts will not be making a FHIR API for its Pharmacies available externally.

**Q: Can the Provider Directory file on the CWS (Client Web Site) be used?**

A: In determining our own internal source for the Pharmacy Network component of the Provider Directory API, we are looking at the processes that generate these files. An alternative option is to take these files and perform your own mapping to FHIR within your own systems.

## Historical Data

**Q: How much historic data will Express Scripts make available?**

A: Express Scripts plans on being fully compliant with the rules, meaning that data with a service date of 1/1/2016 or later needs to be provided. We do not expect to be fully compliant on 1/1 since many operational systems do not have data that goes back this far, but we are working to make the required date range available as quickly as possible after 1/1. Detailed guidance for each profile and how much data is available will be provided with further updates of this document.

## FHIR Bulk Data Access

**Q: Could ESI provide information on FHIR Bulk Data Access implementation? Are there any limitations or constraints for clients to consider?**

A: Please refer to our ESI Interaction Guide for FHIR Bulk Data Access - the extension of this interaction guide. At this time, our Bulk FHIR solution only will cover the data associated at the member-level and will not contain the plan-level information (Formulary and the Provider Directory).

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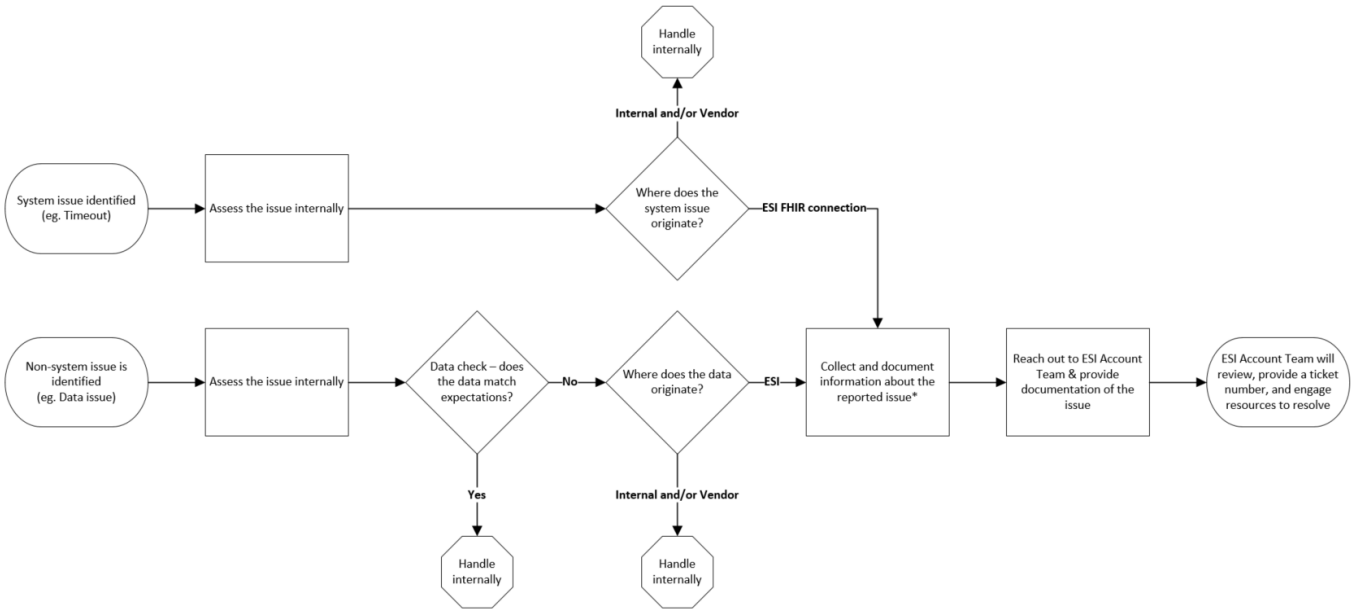
## Production Support

**Q: Once we are live in Production and connected to external 3rd party applications, if we identify an issue, is there an outlined process we should follow to get ESI support?**

A: Yes. We have outlined a recommended process for issues below. Our primary request is that you review the issue internally first to be sure it is sent to the appropriate originating provider. Ideally, the more information we receive, the better we may be able to assist.




*Information to provide to ESI for assistance (the more detail, the better):

- Description of issue / discrepancy
- Screen shots of the discrepancy - sent securely
- Field / Resource IDs impacted
- Any other supporting documents
- Replication steps/research query
- Date (and time if available) of the issue
- Third party application (if reported by them)

**Q: What are ESI's FHIR API support hours?**

A: ESI's support hours for the FHIR APIs are Monday through Friday, 8am – 5pm CT.

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