

# Client Application Interface to Vaccine Passport Service

## Interface Definition

PDX, Inc. – National Health Information Network, Inc.  
Change Healthcare LLC Companies

Email questions to:  
[interfaces@pdxinc.com](mailto:interfaces@pdxinc.com)



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## Introduction

This document contains the message definitions to build a message interface between a client application and the Vaccine Passport Service using HL7-FHIR Immunization bundles (JSON) over HTTPS/TCP/IP.

This message interface provides certified client applications with the features to allow the client application

- to report a patient immunization to the Vaccine Passport Service

All request to the Vaccine Passport Service are encrypted over HTTPS using TLS 1.2 or higher. All request to the Vaccine Passport Service are secured using JSON Web Tokens (JWT). All requests' JWT(s) are issued after authorization via OAUTH2 using the client credentials grant. This is a secure authorization workflow that allows consumers to obtain a perishable (one-hour) access token that must be transmitted with subsequent request.

## Release History

| Release Date | Version  | Approved for Release by: | Reviewed by: | Prepared by: |
|--------------|--|--------------------------|--------------|--------------|
| 03/21/2021   | 1.0<br>Release:<br>Baseline revision:<br>Document Status:<br>DRAFT<br>Date: 2021-02- |                          |              |              |

## Change History

| Revision Date | Revision | Author / Revised by | References   |
|---------------|----------|---------------------|--|
|               |          |                     | -  |
| 03/16/2021    | 1.0      | Shanker Rakasi      | - Removed & resolved comments  |
| 02/15/2021    | 0.1      | S. D. Johnson       | - Revised cardinality of elements in request body to comply with <a href="#">CHC VPS request body validation</a> |
| 02/11/2021    | 0.0      | S. D. Johnson       | - Preliminary draft  |

## **Standards and Reference Documents**

### ***HL7 (Health Level 7)***

#### **FHIR (Fast Healthcare Interoperability Resources)**

- HL7 Fast Healthcare Interoperability Resources Specification (FHIR)  
[http://hl7.org/fhir/?utm\\_referrer=http%3A%2F%2Fwww.hl7.org%2F](http://hl7.org/fhir/?utm_referrer=http%3A%2F%2Fwww.hl7.org%2F)

### ***IETF (Internet Engineering Task Force) Standards***

#### **HTTP (HyperText Transport Protocol)**

- RFC 2119 " Key words for use in RFCs to Indicate Requirement Levels"  
<http://www.ietf.org/rfc/rfc2119.txt?number=2119>
- RFC 2616 " Hypertext Transfer Protocol -- HTTP/1.1"  
<http://www.ietf.org/rfc/rfc2616.txt?number=2616>

### ***JSON (Java Script Object Notation)***

- ECMA-404 The JSON Data Interchange Standard  
<https://www.json.org/json-en.html>

# Table of Contents

**Notice of Copyright** ..... 2

**Acknowledgement of Trademarks** ..... 2

**Introduction** ..... 3

**Release History** ..... 3

**Change History** ..... 3

**Standards and Reference Documents** ..... 4

*HL7 (Health Level 7)* ..... 4

        FHIR (Fast Healthcare Interoperability Resources) ..... 4

*IETF (Internet Engineering Task Force) Standards* ..... 4

        HTTP (HyperText Transport Protocol) ..... 4

*JSON (Java Script Object Notation)* ..... 4

**Table of Contents** ..... 5

**Data Dictionary** ..... 6

**JSON Message Bodies** ..... 8

*Service* ..... 9

        Request Body: ..... 9

        Response Body ..... 19

**Sample JSON** ..... 20

*Vaccine Passport Service:* ..... 20

        Vaccine Passport Service Immunization Request Body: ..... 20

        Vaccine Passport Service Response Body: ..... 27

**Use Cases:** ..... 27

*Report Vaccination Status to Vaccine Passport Service* ..... 27

**Faults, Status Codes, Error Codes and Text** ..... 30

    Status Codes and Text ..... 30

**Appendices:** ..... 31

*Service Endpoints:* ..... 31

        Vaccine Passport Service ..... 31

**Glossary of Terms and Acronyms** ..... 31

## Data Dictionary

This interface uses the [HL7-FHIR Release 4](#) standard, specifically the [Immunization Resource](#) definition. This definition may be implemented in XML or JSON. This interface uses JSON (Javascript Object Notation) to represent structured data in message bodies. JSON has only 6 data types. See <https://www.json.org/json-en.html> .

We can refer to the first two data types: object and array, as **complex data types**.

- object a comma separated list of one or more un-ordered name-value pairs
- array a comma separated list of one or more ordered name-value pair or anonymous values

We can refer to the other four data types: string, number, boolean and null, as **simple data types**.

- string any string of UTF-8 characters between double quotes, e.g. "string"
- number any string of decimal digits, with no leading zeroes, with no enclosing double quotes, with or without a leading minus sign "-", and with or without an embedded decimal point, ".",
- boolean a string that take only the values with no enclosing double quotes: "true" or "false"
- null an empty value

In JSON the root object is un-named; just a set of curly braces {root}, that encloses everything.

| Element            | Type   | Usage   | Parent Resource | Used in message(s) |
|--------------------|--------|---|-----------------|--------------------|
| resource           | object |   | Immunization    |                    |
| resourceType       | string | "resourceType":<br>"Immunization"             | Immunization    |                    |
| meta               | object | "meta": ""                                    | Immunization    |                    |
| versionId          | string | "versionId": ""                               | Immunization    |                    |
| identifier         | object |   | Immunization    |                    |
| system             | string | "system": ""                                  | Immunization    |                    |
| value              | string | "value" : ""                                  | Immunization    |                    |
| status             | string | status::= 'completed'<br>  'entered-in-error' | Immunization    |                    |
| vaccineCode        | object |   | Immunization    |                    |
| coding             | object |   | Immunization    |                    |
| system             | string | "system": ""                                  | Immunization    |                    |
| code               | string |   | Immunization    |                    |
| patient            |        |   | Immunization    |                    |
| reference          |        |   | Immunization    |                    |
| occurrenceDateTime |        |   | Immunization    |                    |

| Element               | Type   | Usage                 | Parent Resource | Used in message(s) |
|-----------------------|--------|-----------------------|-----------------|--------------------|
| location              |        |                       | Immunization    |                    |
| reference             |        |                       | Immunization    |                    |
| manufacturer          |        |                       | Immunization    |                    |
| reference             |        |                       | Immunization    |                    |
| protocolApplied       |        |                       | Immunization    |                    |
| doesNumberPositiveInt |        |                       | Immunization    |                    |
| request               | object |                       | Immunization    |                    |
| method                | string | "method": "POST"      | Immunization    |                    |
| url                   | string | "url": "immunization" | Immunization    |                    |
|                       |        |                       |                 |                    |
|                       |        |                       |                 |                    |
|                       |        |                       |                 |                    |
|                       |        |                       |                 |                    |
|                       |        |                       |                 |                    |
|                       |        |                       |                 |                    |

## JSON Message Bodies

|  |    |
|--|----|
| Table 1 Vaccine Passport Service Request Body .....  | 9  |
| Table 2 Vaccine Passport Service Response Body ..... | 19 |



**Service**

See Use Case – [Report Vaccination Status to Vaccine Passport Service](#) **Error! Bookmark not defined..**

**Request Body:**

**Table 1 Vaccine Passport Service Request Body**

| Path. Element Name               | Definition (synonyms, element description, use)                          | Cardinality           | Data Type / Format | Field Size | Valid Values / Ranges / Examples                             | Comments / Reference                          |
|----------------------------------|--|-----------------------|--------------------|------------|--|---|
| {                                | root JSON object   | Required; exactly one | object             | n/a        |  | HL7-FHIR bundle of Resources                  |
| \$.resourceType                  | type of Resource: "Bundle"   | Required; exactly one | object             | n/a        | Fixed "Bundle"   |   |
| \$.type                          | Bundle type "collection"   | Required; exactly one | string             |            | Fixed "collection"   |   |
| \$.entry                         | an Array of Resources: Patient, Location, Organization, and Immunization | Required; exactly one | array              |            |  |   |
| fullUrl<br>\$.entry[0].fullUrl   | Patient resource identifier within bundle                                | Required; exactly one | string             | n/a        | e.g. "urn:uuid:eb11b87f-7a56-4e84-92a8-8e53d57cf5aa"         |   |
| resource<br>\$.entry[0].resource | "Patient" Resource   | Required; exactly one | object             | n/a        |  |   |
| resourceType                     | type of Resource: "Patient"  | Required; exactly one | string             | n/a        | Fixed "Patient"  |   |
| meta                             | Resource version and provenance  | Optional; one or none | object             | n/a        |  |   |
| versionId                        | Resource version   | Optional; one or none | string             | n/a        | Fixed "1.0"  |   |
| source                           | Resource provenance  | Optional; one or none | string             | n/a        | e.g. "http://changehealthcare.com/pharmacy/central-services" |   |
| identifier                       | Patient identifier   | Required; exactly one | array              | n/a        |  | This is an array of one element – the patient |

| Path. Element Name | Definition (synonyms, element description, use) | Cardinality   | Data Type / Format | Field Size | Valid Values / Ranges / Examples                    | Comments / Reference  |
|--------------------|---|---|--------------------|------------|---|---|
|                    |   |   |                    |            |   | identifier system and value                                   |
| system             | Patient identifier namespace                    | Required; exactly one                               | string             | n/a        | e.g. "http://changehealthcare.com/pharmacy/patient" |   |
| value              | Patient identifier value                        | Required; exactly one                               | string             | 21         | e.g. "4000-28986"                                   | Two numeric dash delimited fields                             |
| name               | Patient name                                    | exactly one   | array              | n/a        |   | This is an array of only one element                          |
| text               | Patient full name                               | Required; exactly one                               | string             | 46         | <first-name> <surname>                              |   |
| family             | Patient surname                                 | Required; exactly one                               | string             | 25         | <surname>   |   |
| given[]            | Patient given name(s)                           | Required; exactly one                               | array              | n/a        |   | This is an array of only one element – the patient first name |
| given[0]           |   | Required; exactly one<br>'given' name array element | string             | 20         | <first-name>  |   |
| telecom[]          | Patient telephone numbers                       | Required; exactly one                               | array              | n/a        |   |   |
| telecom[*]         |   | Optional; zero or more 'telecom' array elements     |                    | n/a        |   |   |
| system             | type of 'telecom'                               | Required; exactly one                               | string             | n/a        | Fixed "phone"                                       |   |
| value              | telephone number                                | Required; exactly one                               | string             | 10         | e.g. "8175558925"                                   | Ten (10) digit - Area code and telephone number               |
| use                | telephone number type                           | Optional: one or none                               |                    | n/a        | use::="home"   "work"<br>e.g. "home"                |   |
| gender             | Patient gender                                  | Required; exactly one                               | string             | n/a        | Gender::="male"   "female"   "other"   "unknown"    |   |

| Path. Element Name | Definition (synonyms, element description, use) | Cardinality                                 | Data Type / Format | Field Size | Valid Values / Ranges / Examples   | Comments / Reference                  |
|--------------------|---|---|--------------------|------------|--|---------------------------------------|
| birthDate          | Patient date of birth                           | Required; exactly one                       | string             | 10         | YYYY-MM-DD<br>e.g. 2020-08-08  | Must be valid Gregorian Calendar date |
| address[]          | Patient Address Array                           | Required; exactly one                       | array              |            |  |                                       |
| address[*]         | Patient Address                                 | one or more Address elements                | object             | n/a        |  |                                       |
| use                | Address usage                                   | Optional; one or none                       | string             | n/a        | use::= "home"   "work"<br>e.g. "home"  |                                       |
| type               | Address type                                    | Optional; one or none                       | string             | n/a        | type::= "postal"   "physical"   "both"<br>e.g. "physical"                    |                                       |
| text               | full Address                                    | Optional; one or none                       | string             | 550*       | <address-lines>\n<br><city-name>+","+<state>\n<br><postal-code>              |                                       |
| line[]             | Address Line Array                              | Required; exactly one                       | array              |            |  | Street Address                        |
| line[*]            |   | Required; one or more 'line' array elements | string             | 255        | e.g. "123 Test"  |                                       |
| city               | City name                                       | Required; exactly one                       | string             | 30         |  |                                       |
| state              | State abbreviation                              | Required; exactly one                       | string             | 2          | USPS US State, and Territories abbreviations                                 |                                       |
| postalCode         | Postal Code / ZIP code                          | Required; exactly one                       | string             | 5          |  |                                       |
| request            |   | Required; exactly one                       | object             | n/a        |  |                                       |
| method             |   | Required; exactly one                       | string             | n/a        | Fixed "POST"   |                                       |
| url                |   | Required; exactly one                       | string             | n/a        | Fixed "Patient"  |                                       |
| ifNoneExist        |   | Required; exactly one                       | string             | n/a        | "identifier=<resource.identifier.system>+<br>" "+<resource.identifier.value> |                                       |

| Path. Element Name | Definition (synonyms, element description, use) | Cardinality           | Data Type / Format | Field Size | Valid Values / Ranges / Examples  | Comments / Reference  |
|--------------------|---|-----------------------|--------------------|------------|---|---|
|                    |   |                       |                    |            | e.g. "identifier=http://changehealthcare.com/pharmacy/patient 4000-28986" |   |
| fullUrl            | Location resource identifier within bundle      | Required; exactly one | string             | n/a        | e.g. "urn:uuid:445cfb0b-55e8-487f-bd43-d37f4a08f8c5"                      |   |
| resource           | "Location" resource                             | Required; exactly one | object             | n/a        |   |   |
| resourceType       | type of Resource "Location"                     | exactly one           | string             | n/a        | Fixed "Location"  |   |
| meta               | Resource version and provenance                 | Optional; one or none | object             | n/a        |   |   |
| versionId          | Resource version                                | Optional; one or none | string             | n/a        | Fixed "1.0"   |   |
| source             | Resource provenance                             | Optional; one or none | string             | n/a        | Fixed "http://changehealthcare.com/pharmacy/central-services"             |   |
| identifier[]       | Location Identifier                             | exactly one           | array              | n/a        |   | This is an array of one element that contains the location identifier system and value  |
| identifier[0]      | Identifier                                      | Required; exactly one | object             | n/a        |   |   |
| system             | Location identifier namespace                   | Required; exactly one | string             | n/a        | e.g. "'http://hl7.org/fhir/sid/us-npi'"                                   | Either the NPI or if necessary the NCPDP Number may be used. <a href="http://hl7.org/fhir/sid/us-npi">http://hl7.org/fhir/sid/us-npi</a> for NPI Or |

| Path. Element Name | Definition (synonyms, element description, use) | Cardinality                         | Data Type / Format | Field Size | Valid Values / Ranges / Examples                         | Comments / Reference  |
|--------------------|---|-------------------------------------|--------------------|------------|--|---|
|                    |   |                                     |                    |            |  | <a href="http://changehealthcare.com/pharmacy/ncpdp">http://changehealthcare.com/pharmacy/ncpdp</a> for ncpdp |
| value              | Location identifier value                       | Required; exactly one               | string             | 10         | e.g. "4000104107"  |   |
| status             | Location status                                 | Optional; one or none               | string             | n/a        | Fixed "active"   | Only active locations reporting immunizations   |
| name               | Location name                                   | Required; exactly one               | string             | 60         |  |   |
| type[]             | Location Type Array                             | Optional; one or none               | array              | n/a        |  | If provided this is an array of one element   |
| type[0]            | Location Type Element                           | Optional; one or none               | object             | n/a        |  |   |
| coding             | Location type coding                            | Conditionally required; exactly one | array              | n/a        |  |   |
| system             | Location type coding namespace                  | Conditionally required; exactly one | string             | n/a        | e.g. "http://terminology.hl7.org/CodeSystem/v3-RoleCode" |   |
| code               | Location type code value                        | Conditionally required; exactly one | string             | 7          | e.g. Code value for pharmacy location is "PHARM"         |   |
| telecom[]          | Location telephone numbers                      | Required; exactly one               | array              | n/a        |  |   |
| telecom[*]         | Telephone number                                | Required; one or more               | object             | n/a        |  |   |
| system             | type of 'telecom'                               | Required; exactly one               | string             | n/a        | Fixed "phone"  |   |
| value              | telephone number                                | Required; exactly one               | string             | 10         | e.g. "8175556565"  | Area code and telephone number  |
| use                | telephone number type                           | Optional; one or none               | string             | n/a        | Fixed "work"   |   |
|                    |   |                                     |                    |            |  |   |

| Path. Element Name | Definition (synonyms, element description, use) | Cardinality                       | Data Type / Format | Field Size | Valid Values / Ranges / Examples  | Comments / Reference |
|--------------------|---|-----------------------------------|--------------------|------------|---|----------------------|
| address[]          | Location Address Array                          | exactly one                       | array              | n/a        |   |                      |
| address[*]         | Address element                                 | one or more Address elements      | object             | n/a        | This is an array of one element   |                      |
| use                | Address usage                                   | Optional; one or none             | string             | n/a        | If provided allowed value is 'work'   |                      |
| type               | Address type                                    | Optional; one or none             | string             | n/a        | If provided allowed value is "physical"   |                      |
| text               | full Address                                    | Optional; one or none             | string             | 97         |   |                      |
| line[]             | Address Line Array                              | exactly one                       | array              | n/a        |   |                      |
| line[*]            | Address line element                            | one or more 'line' array elements | string             | 30         | e.g. "123 Test"   |                      |
| city               | City name                                       | Required; exactly one             | string             | 30         |   |                      |
| state              | State abbreviation                              | Required; exactly one             | string             | 2          | USPS US State, and Territories abbreviations  |                      |
| postalcode         | Postal Code / ZIP code                          | Required; exactly one             | string             | 5          |   |                      |
| request            |   | Required; exactly one             | object             | n/a        |   |                      |
| method             |   | Required; exactly one             | string             | n/a        | Fixed "POST"  |                      |
| url                |   | Required; exactly one             | string             | n/a        | Fixed "Location"  |                      |
| ifNotExist         |   | Required; exactly one             | string             | n/a        | "identifier=<resource.identifier.system>+ " " + <resource.identifier.value><br>e.g.<br>"identifier=http://hl7.org/fhir/sid/us-npi 4000104107" |                      |

| Path. Element Name | Definition (synonyms, element description, use)  | Cardinality           | Data Type / Format | Field Size | Valid Values / Ranges / Examples                                   | Comments / Reference      |
|--------------------|--|-----------------------|--------------------|------------|--|---------------------------|
| fullUrl            | "Organization" resource identifier within bundle | Required; exactly one | string             | n/a        | e.g. "urn:uuid:665ced03-49d2-4ad1-bfca-c50c7d944fc9"               |                           |
| resource           | "Organization" resource                          | Required; exactly one | object             | n/a        |  |                           |
| resourceType       | Type of Resource "Organization"                  | Required; exactly one | string             | n/a        | Fixed "Organization"   | Immunization manufacturer |
| meta               | Resource version and provenance                  | Optional; one or none | object             | n/a        |  |                           |
| versionId          | Resource version                                 | Optional; one or none | string             | n/a        | Fixed "1.0"  |                           |
| source             | Resource provenance                              | Optional; one or none | string             | n/a        | Fixed "http://changehealthcare.com/pharmacy/central-services"      |                           |
| identifier[]       | Organization identifier                          | Required; exactly one | array              | n/a        |  |                           |
| Identifier[0]      |  | Required; exactly one | object             |            |  |                           |
| system             | Organization identifier namespace                | Required; exactly one | string             | n/a        | e.g. "http://changehealthcare.com/pharmacy/drug/manufacture/name", |                           |
| value              | Organization identifier value                    | Required; exactly one | string             | 10         |  |                           |
| name               | Organization name                                | Required; exactly one | string             | 10         |  |                           |
| request            |  | Required; exactly one | object             | n/a        |  |                           |
| method             |  | Required; exactly one | string             | n/a        | Fixed "POST"   |                           |
| url                |  | Required; exactly one | string             | n/a        | Fixed "Location"   |                           |
| ifNoneExist        |  | Required; exactly one | string             | n/a        | "identifier=<resource.identifier.system>+                          |                           |

| Path. Element Name | Definition (synonyms, element description, use) | Cardinality           | Data Type / Format | Field Size | Valid Values / Ranges / Examples   | Comments / Reference   |
|--------------------|---|-----------------------|--------------------|------------|--|--|
|                    |   |                       |                    |            | " "+<resource.identifier.value><br>e.g.<br>"identifier=http://changehealthcare.com/pharmacy/drug/manufacturer/name MODERNA US" |  |
| resource           | Immunization resource                           | Required; exactly one | object             | n/a        |  |  |
| resourceType       | Type of Resource: "Immunization"                | Required; exactly one | string             | n/a        | Fixed "Immunization"   |  |
| meta               | Resource version and provenance                 | exactly one           | object             | n/a        |  |  |
| versionID          | Resource version                                | exactly one           | string             | n/a        | Fixed "1.0"  |  |
| source             | Resource provenance                             | exactly one           | string             | n/a        | Fixed "http://changehealthcare.com/pharmacy/central-services"  |  |
| identifier[]       | Immunization identifier Array                   | Required; exactly one | array              | n/a        |  | This is an array with only one element   |
| identifier[0]      | Immunization identifier element                 | Required; exactly one | object             | n/a        |  |  |
| system             | Immunization identifier namespace               | Required; exactly one | string             | n/a        |  |  |
| value              | Immunization identifier value                   | Required; exactly one | string             | 47         | Four numeric dash delimited fields e.g. "4000-40001041-6373813-1376963"  | Third field is prescription number Value is composed of the <chain-nhinid>-<pharmacy-mhinid>-<prescription-number>-<prescription-filling-transaction-number> |



| Path. Element Name | Definition (synonyms, element description, use)  | Cardinality           | Data Type / Format | Field Size | Valid Values / Ranges / Examples                               | Comments / Reference   |
|--------------------|--|-----------------------|--------------------|------------|--|--|
| status             | Immunization status                              | Required; exactly one | string             | n/a        | status::= "completed"   "entered-in-error"                     | Allowed Values - completed (for successful vaccination) and any other statuses |
| vaccineCode        | Vaccine Code                                     | Required; exactly one | object             | n/a        |  |  |
| coding             | External code list                               | Required; exactly one | array              | n/a        |  |  |
| system             | External code list namespace                     | Required; exactly one | string             | n/a        | i.e "https://www.ama-assn.org/practice-management/cpt"         | AMA CPT code list for COVID-19 vaccines  |
| code               | External code value                              | Required; exactly one | string             | 5          | code::= ""91300"   "91301"   "91302"   "91303"<br>e.g. "91301" | CPT code value   |
| patient            | Patient resource reference                       | Required; exactly one | object             | n/a        |  |  |
| reference          | Patient resource identifier within bundle        | Required; exactly one | string             |            | e.g. "urn:uuid:eb11b87f-7a56-4e84-92a8-8e53d57cf5aa"           |  |
| occurrenceDateTime | Immunization date                                | Required; exactly one | string             | 25         | e.g. "2021-02-09T17:37:00+00:00"                               |  |
| location           | Location resource reference                      | Required; exactly one | object             | n/a        |  |  |
| reference          | Location resource identifier within bundle       | Required; exactly one | string             | n/a        | e.g. "urn:uuid:445cfb0b-55e8-487f-bd43-d37f4a08f8c5"           |  |
| lotNumber          | Immunization lotNumber                           | exactly one           | string             | n/a        | e.g. "EP1234"  |  |
| manufacturer       | Manufacturer resource reference                  | Required; exactly one | object             | n/a        |  |  |
| reference          | "Organization" resource identifier within bundle | Required; exactly one | string             | n/a        | e.g. "urn:uuid:665ced03-                                       |  |

| Path. Element Name    | Definition (synonyms, element description, use)                  | Cardinality           | Data Type / Format | Field Size | Valid Values / Ranges / Examples | Comments / Reference |
|-----------------------|--|-----------------------|--------------------|------------|----------------------------------|----------------------|
|                       |  |                       |                    |            | 49d2-4ad1-bfca-c50c7d944fc9"     |                      |
| protocolApplied[]     |  | Required; exactly one | array              | n/a        |                                  |                      |
| protocolApplied[0]    |  | Required; exactly one |                    |            | This is an array of one element  |                      |
| doseNumberPositiveInt | Ordinal number of dose: 1 <sup>st</sup> , 2 <sup>nd</sup> , etc. | Required; exactly one | number             | 2          |                                  |                      |
| request               |  | Required; exactly one | object             | n/a        |                                  |                      |
| method                |  | Required; exactly one | string             | n/a        | Fixed "POST"                     |                      |
| url                   |  | Required; exactly one | string             | n/a        | Fixed "Immunization"             |                      |
| }                     |  |                       |                    |            |                                  |                      |
|                       |  |                       |                    |            |                                  |                      |



## Sample JSON

### *Vaccine Passport Service:*

### **Vaccine Passport Service Immunization Request Body:**

#### **Completed**

(Reports a completed vaccination.)

```

{
  "resourceType": "Bundle",
  "type": "collection",
  "entry": [
    {
      "fullUrl": "urn:uuid:eb11b87f-7a56-4e84-92a8-8e53d57cf5aa",
      "resource": {
        "resourceType": "Patient",
        "meta": {
          "versionId": "1.0",
          "source":
"http://changehealthcare.com/pharmacy/centralservices"
        },
        "identifier": [
          {
            "system":
"http://changehealthcare.com/pharmacy/patient",
            "value": "4000-28986"
          }
        ],
        "name": [
          {
            "text": "LARS HANSEN",
            "family": "HANSEN",
            "given": [
              "LARS"
            ]
          }
        ],
        "telecom": [
          {
            "system": "phone",
            "value": "8175558925",
            "use": "home"
          }
        ],
        "gender": "female",
        "birthDate": "2010-08-08",
        "address": [
          {
            "use": "home",
            "type": "physical",
            "text": "123 TEST\nFORT WORTH, TX\n76108",
            "line": [

```

```

        "123 TEST"
      ],
      "city": "FORT WORTH",
      "state": "TX",
      "postalCode": "76108"
    }
  ],
},
"request": {
  "method": "POST",
  "url": "Patient",
  "ifNotExist":
"identifier=http://changehealthcare.com/pharmacy/patient|4000-28986"
},
{
  "fullUrl": "urn:uuid:445cfb0b-55e8-487f-bd43-d37f4a08f8c5",
  "resource": {
    "resourceType": "Location",
    "meta": {
      "versionId": "1.0",
      "source":
"http://changehealthcare.com/pharmacy/centralservices"
    },
    "identifier": [
      {
        "system": "http://hl7.org/fhir/sid/us-npi",
        "value": "4000104107"
      }
    ],
    "status": "active",
    "name": "R4810G",
    "type": [
      {
        "coding": [
          {
            "system":
"http://terminology.hl7.org/CodeSystem/v3-RoleCode",
            "code": "PHARM"
          }
        ]
      }
    ],
    "telecom": [
      {
        "system": "phone",
        "value": "6655556565",
        "use": "work"
      }
    ],
    "address": {
      "use": "work",
      "type": "physical",
      "text": "1234 main st\nfort worth, TX\n76104",
      "line": [

```

```

        "1234 main st"
      ],
      "city": "fort worth",
      "state": "TX",
      "postalCode": "76104"
    }
  },
  "request": {
    "method": "POST",
    "url": "Location",
    "ifNotExist": "identifier=http://hl7.org/fhir/sid/us-
npi|4000104107"
  }
},
{
  "fullUrl": "urn:uuid:665ced03-49d2-4ad1-bfca-c50c7d944fc9",
  "resource": {
    "resourceType": "Organization",
    "meta": {
      "versionId": "1.0",
      "source":
"http://changehealthcare.com/pharmacy/centralservices"
    },
    "identifier": [
      {
        "system":
"http://changehealthcare.com/pharmacy/drug/manufacture/name",
        "value": "MODERNA US"
      }
    ],
    "name": "MODERNA US"
  },
  "request": {
    "method": "POST",
    "url": "Manufacturer",
    "ifNotExist":
"identifier=http://changehealthcare.com/pharmacy/drug/manufacture/name|MODERNA US"
  }
},
{
  "resource": {
    "resourceType": "Immunization",
    "meta": {
      "versionId": "1.0",
      "source":
"http://changehealthcare.com/pharmacy/centralservices"
    },
    "identifier": [
      {
        "system":
"http://changehealthcare.com/pharmacy/tx",
        "value": "4000-40001041-6373813-1376963"
      }
    ],
    "status": "completed",

```

```

      "vaccineCode": {
        "coding": [
          {
            "system": "https://www.ama-
assn.org/practice-management/cpt",
            "code": "91301"
          }
        ]
      },
      "patient": {
        "reference": "urn:uuid:eb11b87f-7a56-4e84-92a8-
8e53d57cf5aa"
      },
      "occurrenceDateTime": "2021-02-09T17:37:00+00:00",
      "location": {
        "reference": "urn:uuid:445cfb0b-55e8-487f-bd43-
d37f4a08f8c5"
      },
      "manufacturer": {
        "reference": "urn:uuid:665ced03-49d2-4ad1-bfca-
c50c7d944fc9"
      },
      "protocolApplied": [
        {
          "doseNumberPositiveInt": 1
        }
      ]
    },
    "request": {
      "method": "POST",
      "url": "Immunization"
    }
  }
]
}

```

## Entered-In-Error

(Reports that a vaccination previously reported as completed which was in fact entered in error.)

```

{
  "resourceType": "Bundle",
  "type": "collection",
  "entry": [
    {
      "fullUrl": "urn:uuid:eb11b87f-7a56-4e84-92a8-8e53d57cf5aa",
      "resource": {
        "resourceType": "Patient",
        "meta": {
          "versionId": "1.0",
          "source":
"http://changehealthcare.com/pharmacy/centralservices"
        },
        "identifier": [
          {

```

```

        "system":
"http://changehealthcare.com/pharmacy/patient",
        "value": "4000-28986"
    },
    "name": [
        {
            "text": "LARS HANSEN",
            "family": "HANSEN",
            "given": [
                "LARS"
            ]
        }
    ],
    "telecom": [
        {
            "system": "phone",
            "value": "8175558925",
            "use": "home"
        }
    ],
    "gender": "female",
    "birthDate": "2010-08-08",
    "address": [
        {
            "use": "home",
            "type": "physical",
            "text": "123 TEST\nFORT WORTH, TX\n76108",
            "line": [
                "123 TEST"
            ],
            "city": "FORT WORTH",
            "state": "TX",
            "postalCode": "76108"
        }
    ]
},
"request": {
    "method": "POST",
    "url": "Patient",
    "ifNotExist":
"identifier=http://changehealthcare.com/pharmacy/patient|4000-28986"
}
},
{
    "fullUrl": "urn:uuid:445cfb0b-55e8-487f-bd43-d37f4a08f8c5",
    "resource": {
        "resourceType": "Location",
        "meta": {
            "versionId": "1.0",
            "source":
"http://changehealthcare.com/pharmacy/centralservices"
        }
    },
    "identifier": [
        {

```



```

        "system": "http://hl7.org/fhir/sid/us-npi",
        "value": "4000104107"
    },
    ],
    "status": "active",
    "name": "R4810G",
    "type": [
        {
            "coding": [
                {
                    "system":
"http://terminology.hl7.org/CodeSystem/v3-RoleCode",
                    "code": "PHARM"
                }
            ]
        }
    ],
    "telecom": [
        {
            "system": "phone",
            "value": "6655556565",
            "use": "work"
        }
    ],
    "address": {
        "use": "work",
        "type": "physical",
        "text": "1234 main st\nfort worth, TX\n76104",
        "line": [
            "1234 main st"
        ],
        "city": "fort worth",
        "state": "TX",
        "postalCode": "76104"
    }
},
"request": {
    "method": "POST",
    "url": "Location",
    "ifNotExist": "identifier=http://hl7.org/fhir/sid/us-
npi|4000104107"
}
},
{
    "fullUrl": "urn:uuid:665ced03-49d2-4ad1-bfca-c50c7d944fc9",
    "resource": {
        "resourceType": "Organization",
        "meta": {
            "versionId": "1.0",
            "source":
"http://changehealthcare.com/pharmacy/centralservices"
        }
    },
    "identifier": [
        {

```

```

        "system":
"http://changehealthcare.com/pharmacy/drug/manufacture
"value": "MODERNA US"
    },
    "name": "MODERNA US"
  },
  "request": {
    "method": "POST",
    "url": "Manufacturer",
    "ifNotExist":
"identifier=http://changehealthcare.com/pharmacy/drug/manufacture
  }
},
{
  "resource": {
    "resourceType": "Immunization",
    "meta": {
      "versionId": "1.0",
      "source":
"http://changehealthcare.com/pharmacy/centralservices"
    },
    "identifier": [
      {
        "system":
"http://changehealthcare.com/pharmacy/tx",
        "value": "4000-40001041-6373813-1376963"
      }
    ],
    "status": "entered-in-error",
    "vaccineCode": {
      "coding": [
        {
          "system": "https://www.ama-
assn.org/practice-management/cpt",
          "code": "91301"
        }
      ]
    },
    "patient": {
      "reference": "urn:uuid:eb11b87f-7a56-4e84-92a8-
8e53d57cf5aa"
    },
    "occurrenceDateTime": "2021-02-09T17:37:00+00:00",
    "location": {
      "reference": "urn:uuid:445cfb0b-55e8-487f-bd43-
d37f4a08f8c5"
    },
    "manufacturer": {
      "reference": "urn:uuid:665ced03-49d2-4ad1-bfca-
c50c7d944fc9"
    },
    "protocolApplied": [
      {
        "doseNumberPositiveInt": 1
      }
    ]
  }
}

```

```

    ],
    "request": {
      "method": "POST",
      "url": "Immunization"
    }
  }
]
}

```

**Vaccine Passport Service Response Body:**

Successful request:  
HTTP Status Code of 200

```

{
  "message": "Successfully processed."
}

```

Failed Request:  
HTTP Status Code of 400

```

{
  "message": "Missing or Invalid patient.birthDate."
}

```

**Use Cases:**

Use Case: 1 Report Vaccination Status to Vaccine Passport Service ..... 27

**Report Vaccination Status to Vaccine Passport Service**

Use Case: 1 Report Vaccination Status to Vaccine Passport Service

|   |
|---|
| <p><b>Use Case: Report Vaccination Status to Vaccine Passport Service</b><br/> <b>Primary Scenario</b><br/> <b>ID: 001</b></p>                                      |
| <p><b>Status:</b> <i>Draft</i></p>  |
| <p><b>Actors:</b></p> <ul style="list-style-type: none"> <li>• Client application vaccine notification service</li> <li>• Vaccine Passport Service</li> </ul>       |
| <p><b>Summary:</b></p> <p>Client application reports a patient immunization to the Vaccine Passport Service (VPS). VPS records the patient immunization status.</p> |
| <p><b>Assumptions:</b></p> <p>Client application processes patient immunization records.</p>  |

**Initiation:**

Individual patient immunization is record is processed by client application.  
Or, client application runs a job to process patient immunizations in batch.

**Preconditions:**

- Client has certified client application
  - Client application has client-id and client-secret
  - Client application has access to Change Healthcare Vaccine Passport Service production endpoint
- All request to the Vaccine Passport Service are encrypted over HTTPS using TLS 1.2 or higher.
- All request to the Vaccine Passport Service are secured using JSON Web Tokens (JWT).
- All requests' JWT are issued after authorization via OAUTH2 using the client credentials grant. This is a secure authorization workflow that allows consumers to obtain a perishable (one-hour) access token that must be transmitted with subsequent request.

**Scenario:**

1. Client application submits an HL7-FHIR Immunization bundle via HTTP POST to the VPS endpoint
2. VPS receives and processes HL7-FHIR Immunization bundle.
3. VPS returns an HTTP response status code 200 to the client application.

**Secondary Scenarios:**

- 1.1 Client application runs a batch job to notify the VPS of patient immunization.
  - 1.1.1 For each patient immunization the client application submits an HL7-FHIR Immunization bundle. This scenario continues at step 2 of the main scenario.

**Exception Scenarios:**

- 3.1 VPS finds input data is missing required elements or contains invalid input elements:
  - 3.1.1 VPS returns HTTP response status code 400
- 6.1 VPS encounters a system error
  - 6.1.1 VPS returns an HTTP response status code 500
- 6.2 VPS . . .
  - 6.2.1 . . .

**Inclusions:**

–NONE–

**Extension Points:**

Any use case that may require a successful request <<action-performed-by-this use case>> extends from the successful completion of this use case, including:

–NONE–

**Minimal Guarantees:**

1. VPS returns an HTTP response status code 400
2. VPS returns an HTTP response status code 500

**Success Guarantees:**

1. VPS returns an HTTP response status code 200
2. VPS persists the patient Immunization status

## Faults, Status Codes, Error Codes and Text

### Status Codes and Text

| Code | Text  | Description  |
|------|---|--|
| 200  | <short-description-of-status-condition-to-be-returned-with-status-code> | <i>Success</i>   |
| 400  | {"message": "<message-text>"}   | <i>Bad Client Request, e.g. {"message": "Missing or Invalid Patient.birthDate, Patient.telecom, Immunization.occurrenceDateTime in request body."}</i> |
| 500  | <short-description-of-status-condition-to-be-returned-with-status-code> | <i>Internal Server error</i>   |
| 502  | <short-description-of-status-condition-to-be-returned-with-status-code> | Bad Gateway  |
| 504  | <short-description-of-status-condition-to-be-returned-with-status-code> | Gateway Timeout  |
|      |   |  |
|      |   |  |

## Appendices:

### *Service Endpoints:*

#### **Vaccine Passport Service**

See use case [Report Vaccination Status to Vaccine Passport Service](#) **Error! Bookmark not defined..**

This service is available at the following URL for production:

<https://apis.changehealthcare.com/dataservices/vpassport/v1/patientData>

Contact <<chc-customer-support>> for client ID and client secret to get OAUTH2 access token.

This service is available at the following URL for customer test

<https://sandbox.apis.changehealthcare.com/dataservices/vpassport/v1/patientData>

Contact <<chc-customer-support>> for client ID and client secret to get OAUTH2 access token.

This service is available at the following URL for customer sandbox.

<https://api-dev.apip.awsnonprod.healthcareit.net/dataservices/vpassport/v1/patientData>

Contact <<chc-customer-support>> for client ID and client secret to get OAUTH2 access token.

## Glossary of Terms and Acronyms

- **CMS NPPES** – Centers for Medicare and Medicaid Services (CMS) National Plan and Provider Enumeration System (NPPES) (NPI Number)
- **ECC** – PDX Inc. - Enterprise Control Center
- **ePharmacy** – PDX Inc. - a website maintained by Rx.com to provide licensed customer's patients access to EPR features.
- **ePharmacy Web Service** – PDX Inc. - a set of web services provided for licensed customers that will create their own web site and web service client to access EPR features.
- **EPR** – PDX Inc. - Enterprise Patient/Prescription Record - The EPR includes components that are integrated into EPS, the Central Fill Facility and the Web environment. The EPR consists of the software application for the storage, management, and communication of patient and clinical information between all pharmacies within all pharmacies within a chain pharmacy enterprise..
- **EPS** – PDX Inc. - Enterprise Pharmacy System
- **ESB** – Enterprise Service Bus - An application consisting of an agreed upon message format and communications methodology that transforms messages between Kaiser Permanente (KP) systems and the Enterprise Pharmacy System (EPS), Electronic Pharmacy Record (EPR), and Prescriber Record. The ESB allows for the implementation of web services in a

Service Oriented Architecture, these services enable the implementation of logic that is applied on the messages that traverse the ESB. Furthermore, the ESB enables the implementation of a business rules engine and a workflow engine.

- **FDB** - First Data Bank , see also Medispan
- **FHIR** – Fast Healthcare Interoperability Resources
- **IETF** – Internet Engineering Task Force,
- **HTTP** – HyperText Transport Protocol
- **HTTPS** – Secure HyperText Transport Protocol
- **ISO** – international standards organization,
- **GMT** – Greenwich Mean Time, also UTC (Coordinated Universal Time). See <http://www.greenwichmeantime.com/>. A GMT date should be formatted as follows: [CCYY-MM-DD]T[HH:MM:SS] in accord with the data type specification <http://www.w3.org/TR/2004/REC-xmlschema-2-20041028/datatypes.html#dateTime>
- **GPI** – Medispan Generic Product Identifier
- **HL7** – Health Level 7
- **KP Rx**, also **KP Rx number** – Prescription Grouping Reference Number (“rxGroupingReferenceNumber”): thirty-five (35) character string
- **Medispan** – see also FBD (First Data Bank)
- **Mobile Services** - e.g. mscripts™ from Remscripts, L.L.C.SMS (Short Message Service)
- **Mobile Service Vendor** – provider of integration point between pharmacy system(s) and mobile telephone network SMS service, e.g., mscripts™, Remscripts™, LLC
- **NANPA** – North American Numbering Plan Association: telephone numbering system
- **NCPDP** – National Council for Prescription Drug Program
- **NCPDP Provider ID** – seven digit numbering system assigned to every licensed pharmacy and qualified Non-Pharmacy Dispensing Sites (NPDS) in the United States.
- **NDC** – National Drug Code
- **NPI** – see also CMS NPPRES, - National Provider Identification number
- **PSU** – pharmacy system user
- **Prescription Number** - a number assigned by EPS to identify each prescription uniquely within a store: ten (10) character string representing a ten (10) digit non-negative integer.
- **REST** – Representational State Transfer,
- **Rx**, also **RX** – Prescription Number
- **SBMO** – Store Based Mail Order,
- **SMS** – Short Message Service also known as “text messaging”
- **SMS Provider** – provider of integration point between pharmacy system(s) and mobile telephone network SMS service, e.g., mscripts™, Remscripts™, LLC
- **Transaction Number** - a number assigned by EPS to identify each prescription filling uniquely within a store, both the original first filling and each subsequent refills.
- **URI** – Uniform Resource Identifier
- **URL** – Uniform Resource Locator
- **W3C** – World Wide Web Consortium,



- **WSDL** – Web Service Description Language, refers to both the WSDL specification and to “.wsdl” files implementing the specification to provide a Web 2.0 web service, as opposed to a RESTful web service.
- **XML** – eXtensible Markup Language. See <http://www.w3.org/XML/> and <http://www.xml.com/pub/a/98/10/guide0.html>.
- **XSD** – XML Schema file suffix – suffix of files containing a description of an XML schema
- **XSD** – XML Schema Definition - W3C Recommendation defining an XML schema language for formally describing an XML document
- **XSD** – XML Schema Document - an instance of an XML schema written in XML.
- **ZIP** – Zone Improvement Plan – United States Postal Service five digit postal code indicating US State, and post office/mail distribution center
- **ZIP+4** – Zone Improvement Plan extension– United States Postal Service five digit postal code with four digit extension to indicate postal route or post office box number