



# HC – API Interface Document

## API Version 1.0

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## Introduction

This document describes the process for third party developers to register and integrate with Health Companion (HC) APIs, to query patient data, in the context of meeting the Meaningful Use Stage 3 g (7), g (8) and g (9) requirements.

## Register

For integration with Health Companion APIs, you first have to register your application with Health Companion. For registration, you have to give the application name, call back URL (the URL which Health Companion has to call, after the authentication) and email. When you register, Health Companion will send the client ID and token to the registered email ID. You have to pass this key and token to authenticate the API calls.

Sandbox registration URL -

<https://nist.healthcompanion.com/HealthCompanionBusiness/app/registration>

Production registration URL -

<https://developer.healthcompanion.com/HealthCompanionBusiness/app/registration>

## Integrate

Health Companion API is based on DSTU 2, of the Fast Healthcare Interoperability Resources (FHIR) standard. FHIR is a standard way for exchanging healthcare information electronically. More information about FHIR is available at the FHIR website <https://www.hl7.org/fhir/overview.html>.

All the APIs are RESTful APIs and it has to be accessed through HTTPS. The server responds with standard HTTP response codes and returns data back in JSON format.

## Environments

URL formats

<https://<server>/<api-string>>

|                   |   |
|-------------------|---|
| <b>server</b>     | Domain name or the IP Address of the server. This is to be set based on sandbox or production environment.<br>Sandbox – <a href="https://nist.healthcompanion.com">https://nist.healthcompanion.com</a><br>Production – <a href="https://developer.healthcompanion.com">https://developer.healthcompanion.com</a> |
| <b>api-string</b> | Path to the FHIR resource – For e.g. For getting the patient details the api-string would be “/HCServices/fhir/GeneralInfo.json”.   |

## Authentication and Authorization

Health Companion uses OAuth 2 for authentication and authorization. More about OAuth 2 is explained in the link <https://en.wikipedia.org/wiki/OAuth>.

### Patient authentication

Patient has to authorize the third party application, to fetch his/her data from HC. Each patient (user) has a username and password in HC. HC has exposed a public URL for the third party application to integrate to their systems for patient authentication.

URL to integrate with the third party application for patient authentication-  
<https://<server>/HealthCompanion/login/login.action>

Patient has to give HC username and password here. After patient authenticates, HC will call the call back URL submitted by the third party application, at the time of application registration, with the patient unique identifier and a session token.

The third party application has to include both these identifies in all the calls to get the patient data from HC, along with access token (oAuth token) and the client Id.

### API details

| Data category            | FHIR resource        | HC Resource URL  |
|--------------------------|----------------------|--|
| General Info             | Patient              | /HCServices/fhir/{version}/GeneralInfo/{patientId}.json    |
| Problem list             | Condition            | /HCServices/fhir/{version}/Problem/{patientId}.json        |
| Medication               | Medication Statement | /HCServices/fhir/{version}/Medication/{patientId}.json     |
| Allergy                  | Allergy Intolerance  | /HCServices/fhir/{version}/Allergy/{patientId}.json        |
| Immunization             | Immunization         | /HCServices/fhir/{version}/Immunization/{patientId}.json   |
| Vital Signs              | Observation          | /HCServices/fhir/{version}/VitalSigns/{patientId}.json     |
| Lab result               | Observation          | /HCServices/fhir/{version}/LabData/{patientId}.json        |
| Procedure                | Procedure            | /HCServices/fhir/{version}/Procedures/{patientId}.json     |
| Medical Devices          | Device               | /HCServices/fhir/{version}/MedicalDevices/{patientId}.json |
| Health concerns          | Condition            | /HCServices/fhir/{version}/HealthConcern/{patientId}.json  |
| Goal                     | Goal                 | /HCServices/fhir/{version}/Goals/{patientId}.json          |
| Care team                | Encounter            | /HCServices/fhir/{version}/CareTeam/{patientId}.json       |
| Assessment               | Care Plan            | /HCServices/fhir/{version}/Assessment/{patientId}.json     |
| Treatment Plan           | Care Plan            | /HCServices/fhir/{version}/TreatmentPlan/{patientId}.json  |
| Smoking status           | Observation          | /HCServices/fhir/{version}/SmokingStatus/{patientId}.json  |
| Clinical Summary as CCDA |                      | /HCServices/fhir/{version}/PatientData/{patientId}.json    |

**The current API version is 1.0**

After the application and patient authentication, for all the subsequent API requests, it should contain the following parameters.

| Parameter | Values  | Required |
|-----------|---|----------|
| api       | GeneralInfo<br>Problem<br>Medication<br>Allergy<br>Immunization<br>VitalSigns<br>LabData<br>Procedures<br>MedicalDevices<br>HealthConcern<br>Goals<br>CareTeam<br>Assessment<br>TreatmentPlan<br>SmokingStatus<br>PatientData | Yes      |
| startdate |   |          |
| enddate   |   |          |
| date      |   |          |
| patientId | Patient Identified returned by HC after patient login   | Yes      |
| state     | Session token returned by HC after patient login  | Yes      |

The access token and client Id has to be set in the request header for all the API requests. It has to be set in the following format

```
httpHeaders.add("Authorization", "Bearer " + data.get("access_token"));
httpHeaders.add("clientId", clientId);
```

### Response and Status Codes

This section provides the details on the response codes and error codes that will be returned as part of a 4xx or 5xx Response. These response codes are as per the HTTP Standards.

| Response Code    | Description   |
|------------------|---|
| 200 OK           | The request has succeeded. The information returned with the response is dependent on the method used in the request.   |
| 400 BAD REQUEST  | The request could not be understood by the server due to malformed syntax.  |
| 401 UNAUTHORIZED | The request requires user authentication. If the request already included Authorization credentials, then the 401 response indicates that authorization has been refused for those credentials. |

|                              |  |
|------------------------------|--|
| 404 NOT FOUND                | The server has not found anything matching the Request-URI. No indication is given of whether the condition is temporary or permanent.                 |
| 405 METHOD NOT ALLOWED       | The method specified in the Request-Line is not allowed for the resource identified by the Request-URI.  |
| 406 NOT ACCEPTABLE           | The server is refusing to process a request because the data is corrupted or the data is not able to process. (Queue issue)                            |
| 412 PRE CONDITION FAILED     | The server is refusing to process a request because the ccd data is not available.   |
| 413 REQUEST ENTITY TOO LARGE | The server is refusing to process a request because the request entity is larger than the server is willing or able to process.                        |
| 500 INTERNAL SERVER ERROR    | The server encountered an unexpected condition which prevented it from fulfilling the request.   |
| 502 BAD GATEWAY              | The server, while acting as a gateway or proxy, received an invalid response from the upstream server it accessed in attempting to fulfil the request. |
| 503 SERVICE UNAVAILABLE      | The server is currently unable to handle the request due to a temporary overloading or maintenance of the server.                                      |

**General Info**

API – HCServices/fhir/1.0/GeneralInfo/{patientId}.json

Sample request –

[https://<server>/HCServices/fhir/1.0/GeneralInfo/1234.json?state=""&startDate="07/05/2016"&endDate="07/05/2017"&date=""](https://<server>/HCServices/fhir/1.0/GeneralInfo/1234.json?state=)

**Response JSON format**

```
{
  "resourceType": "Patient",
  "extension": [
    {
      "url": "http://hl7.org/fhir/Profile/us-core#ethnicity",
      "valueCodeableConcept": {
        "coding": [
          {
            "system": "http://hl7.org/fhir/v3/Ethnicity",
            "code": "NHL"
          }
        ]
      }
    }
  ]
}
```

```

    }
  },
  {
    "url": "http://hl7.org/fhir/Profile/us-core#race",
    "valueCodeableConcept": {
      "coding": [
        {
          "system": "http://hl7.org/fhir/v3/Race"
        }
      ]
    }
  }
],
"name": [
  {
    "family": [
      "Newman1"
    ],
    "given": [
      "Alice"
    ]
  }
],
"telecom": [
  {
    "system": "email"
  },
  {
    "system": "phone",
    "value": "+1(555)-115-1234"
  }
],
"gender": "female",
"birthDate": "1970-05-01",
"address": [
  {
    "use": "home",
    "city": "Beaverton",
    "postalCode": "97006"
  }
],
"communication": [
  {
    "language": {
      "coding": [
        {
          "system": "urn:ietf:bcp:47",
          "code": "EN-US"
        }
      ]
    },
    "preferred": true
  }
]
}

```

## Problem

API – HCServices/fhir/1.0/ Problem/{patientId}.json

Sample request –

[https://<server>/HCServices/fhir/1.0/Problem/1234.json?state=""&startDate="07/05/2016"&endDate="07/05/2017"&date="](https://<server>/HCServices/fhir/1.0/Problem/1234.json?state=)

Response JSON format

```

{
  "resourceType": "List",
  "contained": [
    {
      "resourceType": "Condition",
      "id": "1",
      "patient": {
        "display": "Alice Jones Newman1"
      },
      "code": {
        "coding": [
          {
            "system": "http://snomed.info/sct",
            "code": "386661006",
            "display": "Fever"
          }
        ]
      },
      "category": {
        "coding": [
          {
            "system": "http://hl7.org/fhir/condition-category",
            "code": "diagnosis"
          }
        ]
      },
      "clinicalStatus": "resolved",
      "verificationStatus": "confirmed",
      "onsetDateTime": "2015-06-22T00:00:00-05:00"
    },
    {
      "resourceType": "Condition",
      "id": "2",
      "patient": {
        "display": "Alice Jones Newman1"
      },
      "code": {
        "coding": [
          {
            "system": "http://snomed.info/sct",
            "code": "236578006",
            "display": "Chronic rejection of renal transplant"
          }
        ]
      },
      "clinicalStatus": "resolved",
      "verificationStatus": "confirmed",
      "onsetDateTime": "2011-12-31T00:00:00-06:00"
    }
  ]
}

```



```

    },
    {
      "resourceType": "Condition",
      "id": "3",
      "patient": {
        "display": "Alice Jones Newman1"
      },
      "code": {
        "coding": [
          {
            "system": "http://snomed.info/sct",
            "code": "59621000",
            "display": "Essential hypertension"
          }
        ]
      },
      "clinicalStatus": "resolved",
      "verificationStatus": "confirmed",
      "onsetDateTime": "2011-10-05T00:00:00-05:00"
    }
  ],
  "status": "current",
  "mode": "working",
  "entry": [
    {
      "item": {
        "reference": "#1"
      }
    },
    {
      "item": {
        "reference": "#2"
      }
    },
    {
      "item": {
        "reference": "#3"
      }
    }
  ]
}

```

## Medication

API – HCServices/fhir/1.0/Medication/{patientId}.json

Sample request –

[https://<server>/HCServices/fhir/1.0/Medication/1234.json?state=""&startDate="07/05/2016"&endDate="07/05/2017"&date=""](https://<server>/HCServices/fhir/1.0/Medication/1234.json?state=)

Response JSON format

```

{
  "resourceType": "List",
  "contained": [
    {

```

```

"resourceType": "MedicationStatement",
"id": "1",
"status": "active",
"effectiveDateTime": "2015-06-22T00:00:00-05:00",
"medicationCodeableConcept": {
  "coding": [
    {
      "system": "http://www.nlm.nih.gov/research/umls/rxnorm",
      "code": "309090",
      "display": "Ceftriaxone 100MG/ML"
    }
  ]
},
"dosage": [
  {
    "route": {
      "coding": [
        {
          "system": "http://snomed.info/sct",
          "display": "INTRAVENOUS"
        }
      ]
    }
  }
]
},
{
"resourceType": "MedicationStatement",
"id": "2",
"status": "active",
"effectiveDateTime": "2015-06-22T00:00:00-05:00",
"medicationCodeableConcept": {
  "coding": [
    {
      "system": "http://www.nlm.nih.gov/research/umls/rxnorm",
      "code": "209459",
      "display": "Tylenol 500mg"
    }
  ]
},
"dosage": [
  {
    "route": {
      "coding": [
        {
          "system": "http://snomed.info/sct",
          "display": "ORAL"
        }
      ]
    }
  }
]
},
{
"resourceType": "MedicationStatement",
"id": "3",
"status": "active",
"effectiveDateTime": "2015-06-22T00:00:00-05:00",
"medicationCodeableConcept": {
  "coding": [
    {

```

```

        "system": "http://www.nlm.nih.gov/research/umls/rxnorm",
        "code": "731241",
        "display": "Aranesp 0.5 MG/ML"
    }
  ],
  },
  "dosage": [
    {
      "route": {
        "coding": [
          {
            "system": "http://snomed.info/sct",
            "display": "INTRAVENOUS"
          }
        ]
      }
    }
  ]
},
],
"status": "current",
"mode": "working",
"entry": [
  {
    "item": {
      "reference": "#1"
    }
  },
  {
    "item": {
      "reference": "#2"
    }
  },
  {
    "item": {
      "reference": "#3"
    }
  }
]
}

```

**Allergy**

API – HCServices/fhir/1.0/Allergy/{patientId}.json

Sample request –

[https://<server>/HCServices/fhir/1.0/Allergy/1234.json?state=""&startDate="07/05/2016"&endDate="07/05/2017"&date=""](https://<server>/HCServices/fhir/1.0/Allergy/1234.json?state=)

Response JSON format

```

{
  "resourceType": "List",
  "contained": [
    {

```

```

"resourceType": "AllergyIntolerance",
"id": "1",
"onset": "1980-05-01T00:00:00-05:00",
"substance": {
  "coding": [
    {
      "system": "http://www.nlm.nih.gov/research/umls/rxnorm",
      "code": "7980",
      "display": "Penicillin G"
    }
  ]
},
"category": "medication",
"reaction": [
  {
    "manifestation": [
      {
        "coding": [
          {
            "system": "http://snomed.info/sct",
            "code": "247472004",
            "display": "Hives/Rash"
          }
        ]
      }
    ],
    "severity": "moderate"
  }
],
},
{
  "resourceType": "AllergyIntolerance",
  "id": "2",
  "onset": "1980-05-01T00:00:00-05:00",
  "substance": {
    "coding": [
      {
        "system": "http://www.nlm.nih.gov/research/umls/rxnorm",
        "code": "733",
        "display": "Ampicillin"
      }
    ]
  },
  "category": "medication",
  "reaction": [
    {
      "manifestation": [
        {
          "coding": [
            {
              "system": "http://snomed.info/sct",
              "code": "247472004",
              "display": "Hives/Rash"
            }
          ]
        }
      ],
      "severity": "moderate"
    }
  ]
}

```

```

],
"status": "current",
"mode": "working",
"entry": [
  {
    "item": {
      "reference": "#1"
    }
  },
  {
    "item": {
      "reference": "#2"
    }
  }
]
}

```

## Immunization

API – HCServices/fhir/1.0/Immunization/{patientId}.json

Sample request –

[https://<server>/HCServices/fhir/1.0/Immunization/1234.json?state=""&startDate="07/05/2016"&endDate="07/05/2017"&date="](https://<server>/HCServices/fhir/1.0/Immunization/1234.json?state=)

Response JSON format

```

{
  "resourceType": "List",
  "contained": [
    {
      "resourceType": "Immunization",
      "id": "1",
      "status": "completed",
      "date": "2012-01-04T00:00:00-06:00",
      "vaccineCode": {
        "coding": [
          {
            "system": "http://hl7.org/fhir/sid/cvx",
            "code": "106"
          }
        ]
      },
      "wasNotGiven": false,
      "reported": false
    },
    {
      "resourceType": "Immunization",
      "id": "2",
      "status": "completed",
      "date": "2014-05-10T00:00:00-05:00",
      "vaccineCode": {
        "coding": [
          {

```

```

        "system": "http://hl7.org/fhir/sid/cvx",
        "code": "88"
      }
    ]
  },
  "wasNotGiven": false,
  "reported": false
}
],
"status": "current",
"mode": "working",
"entry": [
  {
    "item": {
      "reference": "#1"
    }
  },
  {
    "item": {
      "reference": "#2"
    }
  }
]
}

```

## Vital Signs

API – HCServices/fhir/1.0/VitalSigns/{patientId}.json

Sample request –

[https://<server>/HCServices/fhir/1.0/VitalSigns/1234.json?state=""&startDate="07/05/2016"&endDate="07/05/2017"&date=""](https://<server>/HCServices/fhir/1.0/VitalSigns/1234.json?state=)

Response JSON format

```

{
  "resourceType": "Bundle",
  "type": "collection",
  "entry": [
    {
      "resource": {
        "resourceType": "Bundle",
        "type": "batch",
        "entry": [
          {
            "resource": {
              "resourceType": "Observation",
              "status": "final",
              "code": {
                "coding": [
                  {
                    "system": "http://loinc.org",
                    "code": "55284-4",
                    "display": "Blood pressure systolic & diastolic"
                  }
                ]
              }
            }
          }
        ]
      }
    }
  ]
}

```

```

    }
  ]
},
"effectiveDateTime": "2015-06-22T15:15:00-05:00",
"component": [
  {
    "code": {
      "coding": [
        {
          "system": "http://loinc.org",
          "code": "8462-4",
          "display": "Diastolic blood pressure"
        }
      ]
    },
    "valueQuantity": {
      "value": 39.92,
      "unit": "mm[Hg]"
    }
  }
]
},
{
  "resource": {
    "resourceType": "Observation",
    "status": "final",
    "code": {
      "coding": [
        {
          "system": "http://loinc.org",
          "code": "9279-1",
          "display": "Respiratory rate"
        }
      ]
    },
    "effectiveDateTime": "2015-06-22T15:15:00-05:00",
    "valueQuantity": {
      "value": 8.16,
      "unit": "breaths/minute",
      "system": "http://unitsofmeasure.org",
      "code": "/min"
    }
  }
},
{
  "resource": {
    "resourceType": "Observation",
    "status": "final",
    "code": {
      "coding": [
        {
          "system": "http://loinc.org",
          "code": "8867-4",
          "display": "Pulse rate"
        }
      ]
    },
    "effectiveDateTime": "2015-06-22T15:15:00-05:00",
    "valueQuantity": {
      "value": 36.29,

```

```

      "unit": "beats/minute",
      "system": "http://unitsofmeasure.org",
      "code": "/min"
    }
  }
]
}

```

## Lab Data

API – HCServices/fhir/1.0/LabData/{patientId}.json

Sample request –

[https://<server>/HCServices/fhir/1.0/LabData/1234.json?state=""&startDate="07/05/2016"&endDate="07/05/2017"&date=""](https://<server>/HCServices/fhir/1.0/LabData/1234.json?state=)

Response JSON format

```

{
  "resourceType": "List",
  "contained": [
    {
      "resourceType": "DiagnosticReport",
      "id": "1",
      "status": "final",
      "code": {
        "coding": [
          {
            "system": "http://loinc.org",
            "code": "5778-6",
            "display": "Color of Urine"
          }
        ]
      },
      "effectiveDateTime": "2015-06-22T00:00:00-05:00",
      "result": [
        {
          "reference": "#2"
        }
      ]
    },
    {
      "resourceType": "Observation",
      "id": "2",
      "code": {
        "coding": [
          {
            "system": "http://snomed.info/sct"
          }
        ]
      }
    }
  ]
}

```



```

    },
    "interpretation": {
      "coding": [
        {
          "system": "http://hl7.org/fhir/v2/0078",
          "code": "N"
        }
      ]
    },
    "referenceRange": [
      {
        "text": "YELLOW"
      }
    ]
  },
  {
    "resourceType": "DiagnosticReport",
    "id": "3",
    "status": "final",
    "code": {
      "coding": [
        {
          "system": "http://loinc.org",
          "code": "5767-9",
          "display": "Appearance of Urine"
        }
      ]
    },
    "effectiveDateTime": "2015-06-22T00:00:00-05:00",
    "result": [
      {
        "reference": "#4"
      }
    ]
  },
  {
    "resourceType": "Observation",
    "id": "4",
    "code": {
      "coding": [
        {
          "system": "http://snomed.info/sct"
        }
      ]
    },
    "interpretation": {
      "coding": [
        {
          "system": "http://hl7.org/fhir/v2/0078",
          "code": "N"
        }
      ]
    },
    "referenceRange": [
      {
        "text": "CLEAR"
      }
    ]
  },
  {
    "resourceType": "DiagnosticReport",

```

```

    "id": "5",
    "status": "final",
    "code": {
      "coding": [
        {
          "system": "http://loinc.org",
          "code": "5811-5",
          "display": "Specific gravity of Urine by Test strip"
        }
      ]
    },
    "effectiveDateTime": "2015-06-22T00:00:00-05:00",
    "result": [
      {
        "reference": "#6"
      }
    ]
  },
  {
    "resourceType": "Observation",
    "id": "6",
    "valueQuantity": {
      "value": 1.015,
      "system": "http://unitsofmeasure.org",
      "code": "1"
    },
    "interpretation": {
      "coding": [
        {
          "system": "http://hl7.org/fhir/v2/0078",
          "code": "N"
        }
      ]
    },
    "referenceRange": [
      {
        "text": " 1.005 1.030"
      }
    ]
  },
  {
    "resourceType": "DiagnosticReport",
    "id": "7",
    "status": "final",
    "code": {
      "coding": [
        {
          "system": "http://loinc.org",
          "code": "5803-2",
          "display": "pH of Urine by Test strip"
        }
      ]
    },
    "effectiveDateTime": "2015-06-22T00:00:00-05:00",
    "result": [
      {
        "reference": "#8"
      }
    ]
  },
  {

```

```

"resourceType": "Observation",
"id": "8",
"valueQuantity": {
  "value": 5.0,
  "unit": "pH",
  "system": "http://unitsofmeasure.org",
  "code": "[pH]"
},
"interpretation": {
  "coding": [
    {
      "system": "http://hl7.org/fhir/v2/0078",
      "code": "N"
    }
  ]
},
"referenceRange": [
  {
    "text": " 5.0 8.0"
  }
]
},
{
  "resourceType": "DiagnosticReport",
  "id": "9",
  "status": "final",
  "code": {
    "coding": [
      {
        "system": "http://loinc.org",
        "code": "5792-7",
        "display": "Glucose [Mass/volume] in Urine by Test strip"
      }
    ]
  },
  "effectiveDateTime": "2015-06-22T00:00:00-05:00",
  "result": [
    {
      "reference": "#10"
    }
  ]
},
{
  "resourceType": "Observation",
  "id": "10",
  "valueQuantity": {
    "value": 50.0,
    "unit": "mg/dL",
    "system": "http://unitsofmeasure.org",
    "code": "mg/dL"
  },
  "interpretation": {
    "coding": [
      {
        "system": "http://hl7.org/fhir/v2/0078",
        "code": "N"
      }
    ]
  }
}
},
{

```

```

"resourceType": "DiagnosticReport",
"id": "11",
"status": "final",
"code": {
  "coding": [
    {
      "system": "http://loinc.org",
      "code": "5797-6",
      "display": "Ketones [Mass/volume] in Urine by Test strip"
    }
  ]
},
"effectiveDateTime": "2015-06-22T00:00:00-05:00",
"result": [
  {
    "reference": "#12"
  }
]
},
{
  "resourceType": "Observation",
  "id": "12",
  "code": {
    "coding": [
      {
        "system": "http://snomed.info/sct",
        "code": "260385009",
        "display": "Negative (qualifier value)"
      }
    ]
  },
  "interpretation": {
    "coding": [
      {
        "system": "http://hl7.org/fhir/v2/0078",
        "code": "N"
      }
    ]
  }
},
{
  "resourceType": "DiagnosticReport",
  "id": "13",
  "status": "final",
  "code": {
    "coding": [
      {
        "system": "http://loinc.org",
        "code": "5804-0",
        "display": "Protein [Mass/volume] in Urine by Test strip"
      }
    ]
  },
  "effectiveDateTime": "2015-06-22T00:00:00-05:00",
  "result": [
    {
      "reference": "#14"
    }
  ]
},
{

```

```

"resourceType": "Observation",
"id": "14",
"valueQuantity": {
  "value": 100.0,
  "unit": "mg/dL",
  "system": "http://unitsofmeasure.org",
  "code": "mg/dL"
},
"interpretation": {
  "coding": [
    {
      "system": "http://hl7.org/fhir/v2/0078",
      "code": "N"
    }
  ]
}
},
{
  "resourceType": "DiagnosticReport",
  "id": "15",
  "status": "final",
  "code": {
    "coding": [
      {
        "system": "http://loinc.org",
        "display": "Chest X-ray 2 Views"
      }
    ]
  },
  "effectiveDateTime": "2015-06-22T00:00:00-05:00",
  "result": [
    {
      "reference": "#16"
    }
  ]
},
{
  "resourceType": "Observation",
  "id": "16",
  "code": {
    "coding": [
      {
        "system": "http://snomed.info/sct"
      }
    ]
  }
}
],
"status": "current",
"mode": "working",
"entry": [
  {
    "item": {
      "reference": "#1"
    }
  },
  {
    "item": {
      "reference": "#3"
    }
  }
],

```

```

    {
      "item": {
        "reference": "#5"
      }
    },
    {
      "item": {
        "reference": "#7"
      }
    },
    {
      "item": {
        "reference": "#9"
      }
    },
    {
      "item": {
        "reference": "#11"
      }
    },
    {
      "item": {
        "reference": "#13"
      }
    },
    {
      "item": {
        "reference": "#15"
      }
    }
  ]
}

```

## Procedures

API – HCServices/fhir/1.0/Procedures/{patientId}.json

Sample request –

[https://<server>/HCServices/fhir/1.0/Procedures/1234.json?state=""&startDate="07/05/2016"&endDate="07/05/2017"&date=""](https://<server>/HCServices/fhir/1.0/Procedures/1234.json?state=)

Response JSON format

```

{
  "resourceType": "List",
  "contained": [
    {
      "resourceType": "Procedure",
      "id": "1",
      "status": "completed",
      "code": {
        "coding": [
          {
            "system": "http://www.ama-assn.org/go/cpt",

```

```

        "code": "175135009"
      }
    ]
  },
  "performedDateTime": "2011-10-05T00:00:00-05:00"
},
{
  "resourceType": "Procedure",
  "id": "2",
  "status": "completed",
  "code": {
    "coding": [
      {
        "system": "http://www.ama-assn.org/go/cpt",
        "code": "56251003"
      }
    ]
  },
  "performedDateTime": "2015-06-22T00:00:00-05:00"
}
],
"status": "current",
"mode": "working",
"entry": [
  {
    "item": {
      "reference": "#1"
    }
  },
  {
    "item": {
      "reference": "#2"
    }
  }
]
}

```

**Medical Devices**

API – HCServices/fhir/1.0/MedicalDevices/{patientId}.json

Sample request –

[https://<server>/HCServices/fhir/1.0/MedicalDevices/1234.json?state=""&startDate="07/05/2016"&endDate="07/05/2017"&date=""](https://<server>/HCServices/fhir/1.0/MedicalDevices/1234.json?state=)

Response JSON format

```

{
  "resourceType": "List",
  "contained": [
    {
      "resourceType": "Device",
      "id": "1",
      "type": {

```

```

        "coding": [
          {
            "system": "http://snomed.info/sct",
            "code": "704708004",
            "display": "Cardiac resynchronization therapy implantable pacemaker"
          }
        ]
      },
      "status": "not-available",
      "udi": "(01)00643169007222(17)160128(21)BLC200461H"
    }
  ],
  "status": "current",
  "mode": "working",
  "entry": [
    {
      "item": {
        "reference": "#1"
      }
    }
  ]
}

```

## Health Concerns

API – HCServices/fhir/1.0/HealthConcern/{patientId}.json

Sample request –

[https://<server>/HCServices/fhir/1.0/HealthConcern/1234.json?state=""&startDate="07/05/2016"&endDate="07/05/2017"&date=""](https://<server>/HCServices/fhir/1.0/HealthConcern/1234.json?state=)

Response JSON format

```

{
  "resourceType": "List",
  "contained": [
    {
      "resourceType": "Condition",
      "id": "1",
      "patient": {
        "display": "Alice Jones Newman1"
      },
      "code": {
        "coding": [
          {
            "system": "http://snomed.info/sct",
            "code": "83986005",
            "display": "Severe Hypothyroidism"
          },
          {
            "system": "http://snomed.info/sct",
            "code": "238131007",
            "display": "Overweight"
          }
        ]
      }
    }
  ]
}

```



```

    ]
  },
  "category": {
    "coding": [
      {
        "system": "http://hl7.org/fhir/condition-category",
        "code": "complaint"
      }
    ]
  },
  "clinicalStatus": "resolved",
  "verificationStatus": "confirmed"
}
],
"status": "current",
"mode": "working",
"entry": [
  {
    "item": {
      "reference": "#1"
    }
  }
]
}

```

## Goals

API – HCServices/fhir/1.0/Goals/{patientId}.json

Sample request –

[https://<server>/HCServices/fhir/1.0/Goals/1234.json?state=""&startDate="07/05/2016"&endDate="07/05/2017"&date=""](https://<server>/HCServices/fhir/1.0/Goals/1234.json?state=)

Response JSON format

```

{
  "resourceType": "List",
  "contained": [
    {
      "resourceType": "Goal",
      "id": "1",
      "extension": [
        {
          "url": "http://hl7.org/fhir/StructureDefinition/goal-target",
          "extension": [
            {
              "url": "measure",
              "valueCodeableConcept": {
                "coding": [
                  {
                    "system": "http://loinc.org",
                    "code": "58144-7"
                  }
                ]
              }
            }
          ]
        }
      ]
    }
  ]
}

```

```

        }
      }
    ]
  }
],
"startDate": "2015-06-22",
"description": "Get rid of intermittent fever that is occurring every few
weeks.",
"status": "accepted",
"author": {
  "display": "patient"
}
},
{
  "resourceType": "Goal",
  "id": "2",
  "extension": [
    {
      "url": "http://hl7.org/fhir/StructureDefinition/goal-target",
      "extension": [
        {
          "url": "measure",
          "valueCodeableConcept": {
            "coding": [
              {
                "system": "http://loinc.org",
                "code": "58144-7"
              }
            ]
          }
        }
      ]
    }
  ]
},
"startDate": "2015-06-22",
"description": "Need to gain more energy to do regular activities.",
"status": "accepted",
"author": {
  "display": "patient"
}
}
],
"status": "current",
"mode": "working",
"entry": [
  {
    "item": {
      "reference": "#1"
    }
  },
  {
    "item": {
      "reference": "#2"
    }
  }
]
}

```

## Care Team

API – HCServices/fhir/1.0/CareTeam/{patientId}.json

Sample request –

[https://<server>/HCServices/fhir/1.0/CareTeam/1234.json?state=""&startDate="07/05/2016"&endDate="07/05/2017"&date=""](https://<server>/HCServices/fhir/1.0/CareTeam/1234.json?state=)

Response JSON format

```
{
  "resourceType": "List",
  "contained": [
    {
      "resourceType": "EpisodeOfCare",
      "id": "1",
      "status": "active",
      "patient": {
        "display": "Alice Jones Newman1"
      },
      "careManager": {
        "display": "Albert Davis"
      }
    },
    {
      "resourceType": "EpisodeOfCare",
      "id": "2",
      "status": "active",
      "patient": {
        "display": "Alice Jones Newman1"
      },
      "careTeam": [
        {
          "member": {
            "display": "Tracy Davis"
          }
        }
      ]
    }
  ],
  "status": "current",
  "mode": "working",
  "entry": [
    {
      "item": {
        "reference": "#1"
      }
    },
    {
      "item": {
        "reference": "#2"
      }
    }
  ]
}
```

## Assessment

API – HCServices/fhir/1.0/Assessment/{patientId}.json

Sample request –

[https://<server>/HCServices/fhir/1.0/Assessment/1234.json?state=""&startDate="07/05/2016"&endDate="07/05/2017"&date=""](https://<server>/HCServices/fhir/1.0/Assessment/1234.json?state=)

Response JSON format

```
{
  "resourceType": "Bundle",
  "type": "collection",
  "entry": [
    {
      "resource": {
        "resourceType": "CarePlan",
        "text": {
          "status": "additional",
          "div": "<div xmlns=\"http://www.w3.org/1999/xhtml\">The patient was found to have fever and Dr Davis is suspecting Anemia based on the patient history. So Dr Davis asked the patient to closely monitor the temperature and blood pressure and get admitted to Community Health Hospitals if the fever does not subside within a day.</div>"
        },
        "status": "active",
        "description": "The patient was found to have fever and Dr Davis is suspecting Anemia based on the patient history. So Dr Davis asked the patient to closely monitor the temperature and blood pressure and get admitted to Community Health Hospitals if the fever does not subside within a day."
      }
    }
  ]
}
```

## Treatment Plan

API – HCServices/fhir/1.0/TreatmentPlan/{patientId}.json

Sample request –

[https://<server>/HCServices/fhir/1.0/TreatmentPlan/1234.json?state=""&startDate="07/05/2016"&endDate="07/05/2017"&date=""](https://<server>/HCServices/fhir/1.0/TreatmentPlan/1234.json?state=)

Response JSON format

```
{
  "resourceType": "List",
  "contained": [
    {
      "resourceType": "CarePlan",
```

```

"id": "1",
"status": "active",
"activity": [
  {
    "detail": {
      "category": {
        "coding": [
          {
            "system": "http://hl7.org/fhir/care-plan-activity-category",
            "code": "observation"
          }
        ]
      },
      "code": {
        "coding": [
          {
            "system": "http://loinc.org",
            "code": "24357-6",
            "display": "Urinalysis macro (dipstick) panel"
          }
        ]
      },
      "prohibited": false
    }
  },
  {
    "detail": {
      "category": {
        "coding": [
          {
            "system": "http://hl7.org/fhir/care-plan-activity-category",
            "code": "observation"
          }
        ]
      },
      "code": {
        "coding": [
          {
            "system": "http://loinc.org",
            "code": "34534-8",
            "display": "EKG 12 channel panel"
          }
        ]
      },
      "prohibited": false
    }
  },
  {
    "detail": {
      "category": {
        "coding": [
          {
            "system": "http://hl7.org/fhir/care-plan-activity-category",
            "code": "observation"
          }
        ]
      },
      "code": {
        "coding": [
          {
            "system": "http://snomed.info/sct",

```

```

        "code": "168731009",
        "display": "Chest X-ray"
    }
  ],
  },
  "prohibited": false
}
},
{
  "detail": {
    "category": {
      "coding": [
        {
          "system": "http://hl7.org/fhir/care-plan-activity-category",
          "code": "drug"
        }
      ]
    },
    "code": {
      "coding": [
        {
          "system": "http://www.nlm.nih.gov/research/umls/rxnorm",
          "code": "284215",
          "display": "Clindamycin 300mg"
        }
      ]
    },
    "prohibited": false
  }
},
{
  "detail": {
    "category": {
      "coding": [
        {
          "system": "http://hl7.org/fhir/care-plan-activity-category",
          "code": "encounter"
        }
      ]
    },
    "code": {
      "coding": [
        {
          "system": "http://snomed.info/sct",
          "code": "11429006",
          "display": "consultation"
        }
      ]
    },
    "prohibited": false
  }
}
]
}
},
"status": "current",
"mode": "working",
"entry": [
  {
    "item": {
      "reference": "#1"
    }
  }
]

```

```

    }
  }
]
}

```

## Smoking Status

API – HCServices/fhir/1.0/SmokingStatus/{patientId}.json

Sample request –

[https://<server>/HCServices/fhir/1.0/SmokingStatus/1234.json?state=""&startDate="07/05/2016"&endDate="07/05/2017"&date="](https://<server>/HCServices/fhir/1.0/SmokingStatus/1234.json?state=)

Response JSON format

```

{
  "resourceType": "Observation",
  "status": "final",
  "category": {
    "coding": [
      {
        "system": "http://hl7.org/fhir/observation-category",
        "code": "social-history",
        "display": "Social History"
      }
    ]
  },
  "code": {
    "coding": [
      {
        "system": "http://loinc.org",
        "code": "72166-2",
        "display": "Tobacco smoking status"
      }
    ],
    "text": "Tobacco smoking status"
  },
  "effectiveDateTime": "2017-08-04T13:21:13-05:00",
  "valueCodeableConcept": {
    "coding": [
      {
        "system": "http://snomed.info/sct",
        "code": "449868002",
        "display": "Current every day smoker"
      }
    ],
    "text": "Current every day smoker"
  }
}

```

## Patient Data

API – HCServices/fhir/1.0/PatientData/{patientId}.json

Sample request –

[https://<server>/HCServices/fhir/1.0/PatientData/1234.json?state=""&startDate="07/05/2016"&endDate="07/05/2017"&date=""](https://<server>/HCServices/fhir/1.0/PatientData/1234.json?state=)

Response JSON format

```
[{fileName=Clinical Document.xml, contentType=text/xml, content= ,
reportCode=null, documentDate=null, documentType=null}]
```

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