醫健通

eHealth

香港特別行政區政府 HKSARGOVT

# Developers' Quick Guide
# eHealth Procedure Records (FHIR)

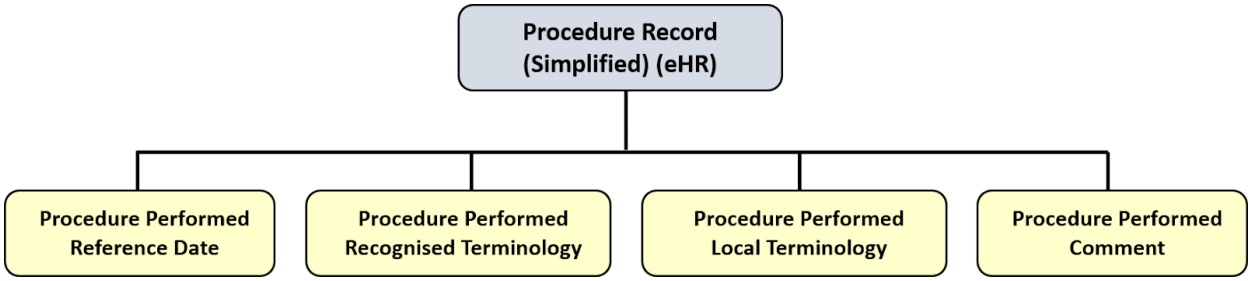
# 1 Contents

# 1. Purpose

This document is intended for Information Technology personnel involved in the development of programmes to upload data from their Electronic Medical Record (EMR) system to the electronic Health Record Sharing System (eHRSS) .

The technical interface requirements for implementing Health Level Seven (HL7) Fast Healthcare Interoperability Resources (FHIR) Release 4 (R4) for uploading the Procedure Records to eHRSS are provided below. Readers who prefer more in-depth study of the HL7 FHIR (R4) standards and content standards may refer to the HL7 FHIR website https://www.hl7.org/fhir/ and the **eHR Content Standards Guidebook** on the eHealth official website https://www.ehealth.gov.hk/ for more detail.

# 2. Data Components




**Procedure Performed Reference Date**
Date when the procedure was performed.

**Procedure Performed Recognised Terminology**
It describes the recognised terminology/classification from which the procedure performed is referenced to:

- Recognised Terminology Name
- Procedure Performed Identifier
- Procedure Performed Description

**Procedure Performed Local Terminology**
Local code and description created by the healthcare provider for the procedure performed.

**Procedure Performed Comment**
Comment made on the procedure performed.

# 3. Upload Standards

**Supported Data Standards Level**

The Procedure data domain (PX) supports Level 2 or Level 3 data standards.

**Examples of Procedure Scenarios**
Below is an example depicting the different details in Level 2 and Level 3 Procedure records:

| Data Field | Level 2 data | Level 3 data |
|---|---|---|
| Procedure performed reference date | 2023-01-31 16:30:05.005 | 2023-01-31 16:30:05.005 |
| Procedure performed - recognised terminology | | HKCTT |
| Procedure performed identifier - recognised terminology | | 23815 |
| Procedure performed description - recognised terminology | | Lobectomy of lung - left lower lobe |
| Procedure performed local code | 2231 | 2231 |
| Procedure performed local description | Lobectomy of left lung | Lobectomy of left lung |
| Procedure performed comment | lower lobe | lower lobe |

**Modes of Data Upload**
HCP can upload clinical data in TWO upload modes according to needs. Please refer to the relevant sections in the General Guide.

- **Data materialization (DM)** mode is to upload all of an HCR's clinical data of a specific sharable dataset (data domain) that exists in the EMR system to eHRSS. DM aims for the first data upload for an HCR who newly given sharing consent to the HCP; and

- **Incremental Load (INC)** mode is for HCP to upload all newly created, amended and cancelled clinical data of a specific sharable data from all HCRs in the EMR system to eHRSS in ONE batch since the last data upload.

**Recognised Terminology**
- The recognised terminology sets adopted for the eHR Procedure Records includes:
    - HKCTT
    - SNOMED CT
    - ICPC2

- The clinical terminology and code sets used are provided in the **self-service kit**. For the latest codes used, please refer the eHR code sets published on the eHealth official website.

**Message Standards**

- FHIR R4 message standards in JSON format are adopted for Procedure Records upload to eHealth.
- Resource and Element names are case-sensitive

**Encoding**

- UTF-8 encoding is used for eHR Clinical data exchange.

## 4. Artifacts Summary

This section provides a list of the FHIR artifact defined as part of this implementation guide:

| Resource used | Definition | Cardinality |
|---|---|---|
| eHRSS Bundle | This profile represents the constraints and localization applied to the Bundle resource by eHRSS | 1..1 |
| eHRSS Composition | This profile represents the constraints and localization applied to the Composition resource by eHRSS | 1..1 |
| eHRSS Patient | This profile represents the constraints and localization applied to the Patient resource by eHRSS. | 1..1 |
| eHRSS Procedure | This profile defines a condition structure which includes eHR Procedure data | 1..* |
| eHRSS Encounter | This profile defines an Encounter structure which related to the procedure performed | 0..* |

*Notes:*

*The following conventions are used for the specifications described in this document:*

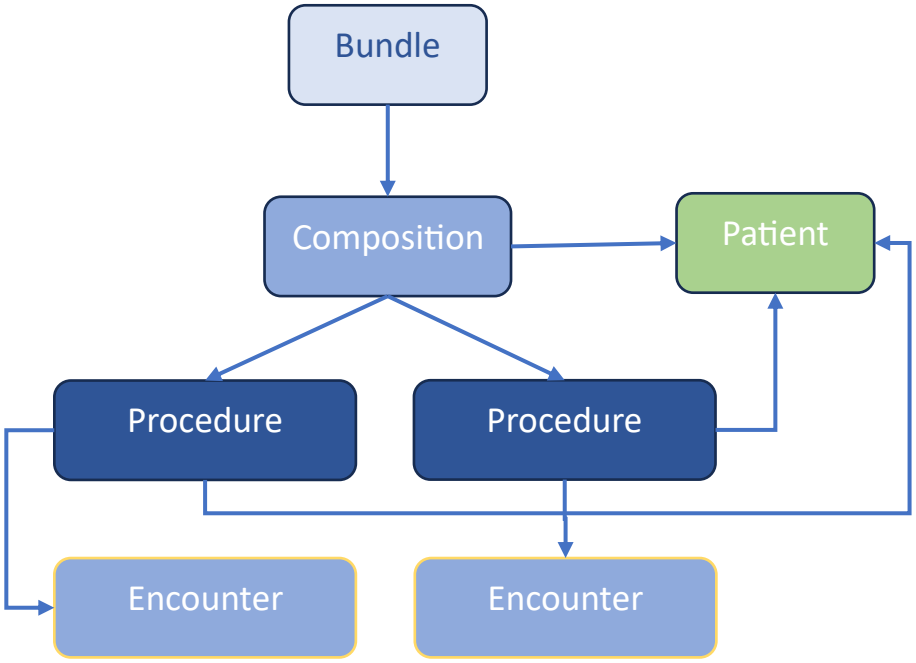
| | |
|---|---|
| *Constants:* | ***Bolded** values are constants or fixed values.* |
| *E.g.:* | *Example values for illustration.* |
| *[…]:* | *Data variables* |
| *"…":* | *Data values.* |
| *"M/O"* | *Indicates if the data field is Mandatory (M) or Optional (O). M* or O* denotes conditional Mandatory or Optional, please refer to Remarks for rules* |
| *NA:* | *Data Field in concern is not used.* |
| *[S]:* | *Must Support* |

## 5. Specification of Data uploaded

The section describes the format and data required for the data contributed to eHealth. Unused FHIR message items and those not processed by eHRSS are not listed below. Readers may refer to the HL7 (HK) website for the full HL7 FHIR R4 message specifications if required.

## 5.1 Composition of HL7 FHIR Message

The Procedure Records are structured with the HL7 FHIR components (Resources) and hierarchy as specified below.




**Bundle Resource** (Single occurrence in each FHIR message bundle)

- Identify the container type for the collection of data included in the bundle. The resource composition and data contents are determined by the Bundle Type. For Procedure Records data upload, the following resources are included in the bundle.

**Composition Resource** (Single occurrence for each bundle)

- Indicate a composition of data or document are collected in the message bundle. For "document" type of bundle, the "Composition Resource" must be the first resource to be included.

**Procedure Resource** (Multiple occurrences are allowed in a bundle)

- Contains the list of procedure records based on the mode of upload.

**Patient Resource** (Single occurrence for each **Bundle**)

- Contains the demographics data of the healthcare recipient (HCR) who has the procedure.

**Encounter Resource** (Single occurrence for each **Procedure**)

- Contains the encounter information for the procedure performed.

## 5.2 Data Elements in the Bundle Resource

A bundle is a collection of resources. For the type of “document” bundle, the following rules should be fulfilled.

*+ Rule: A document must have an identifier with a system and a value*

The below table listed data elements in the Bundle Resource which identifies the beginning of the container and the collection of data resources are all included under [resource.entry] in the bundle.

| **JSON Name** | **Data Value** | **FHIR Data Type (Max Length)** | **Remarks** | **M/O** |
|---|---|---|---|---|
| resourceType | Name of the current resource | string(6) | Fixed value:<br>"resourceType":"**Bundle**" | M |
| id | Resource id which is a logic id to identify the artifact<br><br>A UUID represented as a URI (RFC 4122 )<br><br>Please see reference website in appendix | uuid | *E.g.*<br>urn:uuid:c757873d-ec9a-4326-a141-556f43239520 | M |
| Identifier | Persistent identifier for the resource<br><br>UUID/OID for Bundle | Identifier | *E.g.*<br>"identifier" : {<br>"system" : "urn:ietf:rfc:3986",<br>"value" : "urn:uuid:0c3151bd-1cbf-4d64-b04d-cd9187a4c6e0"<br>} | M |
| Type | The type is always “document” | code | Fixed value:<br>"type":"**document**" | M |
| Timestamp | When the bundle was assembled<br>[current time] | instant | In format:<br>YYYY-MM-DDThh:mm:ss.sss+zz:zz<br><br>*E.g.* "timestamp": "2024-03-01T15:04:48.865+08:00" | M |

| JSON Name | Data Value | FHIR Data Type (Max Length) | Remarks | M/O |
|---|---|---|---|---|
| Entry<br>fullUrl | Resources included in this bundle are collected under 'entry'<br><br>Each resource is identified by a uri<br><br>A UUID represented as a URI (RFC 4122 ) | BackboneElement<br>uri | URI for UUID/OID<br><br>HL7 FHIR Resources that collected in the Procedure record upload Bundle include:<br>• Composition<br>• Patient<br>• Procedure<br>• Encounter<br>*E.g.*<br>"fullUrl": "urn:uuid:21c6828c-b175-4a3b-b6de-6eaf69335021" | M |
| resource | A document must have a Composition as the first resource. Please refer to Composition resource requirements | BackboneElement<br>.Resource | The 1st resource must be "Composition" resource. | M |

## 5.3 Data Elements in the Composition Resource

sThe Composition Resource identifies whether the upload package includes list of Procedure records in this bundle.

| JSON Name | Data Value | Data Definition | FHIR Data Type (Max Length) | Remarks | M/O |
|---|---|---|---|---|---|
| resourceType | Resource name | - | string (11) | Fixed value:<br>"resourceType":" **Composition**" | M |
| id | Resource id which is a logic id to identify the artifact<br><br>A UUID represented as a URI (RFC 4122 )<br><br>Please see reference website in appendix | - | uuid | *E.g.*<br>urn:uuid: 30551ce1-5a28-4356-b684-1e639094ad4d | M |
| status | The status is always "final". Other codes are not accepted by eHRSS. | - | string(5) | Fixed value:<br>"**final**" | M |

| JSON Name | Data Value | Data Definition | FHIR Data Type (Max Length) | Remarks | M/O |
|---|---|---|---|---|---|
| type.coding.system<br>type.coding.display | Composition type<br><br>A coding object is required. | - | CodeableConcept<br><br>coding.system<br><br>coding.display | Fixed value:<br>"type": {<br>"coding": [<br>{<br>"system": "**[eHR FHIR URL]**",<br>"display": "**Hong Kong eHR Healthcare Document**"<br>}]} | M |
| subject.reference | [resource.id] of Patient Resource included in the same bundle | HCR has the condition in this bundle | Reference(Patient) | In format:<br>Patient/<resource id><br><br>*E.g.*<br>"subject": {<br>"reference":<br>"Patient/6e480262-978c-49f0-a793-468293932fc2"<br>}<br>• This resource id is the same value of the Patient resource id<br>• The Patient Resource contains data of the HCR | M |
| date | Message generation time<br><br>*eHRSS will use this value and [record key] for overriding records uploaded in eHRSS* | Composition creation time | dateTime(25) | In format:<br>YYYY-MM-DDThh:mm:ss+zz:zz<br><br>*E.g.* "date":"2022-12-01T15:04:48+08:00" | M |
| author | Author of this composition<br><br>Name of healthcare institution who created/update the record<br><br>*eHRSS will not interpret this value* | - | Reference(Organization) | Fixed value:<br>Organization/author<br><br>*E.g.*<br>"author": [{<br>"reference" :<br>"Organization/author",<br>"display" : "ABC Clinic"<br>}]<br><br>HCP could use either the value of the following 2 fields:<br>[Record Create Institution Name]<br>[Record Update institution name] | M |

| JSON Name | Data Value | Data Definition | FHIR Data Type (Max Length) | Remarks | M/O |
|---|---|---|---|---|---|
| title | Title of this composition<br><br>*eHR will not interpret this value* | - | string(33) | Fixed value:<br>title:"**Hong Kong eHR Healthcare Document**" | M |
| section | Composition is broken into sections | - | BackboneElement | - | M |
| title | A human readable label for this section | - | string(255) | Fixed value:<br>title: "**Procedure Records**" | M |
| code | A code identifying the kind of content contained within the section. This must be consistent with the section title. | - | CodeableConcept<br><br>coding.system<br><br>coding.code<br><br>coding.display | Fixed value:<br>"code": {<br>"coding": [<br>{<br>"system": "**[eHR FHIR URL]**/datadomain",<br>"code": "**PX**",<br>"display": "**Procedure Records**"<br>}]} | M |
| entry | A reference to data that supports this section<br><br>**Each entry represents each record | | Reference(Condition) | Reference Format: Condition/<resource id><br>• This resource id is the same value of the Condition resource id<br>• The Procedure Resource contains data of the HCR 's procedure are included in this bundle. | M |

| JSON Name | Data Value | Data Definition | FHIR Data Type (Max Length) | Remarks | M/O |
|---|---|---|---|---|---|
| 99999999-TransactionType | [Transaction Type]<br>Insert / Update / Delete | • Insert (“I”): Upload a record which has never been uploaded to eHRSS before.<br>• Update (“U”): Update a record which has been uploaded to eHRSS before and its data content was changed since the last upload of this record (identified by [Record Key]).<br>• Delete (“D”): Delete an record which has been uploaded to eHRSS before and has since be cancelled or deleted (identified by [Record Key]).<br>• DM mode only permits ‘I’ (Insert) | BackboneElement.Reference.Extension<br>string(1) | Permissible Values:<br>**I**: Insert<br>**U**: Update<br>**D**: Delete<br><br>*E.g.:*<br>"extension": [<br>{<br>"url": "**[eHR FHIR URL]**/99999999-TransactionType",<br>"valueString": "**[Transaction Type]**"<br>}] | M |
| 99999999-LastUpdateDateTime | [Last Update Date Time] | The last update datetime for HCP system | BackboneElement.Reference.Extension<br><br>dateTime(25) | In format:<br>YYYY-MM-DDThh:mm:ss+zz:zz<br>*E.g:* "2019-05-31T08:30:00+08:00"<br><br>*E.g:*<br>"extension": [<br>{<br>"url": "**[eHR FHIR URL]**/99999999-LastUpdateDateTime",<br>"valueDateTime": "**[Last Update Date Time]**"<br>}] | M |
| 99999999-TransactionDateTime | [Transaction Date Time] | The datetime indicates the transaction sequence | BackboneElement.Reference.Extension<br><br>dateTime(25) | In format:<br>YYYY-MM-DDThh:mm:ss+zz:zz<br>*E.g.* "2019-05-31T08:30:00+08:00"<br><br>*E.g.*<br>"extension": [<br>{<br>"url": "**[eHR FHIR URL]**/99999999-TransactionDateTime",<br>"valueDateTime": "**[Transaction Date Time]**"<br>} ] | M |

| JSON Name | Data Value | Data Definition | FHIR Data Type (Max Length) | Remarks | M/O |
|---|---|---|---|---|---|
| 99999999-ComplianceLevel | [Compliance Level] | Data Compliance level | BackboneElement.Reference.Extension<br>string(1) | Permissible Values:<br>2,3<br><br>*E.g.*<br>"extension": [<br>{<br>"url": "**[eHR FHIR URL]**/99999999-ComplianceLevel",<br>"valueString": "**[Compliance Level]**"<br>}] | M |
| 99999999-UploadMode | Bulk Load Type | - | string(4) | Permissible values:<br>**BL**: INC Bulk load<br>**BL-M**: DM Bulk load<br><br>*E.g:*<br>"extension": [<br>{<br>"url": "**[eHR FHIR URL]**/99999999-UploadMode",<br>"valueString": "**[99999999-UploadMode]**"<br>}] | M |
| 99999999-RecordCreateDatetime | [Record Create Datetime] | Datetime when the record was created in source system of HCP | BackboneElement.Reference.Extension<br><br>dateTime(25) | In format:<br>YYYY-MM-DDThh:mm:ss+zz:zz<br>*E.g.*"2021-01-25T08:30:00+08:00"<br><br>*E.g.*<br>"extension": [<br>{<br>"url": "**[eHR FHIR URL]**/99999999-RecordCreateDatetime",<br>"valueDateTime": "**[Record Create Datetime]**"<br>}] | O |
| extension 99999999-RecordCreateInstIdentifier | [Record Create Institution Identifier] | A unique identifier assigned by eHR Healthcare Provider Index to each healthcare institution who created the record | BackboneElement.Reference.Extension<br>string(10) | *E.g.*<br>"extension": [<br>{<br>"url": "**[eHR FHIR URL]**/99999999-RecordCreateInstIdentifier",<br>"valueString": **"[Record Create Institution Identifier]"**<br>}] | O |

| JSON Name | Data Value | Data Definition | FHIR Data Type (Max Length) | Remarks | M/O |
|---|---|---|---|---|---|
| extension 99999999-RecordCreateInstName | [Record Create Institution Name] | Name of healthcare institution who created the record | BackboneElement.Reference.Extension<br><br>string(255) | *E.g.*:<br>"extension": [<br>{<br>"url": "**[eHR FHIR URL]**/99999999-RecordCreateInstName",<br>"valueString": "**[Record Create Institution Name]**"<br>}] | O |
| extension 99999999-RecordLastUpdateDatetime | [Record Last Update Datetime] | Datetime when the record was last updated in source system of HCP | BackboneElement.Reference.Extension<br><br>dateTime(25) | In format:<br>YYYY-MM-DDThh:mm:ss+zz:zz<br>E.g. 2017-03-04T08:30:00+08:00<br><br>*E.g.*<br>"extension": [<br>{<br>"url": "**[eHR FHIR URL]**/99999999-RecordLastUpdateDatetime",<br>"valueDateTime": "**[Record Last Update Datetime]**"<br>}] | O |
| extension 99999999-RecordUpdateInstIdentifier | [Record Update Institution Identifier] | A unique identifier assigned by eHR Healthcare Provider Index to each healthcare institution who updated the record | BackboneElement.Reference.Extension<br>string(10) | *E.g.*<br>"extension": [<br>{<br>"url": "**[eHR FHIR URL]**/99999999-RecordCreateInstIdentifier",<br>"valueString": "**[Record Update Institution Identifier]**"<br>}] | O |
| extension 99999999-RecordUpdateInstName | [Record Update Institution Name] | Name of healthcare institution who updated the record | BackboneElement.Reference.Extension<br><br>string(255) | *E.g.*<br>"extension": [<br>{<br>"url": "**[eHR FHIR URL]**/99999999-RecordUpdateInstName",<br>"valueString": "**[Record Update Institution Name]**"<br>}] | O |
| identifier | [Record key] | A unique identifier for each record | string(40) | *E.g.*<br>"identifier": {<br>"system": "**[HCP FHIR URL]**/Recordkey",<br>"value": "**[Record key]**"<br>} | M |

## 5.4 Data Elements in the Patient Resource

Data elements providing information on the HCR whom this bundle of problem records belong to.

| JSON Name | Data Field | Data Definition | FHIR Data Type (Max Length) | Remarks | M/O |
|---|---|---|---|---|---|
| resourceType | Resource name | - | string(7) | Fixed value:<br>"resourceType" : "**Patient**" | M |
| id | Resource id reference by Condition resource | Logical id of this artifact<br>A UUID represented as a URI (RFC 4122 ); | string(32) | *E.g.*urn:uuid: 6e480262-978c-49f0-a793-468293932fc2 | M |
| identifier | eHR number for this patient | - | identifier | | |
| type.coding.system | Link to document type coding system | - | uri | Fixed value:"**[eHR FHIR URL]/typeofID-ext**" | M |
| type.coding.code | identifier type code | - | string(5) | Fixed value: **"EHRNO"** | M |
| value | [eHR number] | A unique HCR identifier assigned by eHRSS. | numeric(12) | *E.g.*<br>{<br>"type": {<br>"coding": [{<br>"system": "**[eHR FHIR URL]**/typeofID-ext",<br>"code": "**EHRNO**"}]<br>}, "value": "**[eHR number]**"<br>} | M |
| identifier | Document type and HKIC for this patient | - | identifier | | |
| type.coding.system | Link to document type coding system | - | uri | Fixed value:"**[eHR FHIR URL]/typeofID-ext**" | M |
| type.coding.code | [Type of identity document] | The type of identity document the HCR used for eHealth registration or identity update. | string(6) | Permissible Value:<br>ID, BC, CD, ECID | M |
| value | [HKIC] | • Hong Kong Identity Card (HKIC) number; or<br>• Registration Number on Hong Kong Birth Certificate (post-1981); or<br>• Consular Corps Identity Card number issued by HKSAR Immigration Department | string(12) | Format:<br>AANNNNNNC or ANNNNNNC<br>e.g.: A1234563<br>• C is the check digit<br>• One leading space if there is only one leading alphabet in HKIC number<br>• All Uppercase | M |

| JSON Name | Data Field | Data Definition | FHIR Data Type (Max Length) | Remarks | M/O |
|---|---|---|---|---|---|
| identifier | Document type and document number for this patient | Mandatory if [Type of identity document] = ID / BC / CD or [Identity document number] is blank<br>Optional if [Identity document number] is given | identifier | | |
| type.coding.system | Link to document type coding system | - | uri | Fixed value:"**[eHR FHIR URL]/typeofID-ext**" | O* |
| type.coding.code | [Type of identity document] | The type of identity document the HCR used for eHealth registration or identity update. | string(6) | Refer to the document type code set provided in the **self-service kit** or the eHRSS official website for the most updated code set. | O* |
| value | [Identity document number] | The document number of the HCR's identity document | string(30) | Mandatory if HKIC identifier is blank | O* |
| name.family | [English surname] | HCR's surname in English<br><br>For single name cases, the single name can be specified in either [English surname] or [English given Name] | string(40) | Mandatory if [English full name] is blank; else Optional<br><br>All Uppercase letters<br><br>e.g.1: CHAN<br>e.g.2: PARTICIPANT53 | M* |
| name.given | [English given name] | HCR's given name in English | string(40) | Mandatory if [English full name] is blank; else Optional<br><br>All Uppercase letters | |
| text | [English full name] | HCR's full name in English | string(100) | Mandatory if [English surname] and [English given name] are blank<br><br>In format:<br>[English surname] + [,] + 1 white space + [English given name]<br><br>All Uppercase letters<br><br>* If HCR has either English surname or given name stored in local EMR system, full name should be filled. | M* |

| JSON Name | Data Field | Data Definition | FHIR Data Type (Max Length) | Remarks | M/O |
|---|---|---|---|---|---|
| gender | [sex] | The Administrative Gender defined in FHIR<br><br>eHR will convert the FHIR gender to eHR [Sex] according to the Section 6 conversion table | code | Permissible Values:<br>- male<br>- female<br>- unknown<br><br>*E.g.*:<br>"gender": " **[Sex]**" | M |
| birthdate | [Date of birth] | The HCR's date of birth as indicated on the HCR's identity document | Date(10) | In format:<br>YYYY-MM-DD<br><br>*E.g.*:<br>"birthDate": "**[Date of birth]**"<br><br>If date is exact to 'Year' (e.g. 2010), the unknown month and day should be filled with '01-01'. Example: "2010-01-01".<br><br>If date is exact to 'Month' (e.g. 2011-12), the unknown day should be filled with '01'. Example: "2011-12-01". | M |

## 5.5 Data Elements in the Procedure resource

The information about an individual who has procedure peformed.

| JSON Name | Data Value | Data Definition | FHIR Data Type (Max Length) | Remarks | L2 M/O | L3 M/O | Delete Scenario |
|---|---|---|---|---|---|---|---|
| resousrceType | Resource name | Detailed information about procedure was performed on HCR | string(9) | Fixed Value:<br>"resourceType": "**Procedure**" | M | M | M |
| id | Resource id reference by Composition resource | Logical id of this artifact<br>A UUID represented as a URI (RFC 4122 ); | uuid | *E.g.*<br>urn:uuid:c7781f44-6df8-4a8b-9e06-0b34263a47c5 | M | M | M |

| JSON Name | Data Value | Data Definition | FHIR Data Type (Max Length) | Remarks | L2 M/O | L3 M/O | Delete Scenario |
|---|---|---|---|---|---|---|---|
| identifier | [Record key] | A unique identifier for each Procedure record | string(40) | This [Record Key] is reference to the same [Record Key] in Composite Resource entry<br><br>"identifier": {<br>"system": "**[HCP FHIR URL]**/Recordkey",<br>"value": "**[Record key]**"} | M | M | M |
| status | Code to identify the status of the procedure | preparation \| in-progress \| not-done \| on-hold \| stopped \| completed \| entered-in-error \| unknown | | Fixed value: **completed** | M | M | M |
| Code | Identification of the procedure | -- | CodeableConcept | | | | |
| *Recognised Terminology* | | | | | | | |
| coding.system | Link to recognized terminology coding system which indicate the [[Procedure performed - recognised terminology name] | Name of the recognised terminology / classification from which the procedure performed is referenced to | uri | Fixed value:<br>"system": "**[uri for Procedure performed - recognised terminology name]**"<br><br>Please refer to Section 8 : use the "Recognised terminology name – Procedure" to look up the **uri** as the coding.system | NA | M | NA |
| coding.code | [Procedure performed identifier – recognised terminology] | Unique identifier of the procedure performed in the recognised terminology | string(20) | "code":"**[Procedure performed identifier – recognised terminology]**"<br><br>Please refer to Section 8 : use the "Recognised terminology name – Procedure" to look up the **code value** | NA | M | NA |
| coding.display | [Procedure performed description - recognised terminology] | The description of the procedure performed in the recognised terminology. It should be the corresponding description of the selected [Procedure performed identifier - recognised terminology] | string(1000) | "display": "**[Procedure performed description - recognised terminology]**"<br><br>Please refer to Section 8 : use the "Recognised terminology name – Procedure" to look up the **Description** | NA | M | NA |

| JSON Name | Data Value | Data Definition | FHIR Data Type (Max Length) | Remarks | L2 M/O | L3 M/O | Delete Scenario |
|---|---|---|---|---|---|---|---|
| *Local Terminology* | | | | | | | |
| coding.system | Link to local terminology coding system | -- | uri | Fixed Value: "**[HCP FHIR URL]**/procedure " | O | O | NA |
| coding.code | [Procedure performed local code] | Local code created by the healthcare provider for the procedure performed | string(20) | "code": "**[Procedure performed local code]**" | O | O | NA |
| coding.display | [Procedure performed local description] | Local description created by the healthcare provider for the procedure performed | string(1000) | "display": "**[Procedure performed local description]**" | M | M | NA |
| subject.reference | [resource.id] of Patient Resource in the same bundle | HCR has the condition in this bundle | Reference(Patient) | In format:<br>Patient/<resource id><br><br>*E.g.*<br>"subject": {<br>"reference": "Patient/6e480262-978c-49f0-a793-468293932fc2"<br>}<br>• This resource id is the same value of the Patient resource id<br>• The Patient Resource contains data of the HCR | M | M | NA |
| Encounter | [resource.id] of Encounter Resource in the same bundle related to the Condition resource | Encounter created as part of | Reference(Encounter) | In format:<br>Encounter/<resource id><br><br>*E.g.*<br>"encounter": {<br>"reference": "Encounter/169281c8-fb76-4e9c-b30f-3dfb3a7f53f2"<br>}<br><br>• This resource id is the same value of the Encounter resource id | O | O | NA |

| JSON Name | Data Value | Data Definition | FHIR Data Type (Max Length) | Remarks | L2 M/O | L3 M/O | Delete Scenario |
|---|---|---|---|---|---|---|---|
| performedDateTime | [Procedure performed reference date] | Date when the procedure was performed. For eHR, if this date is not available, the create date of the procedure data should be used when submitting data to the eHR | dateTime(25) | In format:<br>YYYY-MM-DDThh:mm:ss+zz:zz<br><br>*E.g.* "date":"2023-06-13T16:15:00+08:00" | M | M | NA |
| note | [Procedure performed comment] | Comment made on the procedure performed | string(1000) | *E.g.*<br>"text": "**[Procedure performed comment]**" | O | O | NA |

## 5.6 Data Elements for the Encounter resource

The information about an encounter which related to procedure peformed.

| JSON Name | Data Value | Data Definition | FHIR Data Type (Max Length) | Remarks | L2 M/O | L3 M/O | Delete Scenario |
|---|---|---|---|---|---|---|---|
| resousrceType | Resource name | Encounter information about the service provided to HCR | string(9) | Fixed Value:<br>"resourceType":"**Encounter**" | M | M | NA |
| id | Resource id reference by Condition resource | Logical id of this artifact<br>A UUID represented as a URI (RFC 4122 ); | uuid | *E.g.* urn:uuid:169281c8-fb76-4e9c-b30f-3dfb3a7f53f2 | O | O | NA |
| 99999999-AttendanceInstIdentifier | [Attendance institution identifier] | eHRSS assigned [Healthcare Institution Identifier] (HCI ID) of the healthcare institution where the HCR receives the service. | string(10) | *E.g.*<br>"extension": [<br>{<br>"url": "**[eHR FHIR URL]**/99999999-AttendanceInstIdentifier",<br>"valueString": "**[Attendance institution identifier]**"<br>}] | O | O | NA |

| JSON Name | Data Value | Data Definition | FHIR Data Type (Max Length) | Remarks | L2 M/O | L3 M/O | Delete Scenario |
|---|---|---|---|---|---|---|---|
| identifier | [Episode number] | A unique reference number assigned by the healthcare institution to an episode of care. The episode of care can be of inpatient or outpatient nature | string(20) | *E.g.*<br>{<br>"system": "**[HCP FHIR URL]**/EpisodeNum",<br>"value": "**[Episode number]**"<br>} | O | O | NA |
| status | Encounter Status<br><br>*eHRSS will not interpret the value.* | -- | code | Fixed Value : "**finished**" | M | M | M |
| Class | Classification of patient encounter<br><br>*eHRSS will not interpret the value.* | -- | Coding | Fixed Value:<br>"class": {<br>"system": "**[eHR FHIR URL]**/class",<br>"code": "UNKNOWN",<br>"display": "Unknown status"} | M | M | M |

# 6. Examples

In the following samples, data variables that have to be generated with each specific upload are quoted in square brackets and highlighted in *[Red]*. The definitions and expected values of these variables are listed in the previous section. All other parts including data values should not be altered without confirmation with the eHRSS project teams.

A sample in JSON format is included in the eHealth Data Upload Self Service Kit. Developers may use it as a template for incorporation with their data uploads after modification.

Procedure template:

```
{
    "resourceType": "Bundle",
    "id": "[resource id]",
    "identifier": {
        "system": "urn:ietf:rfc:4122",
        "value": "urn:uuid:[UUID for Bundle]"
    },
    "type": "document",
    "entry": [
        {
            "fullUrl": "urn:uuid:[resource id for Composition]",
            "resource": {
                "resourceType": "Composition",
                "id": "[UUID for Composition]",
                "status": "final",
                "type": {
                    "coding": [
                        {
                            "system": "https://ehealth.gov.hk/fhir",
                            "display": "Hong Kong eHR Healthcare Document"
                        }
                    ]
                },
                "date": "[Message generation time]",
                "author": [
                    {
                        "reference": "Organization/author",
```

```
                    "display": "[Record Creation institution name]"
                }
            ],
            "title": "Hong Kong eHR Healthcare Document",
            "section": [
                {
                    "title": "Procedure Records",
                    "code": {
                        "coding": [
                            {
                                "system": "https://ehealth.gov.hk/fhir/datadomain",
                                "code": "PX",
                                "display": "Procedure Records"
                            }
                        ]
                    },
                    "entry": [
                        {
                            "extension": [
                                {
                                    "url": "https://ehealth.gov.hk/FHIR/99999999-RecordCreateDatetime",
                                    "valueDateTime": "[Record Create Datetime]"
                                },
                                {
                                    "url": "https://ehealth.gov.hk/FHIR/99999999-RecordCreateInstIdentifier",
                                    "valueString": "[Record Create Institution Identifier]"
                                },
                                {
                                    "url": "https://ehealth.gov.hk/FHIR/99999999-RecordCreateInstName",
                                    "valueString": "[Record Create Institution Name]"
                                },
                                {
                                    "url": "https://ehealth.gov.hk/FHIR/99999999-RecordLastUpdateDatetime",
                                    "valueDateTime": "[Record Last Update Datetime]"
                                },
                                {
                                    "url": "https://ehealth.gov.hk/FHIR/99999999-RecordUpdateInstIdentifier",
                                    "valueString": "[Record Update Institution Identifier]"
                                },
                                {
                                    "url": "https://ehealth.gov.hk/FHIR/99999999-RecordUpdateInstName",
                                    "valueString": "[Record Update Institution Name]"
                                },
                                {
```

```
                                    "url": "https://ehealth.gov.hk/FHIR/99999999-TransactionDateTime",
                                    "valueString": "[Record Update Institution Name]"
                                },
                                {
                                    "url": "https://ehealth.gov.hk/FHIR/99999999-TransactonType",
                                    "valueString": "[Transaction Type]"
                                },
                                {
                                    "url": "https://ehealth.gov.hk/FHIR/99999999-LastUpdateDateTime",
                                    "valueDateTime": "[Last Update Date Time]"
                                },
                                {
                                    "url": "https://ehealth.gov.hk/FHIR/99999999-ComplianceLevel",
                                    "valueString": "[Compliance Level]"
                                },
                                {
                                    "url": "https://ehealth.gov.hk/FHIR/99999999-UploadMode",
                                    "valueString": "[Bulk Load Type]"
                                }
                            ],
                            "reference": "Procedure/[resource id for Procedure] ",
                            "identifier": {
                                "system": " https://ehealth.gov.hk/FHIR/HCP/local/Recordkey",
                                "value": "[Record key]"
                            }
                        }
                    ]
                }
            ]
        }
    },
    {
        "fullUrl": "urn:uuid:[resource id for Patient]",
        "resource": {
            "resourceType": "Patient",
            "id": "[resource id for Patient]",
            "identifier": [
                {
                    "type": {
                        "coding": [
                            {
                                "system": "https://ehealth.gov.hk/FHIR/typeofID-ext",
                                "code": "EHRNO"
                            }
```

```
                        ]
                    },
                    "value": "[eHR number]"
                },
                {
                    "type": {
                        "coding": [
                            {
                                "system": "https://ehealth.gov.hk/FHIR/typeofID-ext",
                                "code": "ID"
                            }
                        ]
                    },
                    "value": "[HKIC number]"
                }
            ],
            "name": [
                {
                    "text": "[English full name]",
                    "family": "[English surname]",
                    "given": "[English given name]"
                }
            ],
            "gender": "[Sex]",
            "birthDate": "[Date of birth]"
        }
    },
    {
        "fullUrl": "urn:uuid:[resource id for Procedure]",
        "resource": {
            "resourceType": "Procedure",
            "id": "[resource id for Procedure]",
            "status": "completed",
            "code": {
                "coding": [
                    {
                        "system": "[uri for Procedure performed - recognised terminology name]",
                        "code": "[Procedure performed identifier – recognised terminology]",
                        "display": "[Procedure performed description - recognised terminology]"
                    },
                    {
                        "system": " https://ehealth.gov.hk/FHIR/HCP/local/procedure",
                        "code": "[Procedure performed local code]",
```

```
                            "display": "[Procedure performed local description]"
                        }
                    ]
                },
                "subject": {
                    "reference": "Patient/[resource id for Patient]"
                },
                "encounter": {
                    "reference": "Encounter/[resource id for Encounter]"
                },
                "performedDateTime": "[Procedure performed reference date]",
                "note": [
                    {
                        "text": "[Procedure performed comment]"
                    }
                ]
            }
        },
        {
            "fullUrl": "urn:uuid:[resource id for Encounter]",
            "resource": {
                "resourceType": "Encounter",
                "id": "[resource id for Encounter]",
                "extension": [
                    {
                        "url": "https://ehealth.gov.hk/FHIR/99999999-AttendanceInstIdentifier",
                        "valueString": "[Attendance institution identifier]"
                    }
                ],
                "identifier": [
                    {
                        "system": "https://ehealth.gov.hk/FHIR/HCP/local/EpisodeNum",
                        "value": "[Episode Number]"
                    }
                ],
                "status": "finished",
                "class": {
                    "system": "https://ehealth.gov.hk/FHIR/class",
                    "code": "UNKNOWN",
                    "display": "Unknown status"
                }
            }
        }
    ]
```

```
}
```

# 7. Mapping Tables

## 7.1 FHIR Administrative Gender

| FHIR Administrative Gender | eHR Value of [Sex] |
|---|---|
| male | M |
| female | F |
| unknown | U |

# 8. Code Tables

Type of identity document

| eHR Value | eHR Description | Chinese Description | Full Description |
|---|---|---|---|
| AR | Adoption Certificate | 領養證明書 | Adopted Children Register (include those issued by HKSAR and non-HKSAR government authorities) |
| BC | Birth Certificate - HK | 香港出生證明書 | Hong Kong Birth Certificate |
| CD | Consular Corps ID Card | 領事團身份證 | Consular Corps Identity Card |
| DI | Document of Identity for Visa Purposes | 香港特別行政區簽證身份書 | HKSAR Document of Identity for Visa Purposes |
| EC | Exemption Certificate | 豁免證明書(或稱豁免登記證明書) | Certificate of Exemption |
| ED | eHR document | 電子健康紀錄文件 | Document issued by eHRC for newborn registration |
| ID | HKID Card | 香港身份證 | Hong Kong Identity Card |
| MD | Macao ID Card | 澳門身份證 | Macao Identity Card |
| OC | Travel documents - PRC | 中華人民共和國發出之其他旅遊証件 | Other travel documents issued by the People Republic of China government / authorising agent, exclude One-way Permit and Two-way Permit |
| OP | Travel document - overseas | 其他國家/地區發出之旅遊証件 | Travel documents issued by other countries / regions |
| OW | One-way Permit | 單程証 | One-way Permit |
| RE | Recognizance Form | 擔保書(行街紙) | Recognizance Form |
| RP | Re-entry Permit | 香港特別行政區回港證 | HKSAR Re-entry Permit |
| TW | Two-way Permit | 雙程証 | Two-way Permit |

Recognised terminology name - Procedure

| eHR Value | eHR Description | Allowable Values | uri | Code Value | Description |
|---|---|---|---|---|---|
| HKCTT | Hong Kong Clinical Terminology Table | Nature = Procedure | https://ehealth.gov.hk/HKCTT | Use [Term ID] | use [eHR description] |
| SNOMED CT | Systematized Nomenclature of Medicine - Clinical Terms | Hierarchy = Procedure, Situation | http://snomed.info/sct | use [ConceptID] | use [Preferred term] |
| ICPC2 | International Classification for Primary Care, Second edition | Valid ICPC2 codes - the last 2 digits should be in | http://hl7.org/fhir/sid/icpc-2 | use [Code] | use [Full description] |

| | | | | | |
|---|---|---|---|---|---|
| | | the range of 30-69 | | | |

## 9. Data variable

| Variable | Variable Value | Remark |
|---|---|---|
| eHR FHIR URL | https://ehealth.gov.hk/FHIR | |
| HCP FHIR URL | https://ehealth.gov.hk/FHIR/HCP/local | |

## 10. Appendix

Reference to generate the UUD URI

Online UUID generator : https://www.uuidgenerator.net/
Python uuid module documentation: https://docs.python.org/3/library/uuid.html
Java UUID Class Documentation:
https://docs.oracle.com/en/java/javase/14/docs/api/java.base/java/util/UUID.html

FHIR Reference

Bundle Resource: https://hl7.org/fhir/R4/bundle.html

Composition Resource: https://hl7.org/fhir/R4/composition.html

Patient Resource: https://hl7.org/fhir/R4/patient.html

Procedure Resource: https://hl7.org/fhir/r4/procedure.html

Encounter Resource : https://hl7.org/fhir/R4/encounter.html