



# **Management of Healthcare Recipient Data by Healthcare Providers**

**[G70]**

**Version 1.2**

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The Government of the Hong Kong Special Administrative Region

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## Document Summary

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## Abbreviations

Abbreviation	Full Name
ADR	Adverse Drug Reaction
eHR	Electronic Health Record
eHR HRI	Electronic Health Record Healthcare Recipient Index
eHRC	Commissioner for the Electronic Health Record
eHRSS	Electronic Health Record Sharing System
eMR / ePR	Electronic Medical Record / Electronic Patient Record (in HCP)
HCP	Healthcare Provider
HCR	Healthcare Recipient
HKIC	Hong Kong Identity Card
PMI	Patient Master Index

# **1. INTRODUCTION**

## **1.1 OBJECTIVE**

This document aims at providing the general principles and illustrating the desirable workflows on managing the data of healthcare recipient (HCR), in relation to the HCR's registration status in eHR sharing, within the electronic medical / patient record (eMR / ePR) system of healthcare providers (HCPs) to support the eHR sharing.

## **1.2 INTENDED READERS**

This guide is to be read by any person who is responsible to plan, develop and implement the eMR / ePR system in HCPs for managing the health data in the HCPs to support eHealth Record Sharing System (eHRSS).

## 2. MANAGEMENT OF HCR DATA BY HCP

### 2.1 INTRODUCTION

When the HCR registered to eHRSS and gave sharing consent to the HCPs, HCR's readily available health data in HCPs would be shared through eHRSS. The sharing of health data includes (i) viewing the HCR's sharable data in eHRSS, (ii) contributing the HCR's eHR through uploading the readily sharable health data in HCPs' eMR / ePR system to eHRSS, and (iii) downloading the HCR's allergy / adverse drug reaction data from eHRSS to eMR / ePR system.

This section will focus on the management of HCR's data by HCPs in response to various eHR workflow scenarios on [Section 2.3](#) in this document.

### 2.2 PRINCIPLES AND GUIDELINES

The basic principles regarding the sharing of data in eHRSS in response to various eHR workflow scenarios include:

- 2.2.1 To ensure the effective communication for data sharing between HCPs' eMR / ePR system and eHRSS, HCPs have to keep and maintain a list of consented HCR (who gave sharing consent to them, so-called 'HCR consent list') in their eMR / ePR system. The list keeps the latest HCRs' major keys<sup>1</sup> and eHR Number registered in eHRSS as well as the consent status, which serves as the key identifiers for identification and validation in the process of two-way data sharing between eHRSS and HCPs' eMR / ePR system.
- 2.2.2 To support the sharing of HCR's health data in eHRSS, eHRSS will notify HCPs the situations with implication on data sharing, i.e. accessing to, uploading and downloading of HCR's eHR data is enabled or disabled. The situations include:

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<sup>1</sup> (i) For Hong Kong Identity Card (HKIC) holder, major keys include HKIC no., English name, Sex and Date of Birth

(ii) For non-HKIC holder, major keys include Identity document number, Type of identity document, English name, Sex and Date of Birth

- (i) At different HCR registration / consent status, e.g. HCR gave sharing consent to the HCP, death of HCR...etc,
- (ii) Upon any changes in patient identity, e.g. HCR changed major keys in eHRSS, and
- (iii) Under problem record scenario of problem identity in HCR's record.

HCPs have to ensure that their eMR / ePR system can cater the above situations to support the sharing of HCR's health data in eHRSS.

2.2.3 To support effective communication between eHRSS and HCPs on the identity of HCR in eHR sharing, it is recommended that HCPs to notify eHRSS some situations with changes in patient identity in their eMR / ePR system. The situations include:

- (i) Upon any changes in patient identity, e.g. HCR changed major keys in HCPs, and
- (ii) Under problem record scenario, e.g. problem identity in HCR's record.

2.2.4 For correct attribution of eHR data, when HCPs upload the sharable health data to eHRSS, the HCR's eHR Number and Major Keys provided by HCPs must match with those in eHR Healthcare Recipient Index (eHR HRI). eHRSS will validate the HCR's eHR Number and Major Keys from the HCPs against the eHR HRI upon receiving the HCPs' data. If the eHR Number or any Major Keys of the HCR is unmatched with that in eHR HRI or eHR HRI change history, eHRSS will reject the data uploaded from HCPs.

2.2.5 To support data sharing between HCPs and eHRSS, it is important for HCPs to prepare the HCP Patient Master Index (PMI) and / or HCP eMR / ePR system according to eHR standards. See [\*'Appendix III – Preparation for joining eHRSS – Patient Master Index'\*](#) for details.

2.2.6 eHRSS provides feature for HCPs to download part of sharable health data (i.e. allergy data, adverse drug reaction (ADR) data) from eHRSS to HCPs' eMR / ePR system. There are two modes for HCPs to adapt with: (i) Push mode, i.e. eHRSS to push the allergy / ADR data to HCP's eMR / ePR system in a regular basis, e.g. an hourly basis, subject to further discussion with



HCPs to meet their operation need as appropriate, and / or (ii) Pull mode, i.e. HCPs' eMR / ePR system to request eHRSS for allergy / ADR data downloading. To ensure the allergy / ADR data belongs to the correct HCR, it is essential for eHRSS to confirm the patient's identification information before the allergy / ADR data is being downloaded to HCPs' eMR / ePR system. eHRSS will validate the HCR's Major Keys from the HCPs' eMR / ePR system against the eHR HRI or eHR HRI change history with details as follows:

- (i) HCPs adapt with push mode: Major Keys are matched by eHRSS upon / after the HCPs' eMR / ePR system replying eHRSS on HCR giving sharing consent; and
- (ii) HCPs adapt with pull mode: Major Keys are matched by eHRSS upon every single request of HCPs' eMR / ePR system for data downloading from eHRSS.

2.2.7 eHRSS allows the HCPs to download allergy / adverse drug reaction (ADR) data. To ensure the allergy / ADR data belongs to the correct HCR, it is highly recommended that HCPs to keep the downloaded allergy / ADR data at staging area<sup>2</sup> until verified with the HCR upon his / her attendance, and adopt at HCPs' eMR / ePR system after verification.

2.2.8 There might be situations when HCR's identity is changed (e.g. under problem record scenario), eHRSS will alert the HCPs and delete the eHR data of the involved HCR to ensure data sharing in eHRSS is correct and 'clean'. It is therefore important for HCPs (adapt with push mode) to follow eHRSS's handling on the downloaded allergy / ADR data in staging area, i.e. to delete the downloaded data accordingly upon receiving the advice from eHRSS on data deletion.

2.2.9 In some situations, eHRSS will advise the HCPs adapt with push mode to delete the downloaded allergy / ADR data in staging area, e.g. when the data source HCP informed eHRSS to delete an error allergy record. Upon

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<sup>2</sup> An intermediate storage area to keep the downloaded data from eHRSS before adapting the data to eMR / ePR system of HCPs.

receiving the message from eHRSS, the HCPs should delete these downloaded data accordingly.

2.2.10 It is important that HCPs to comply with the eHR data standard on data transmission to streamline the communication between eHRSS and their eMR / ePR system.

2.2.11 The following table summarises the data associated with different data access scenarios, i.e. data uploading, data downloading and data viewing.

<b>Data access scenarios</b>	<b>Sharable health data domains</b>
Data uploading	Sharable data <sup>3</sup>
Data downloading	Allergy / ADR and part of PMI data <sup>4</sup>
Data viewing	Sharable data <sup>2</sup>

## 2.3 SCENARIOS AND WORKFLOWS

There are mainly **SIX** eHRSS workflow scenarios related to handling of HCR's data by HCPs under three main categories, which are:

### 2.3.1 HCR registration / consent status

2.3.1.1 HCR gave sharing consent to HCPs

2.3.1.2 HCR revoked sharing consent to HCPs / expiry of the 'One-Year Sharing Consent'

2.3.1.3 HCR withdrew registration from eHRSS / eHRC cancel HCR's registration

2.3.1.4 Death of HCR

2.3.1.5 eHRC suspended HCR's registration

2.3.1.6 eHRC ceased the suspension of HCR's registration

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<sup>3</sup> The health data or information relating to the health condition of, or to the healthcare provided or to be provided to, the healthcare recipient. Refer to [eHR Content Standards Guidebook](#) for details of the sharable health data.

<sup>4</sup> Sharable PMI data includes Chinese Name, Phone number, Email, Nationality and Corresponding address.

2.3.2 Change of HCR's identity

2.3.2.1 HCR changed major keys in eHR

2.3.2.2 HCR changed major keys in HCPs

2.3.3 Problem record scenario

2.3.3.1 Problem identity in HCR's record

Other scenario regarding eHRSS system notifications, which is:

2.3.4 Handling record rejection from eHRSS

Each scenario will be separately elaborated in detail.

### 2.3.1 HCR Registration / Consent Status

#### 2.3.1.1 HCR gave sharing consent to HCPs to upload / access eHR data to / from eHRSS

This scenario is applied when a HCR attends HCPs and wishes the HCPs to access his / her eHR data for continuity of care. By given the sharing consent, either 'indefinite' or 'one-year', the HCPs can upload / access the HCR's sharable health data to / from eHRSS via their eMR / ePR system.

##### Roles of eHRSS (towards HCPs with HCR's giving of sharing consent)

- a. Notify the HCPs that one can access to HCR's eHR data after the HCR gave the sharing consent, as well as the type of sharing consent, either 'indefinite' or 'one-year'.
- b. Accept the data uploading, data downloading and data viewing from HCPs as appropriate.

##### Roles of HCPs (with HCR's giving of sharing consent)

- a. Keep the notification of sharing consent sent from eHRSS.
- b. Update the HCR details in the 'HCR consent list' accordingly.
- c. Match the HCR's major keys received from eHRSS with those in HCP PMI and reply eHRSS by
  - (i) a 'PMI matched' reply, or
  - (ii) upload the HCR's health data, in which the major keys are matched with those in eHR HRI.
- d. Start data uploading, data downloading and data viewing to HCR's eHR data.  
Also see '[Section 2.4 Summary of eHR Data Access Scenarios](#)'. [Remarks: With the HCR's sharing consent, HCPs are required to upload readily available data to eHRSS.]

##### Conclusion on eHR data access (Also see '[Section 2.4 Summary of eHR Data Access Scenarios](#)')

### **Handling in eHRSS**

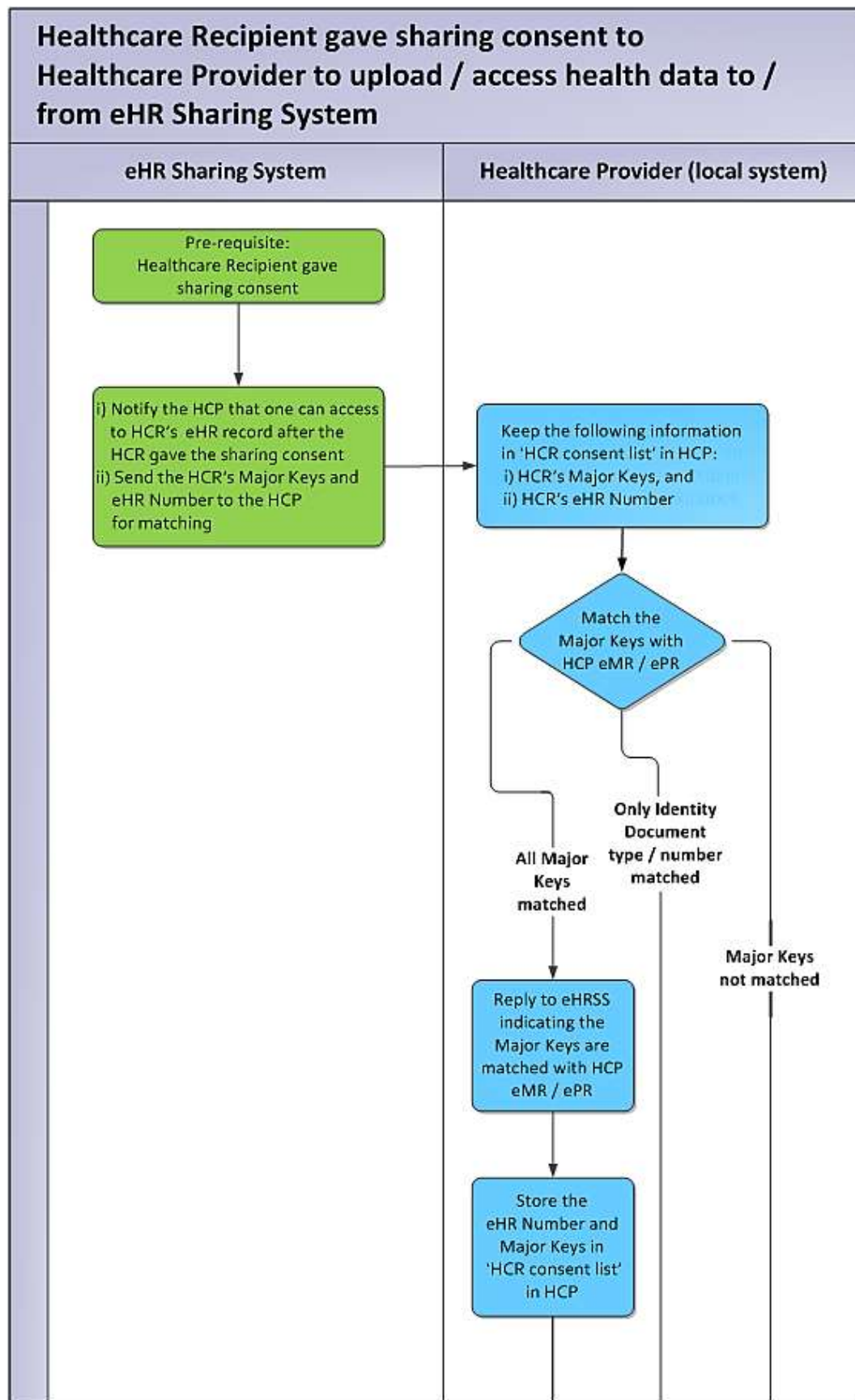
- a. Data viewing
  - (i) Viewing of HCR's sharable data in eHRSS is supported.
- b. Data upload
  - (i) HCR's sharable health data uploaded from HCPs' eMR / ePR system is accepted.
- c. Data download
  - (i) Downloading of HCR's allergy / ADR data from eHRSS to HCPs' eMR / ePR system is provided.

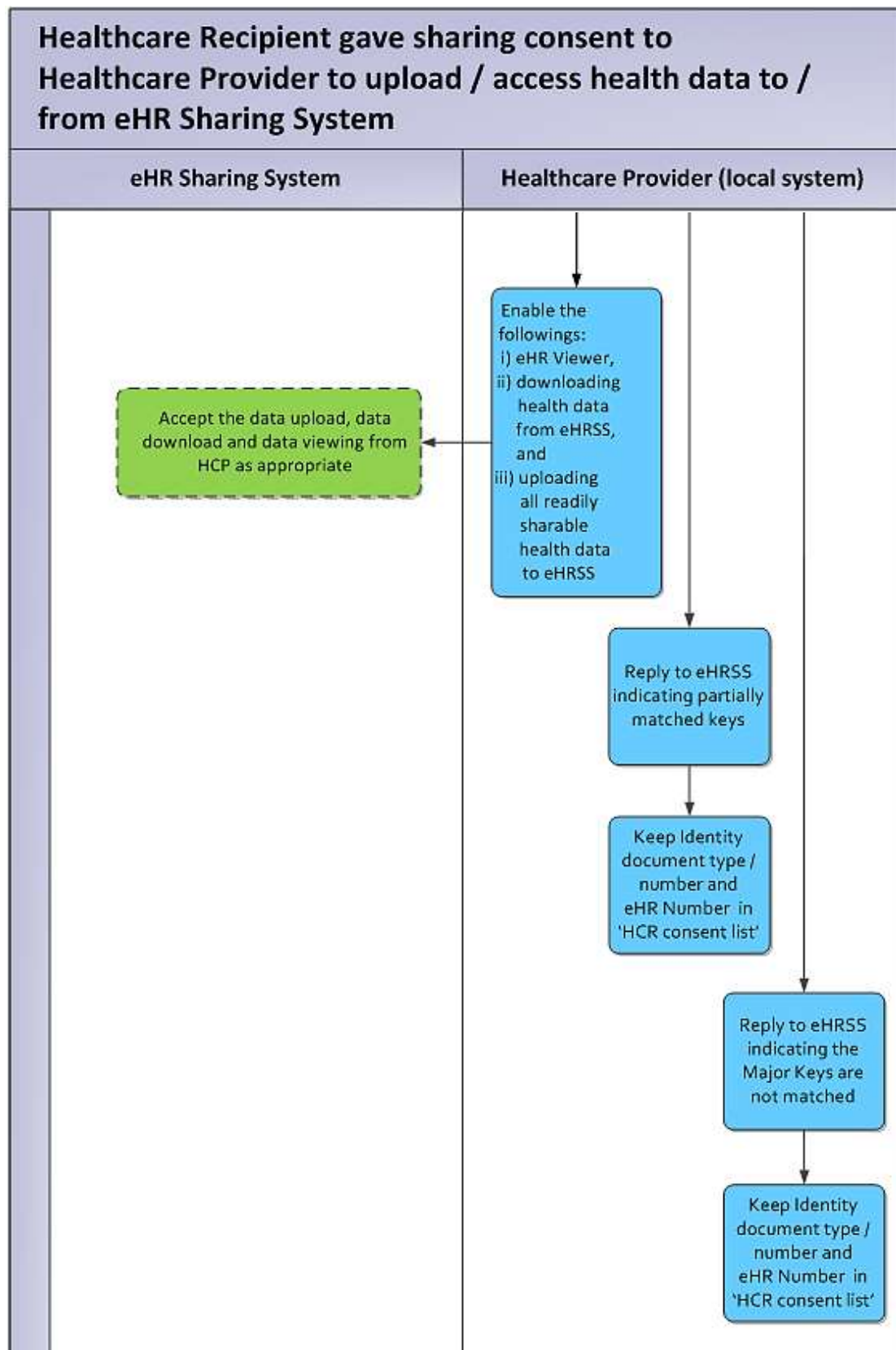
### **Handling in consented HCPs**

- a. Data viewing – 'eHR button' at eMR / ePR system
  - (i) Enable 'eHR button' at eMR / ePR system.
- b. Data upload
  - (i) Start uploading HCR's sharable health data to eHRSS.
- c. Data download
  - (i) Start downloading HCR's allergy / ADR data from eHRSS.
  - (ii) Display the already downloaded data at staging area (if any) and verify with the HCR before use.

For detailed workflow please refer to the flowchart.

## Illustration of workflow in scenario 2.3.1.1





### 2.3.1.2 HCR revoked sharing consent to the HCPs / expiry of the ‘One-Year Sharing Consent’

The scenario is applied when a HCR revokes the sharing consent to a particular HCPs or the ‘One-Year Sharing Consent’ is expired.

#### *Roles of eHRSS (towards HCPs with HCR’s sharing consent being revoked / expired)*

- a. Notify HCPs that HCR’s sharing consent has been revoked or expired.
- b. Reject any data uploading, data downloading and data viewing from HCPs, including those revoked sharing consent and expired sharing consent.

#### *Roles of HCPs (with HCR’s sharing consent being revoked / expired)*

- a. Keep the notification of revocation or expiry of sharing consent sent from eHRSS.
- b. Update the status of sharing consent in the ‘HCR consent list’ accordingly.
- c. Cease data uploading, data downloading and data viewing to HCR’s eHR data.
- d. Display the downloaded allergy / ADR data in staging area<sup>5</sup>, if any and verify with HCR before use. Also see [‘Section 2.4 Summary of eHR Data Access Scenarios’](#).

#### *Conclusion on eHR data access (Also see ‘Section 2.4 Summary of eHR Data Access Scenarios’)*

#### **Handling in eHRSS**

- a. Data viewing
  - (i) Viewing of HCR’s sharable data in eHRSS is not supported.
- b. Data upload
  - (i) HCR’s sharable health data uploaded from HCPs’ eMR / ePR system is rejected.

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<sup>5</sup> An intermediate storage area to keep the downloaded data from eHRSS before adapting the data to eMR / ePR system of HCPs.

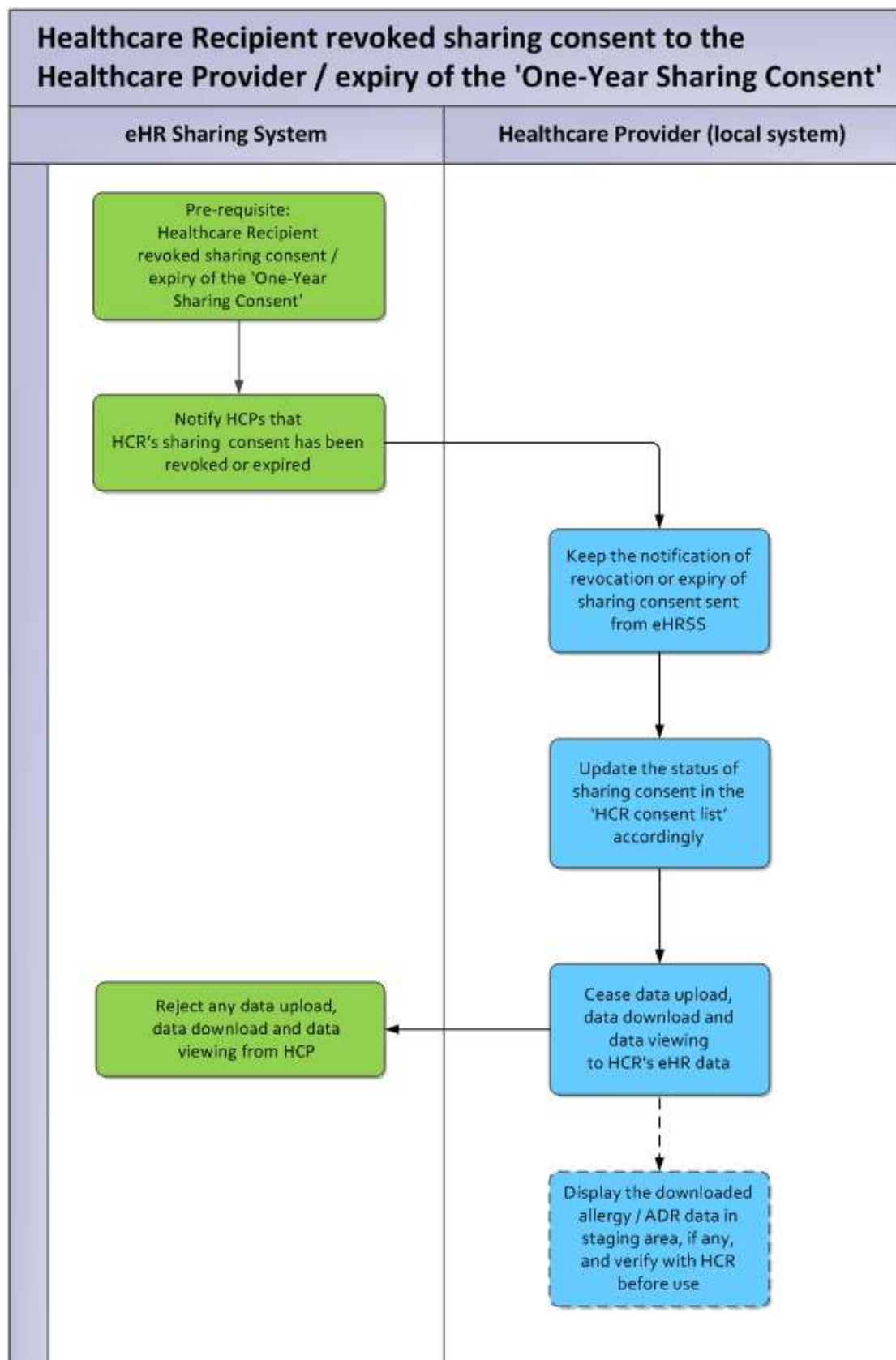


- c. Data download
  - (i) Downloading of HCR's allergy / ADR data from eHRSS to HCPs' eMR / ePR system is not provided.

**Handling in consented HCPs**

- a. Data viewing – 'eHR button' at eMR / ePR system
  - (i) Disable the 'eHR button' at eMR / ePR system.
- b. Data upload
  - (i) Cease uploading HCR's sharable health data to eHRSS.
- c. Data download
  - (i) Downloading of HCR's allergy / ADR data from eHRSS is not supported by eHRSS.
  - (ii) Display the already downloaded data at staging area (if any) and verify with HCR before use.

For detailed workflow please refer to the flowchart.

Illustration of workflow in scenario 2.3.1.2

### 2.3.1.3 HCR withdrew registration from eHRSS / eHRC cancelled HCR's registration

The scenario is applied when a HCR withdraws registration from eHRSS or eHRC cancels a HCR's registration. This would only involve the HCPs with sharing consent given by the HCR, so-called the 'consented HCP'.

#### Roles of eHRSS

- a. Notify all the consented HCPs that the registration of HCR has been withdrawn / cancelled and there is no access to HCR's eHR data when HCR withdraws / eHRC cancels the registration from eHRSS.
- b. Reject any data uploading, data downloading and data viewing from all HCPs.

#### Roles of consented HCPs

- a. Keep the notification of withdrawal / cancellation of registration sent from eHRSS.
- b. Update the 'HCR consent list' accordingly.
- c. Cease data uploading, data downloading and data viewing to HCR's eHR data.
- d. Display the downloaded allergy / ADR data in staging area<sup>6</sup>, if any and verify with HCR before use. Also see '[Section 2.4 Summary of eHR Data Access Scenarios](#)'.

Conclusion on eHR data access (Also see '[Section 2.4 Summary of eHR Data Access Scenarios](#)')

#### **Handling in eHRSS**

- a. Data viewing
  - (i) Viewing of HCR's sharable data in eHRSS is not supported.
- b. Data upload

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<sup>6</sup> An intermediate storage area to keep the downloaded data from eHRSS before adapting the data to eMR / ePR system of HCPs.

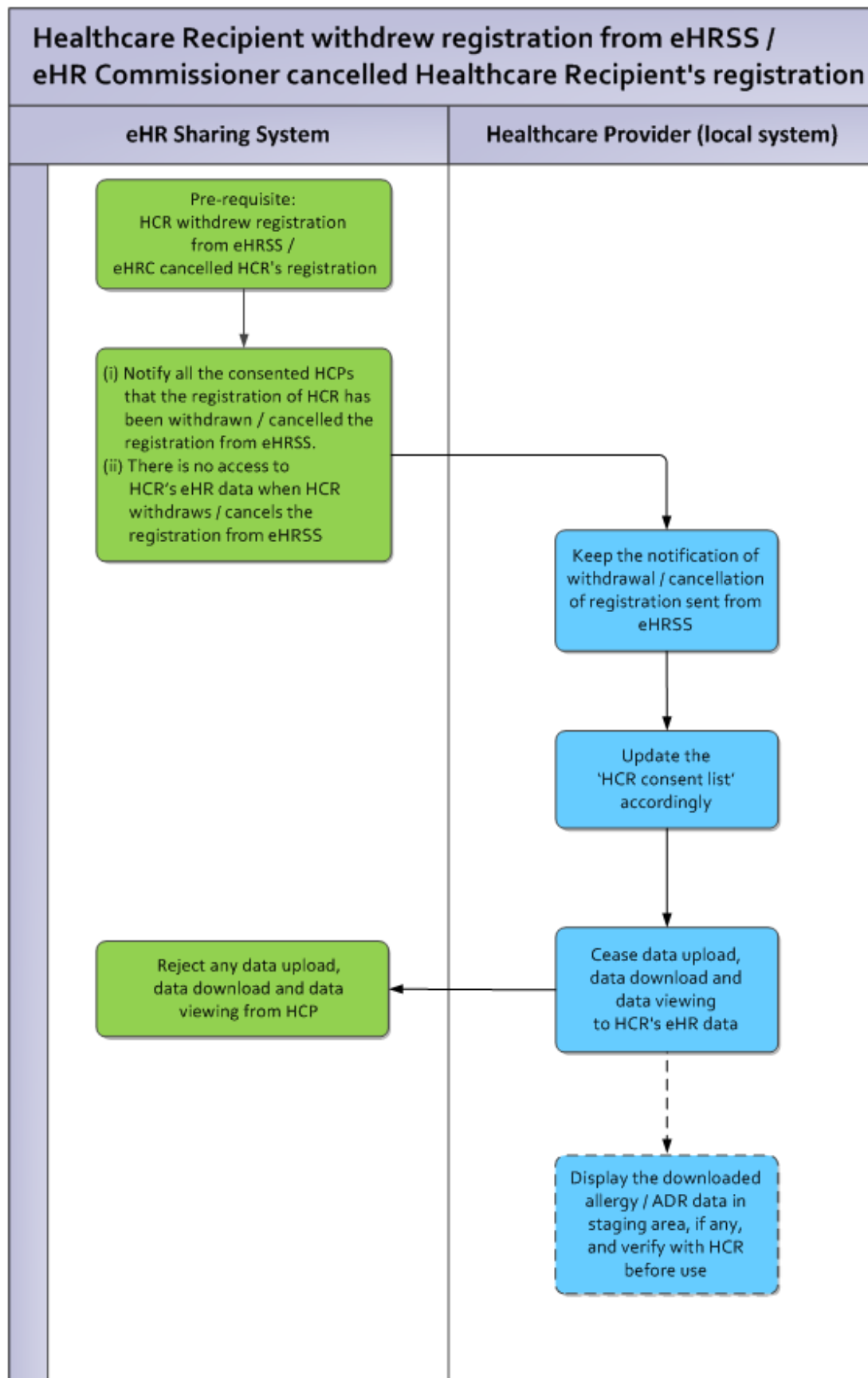
- (i) HCR's sharable health data uploaded from HCPs' eMR / ePR system is rejected.
- c. Data download
  - (i) Downloading of HCR's allergy / ADR data from eHRSS to HCPs' eMR / ePR system is not provided.

**Handling in consented HCPs**

- a. Data viewing – 'eHR button' at eMR / ePR system
  - (i) Disable the 'eHR button' at eMR / ePR system.
- b. Data upload
  - (i) Cease uploading HCR's sharable health data to eHRSS.
- c. Data download
  - (i) Downloading of HCR's allergy / ADR data from eHRSS is not supported by eHRSS.
  - (ii) Display the already downloaded data at staging area (if any) and verify with HCR before use.

For detailed workflow please refer to the flowchart.

## Illustration of workflow in scenario 2.3.1.3



#### 2.3.1.4 Death of HCR

This scenario is applied when eHRSS received the death records of HCR from Death Registry (DR). This would only involve the HCPs with sharing consent given by the HCR, so-called the ‘consented HCP’.

##### *Roles of eHRSS (towards HCP with HCR’s sharing consent)*

- a. Notify the consented HCPs that the HCR is dead according to the records from DR.
- b. Reject any data uploading, data downloading and data viewing from all HCPs.

##### *Roles of consented HCPs*

- a. Keep the notification of HCR’s death sent from eHRSS.
- b. Update the ‘HCR consent list’ accordingly.
- c. Cease data uploading, data downloading and data viewing to HCR’s eHR data.
- d. Retain the downloaded allergy / ADR data in staging area<sup>7</sup> according to HCP retention policy, if any. Also see [‘Section 2.4 Summary of eHR Data Access Scenarios’](#).

##### *Conclusion on eHR data access (Also see ‘Section 2.4 Summary of eHR Data Access Scenarios’)*

#### **Handling in eHRSS**

- a. Data viewing
  - (i) Viewing of HCR’s sharable data in eHRSS is not supported.
- b. Data upload
  - (i) HCR’s sharable health data uploaded from HCPs’ eMR / ePR system is rejected.
- c. Data download

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<sup>7</sup> An intermediate storage area to keep the downloaded data from eHRSS before adapting the data to eMR / ePR system of HCPs.

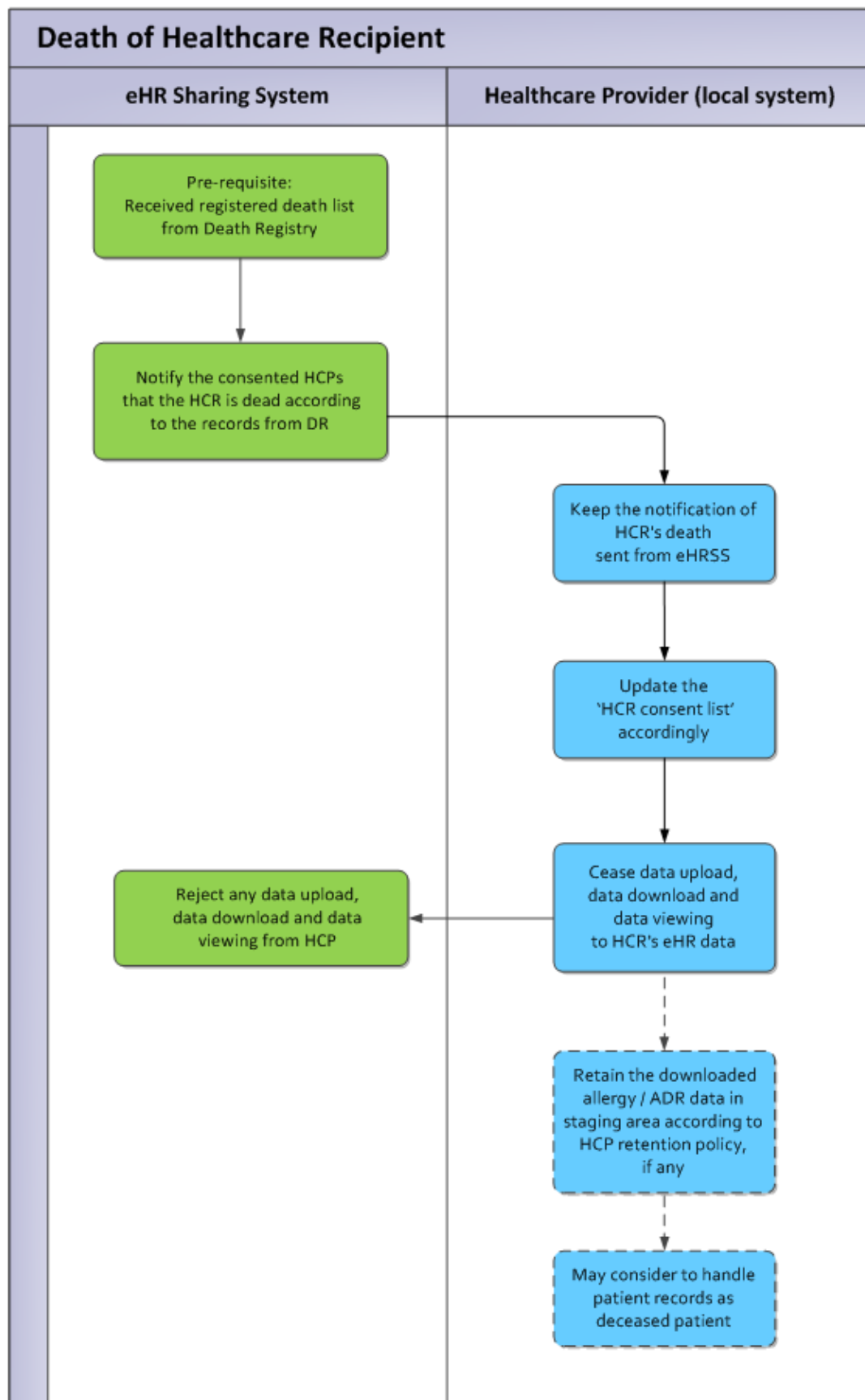
- (i) Downloading of HCR's allergy / ADR data from eHRSS to HCPs' eMR / ePR system is not provided.

**Handling in consented HCPs**

- a. Data viewing – 'eHR button' at eMR / ePR system
  - (i) Disable the 'eHR button' at eMR / ePR system.
- b. Data upload
  - (i) Cease uploading HCR's sharable health data to eHRSS.
- c. Data download
  - (i) Downloading of HCR's allergy / ADR data from eHRSS is not supported by eHRSS.
  - (ii) Retain the already downloaded data at staging area (if any) according to HCP retention policy.

For detailed workflow please refer to the flowchart.

## Illustration of workflow in scenario 2.3.1.4





### 2.3.1.5 eHRC suspended HCR's registration

The scenario is applied when eHRC suspends a HCR's registration. This would only involve the HCPs with sharing consent given by the HCR, so-called the 'consented HCP'.

After that, eHRC will either cease the suspension of or cancel HCR's registration. See ['Section 2.3.1.6 eHRC ceased the suspension of HCR's registration'](#) and ['Section 2.3.1.3 HCR withdrew registration from eHRSS / eHRC cancelled HCR's registration'](#) for details.

#### Roles of eHRSS

- a. Notify all the consented HCPs that the registration of HCR has been suspended and there is no access to HCR's eHR data when eHRC suspends the registration from eHRSS.
- b. Accept data uploading from consented HCPs as appropriate.
- c. Reject any data downloading and data viewing from all HCPs.

#### Roles of consented HCPs (HCPs with sharing consent given by the HCR)

- a. Keep the notification of suspension of registration sent from eHRSS.
- b. Update the 'HCR consent list' accordingly.
- c. Continue data uploading of HCR's eHR data.
- d. Cease data downloading and data viewing to HCR's eHR data.
- e. Display the already downloaded allergy / ADR data in staging area<sup>8</sup>, if any and verify with HCR before use. Also see ['Section 2.4 Summary of eHR Data Access Scenarios'](#).

#### Conclusion on eHR data access (Also see ['Section 2.4 Summary of eHR Data Access Scenarios'](#))

#### **Handling in eHRSS**

- a. Data viewing

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<sup>8</sup> An intermediate storage area to keep the downloaded data from eHRSS before adapting the data to eMR / ePR system of HCPs.

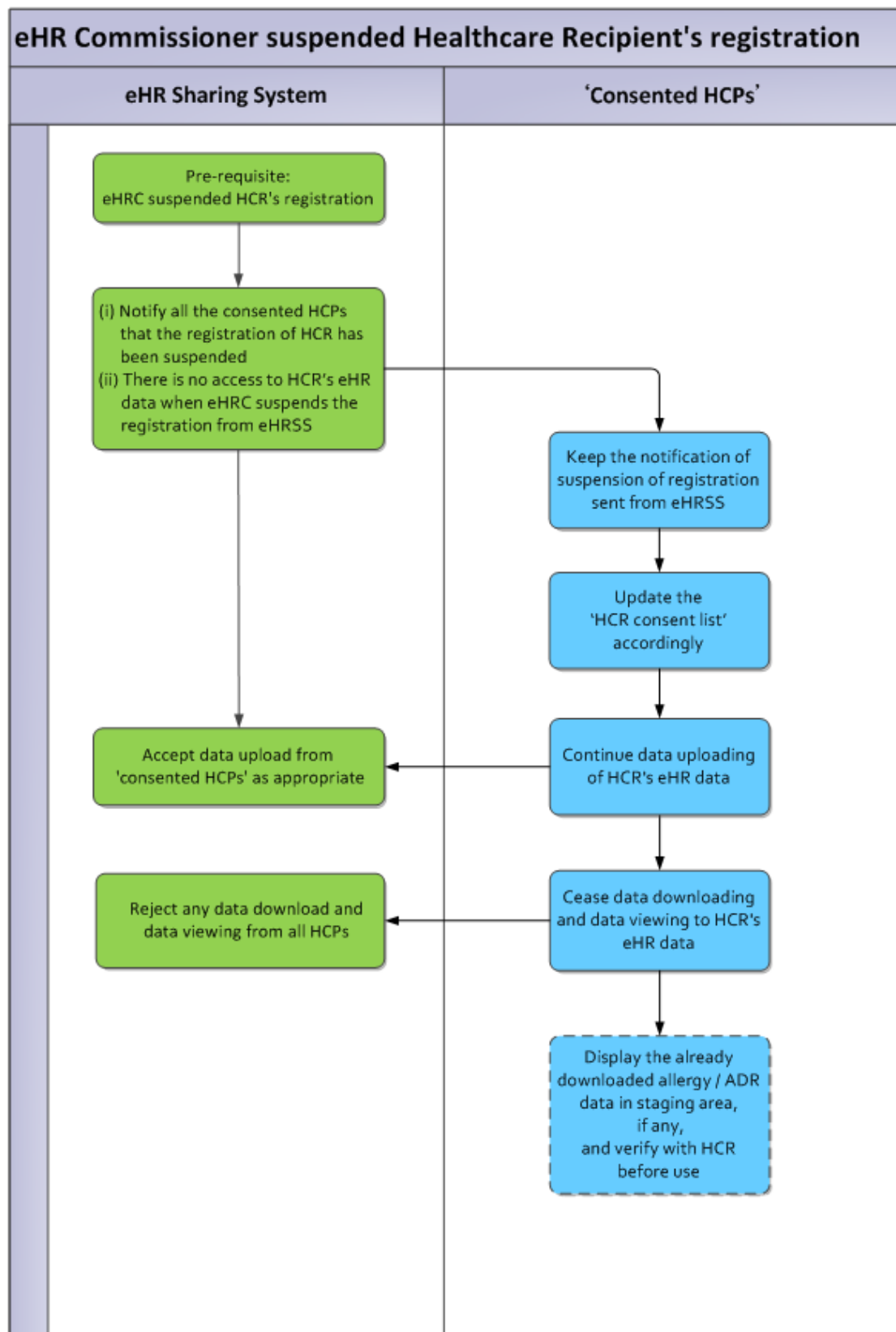
- (i) Viewing of HCR's sharable data in eHRSS is not supported.
- b. Data upload
  - (i) HCR's sharable health data uploaded from HCPs' eMR / ePR system is accepted.
- c. Data download
  - (i) Downloading of HCR's allergy / ADR data from eHRSS to HCPs' eMR / ePR system is not provided.

**Handling in consented HCPs**

- a. Data viewing – 'eHR button' at eMR / ePR system
  - (i) Disable the 'eHR button' at eMR / ePR system.
- b. Data upload
  - (i) Continue uploading HCR's sharable health data to eHRSS.
- c. Data download
  - (i) Downloading of HCR's allergy / ADR data from eHRSS is not supported by eHRSS.
  - (ii) Display the already downloaded data at staging area (if any) and verify with HCR before use.

For detailed workflow please refer to the flowchart.

## Illustration of workflow in scenario 2.3.1.5



### 2.3.1.6 eHRC ceased the suspension of HCR's registration

The scenario is applied when eHRC ceased the suspension of a HCR's registration. This would only involve the HCPs with sharing consent given by the HCR, so-called the 'consented HCP'.

#### Roles of eHRSS

- a. Notify all the consented HCPs that the suspension of HCR's registration has been ceased.
- b. Accept the data uploading, data downloading and data viewing from consented HCPs as appropriate.

#### Roles of consented HCPs (HCPs with sharing consent given by the HCR)

- a. Keep the notification of ceased of suspension sent from eHRSS.
- b. Update the 'HCR consent list' accordingly.
- c. Resume data uploading, data downloading and data viewing of HCR's eHR data.
- d. Display of already downloaded allergy / ADR data in staging area<sup>9</sup>, if any and verify with HCR before use. Also see '[Section 2.4 Summary of eHR Data Access Scenarios](#)'.

#### Conclusion on eHR data access (Also see '[Section 2.4 Summary of eHR Data Access Scenarios](#)')

#### **Handling in eHRSS**

- a. Data viewing
  - (i) Viewing of HCR's sharable data in eHRSS is supported.
- b. Data upload
  - (i) HCR's sharable health data uploaded from HCPs' eMR / ePR system is accepted.

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<sup>9</sup> An intermediate storage area to keep the downloaded data from eHRSS before adapting the data to eMR / ePR system of HCPs.

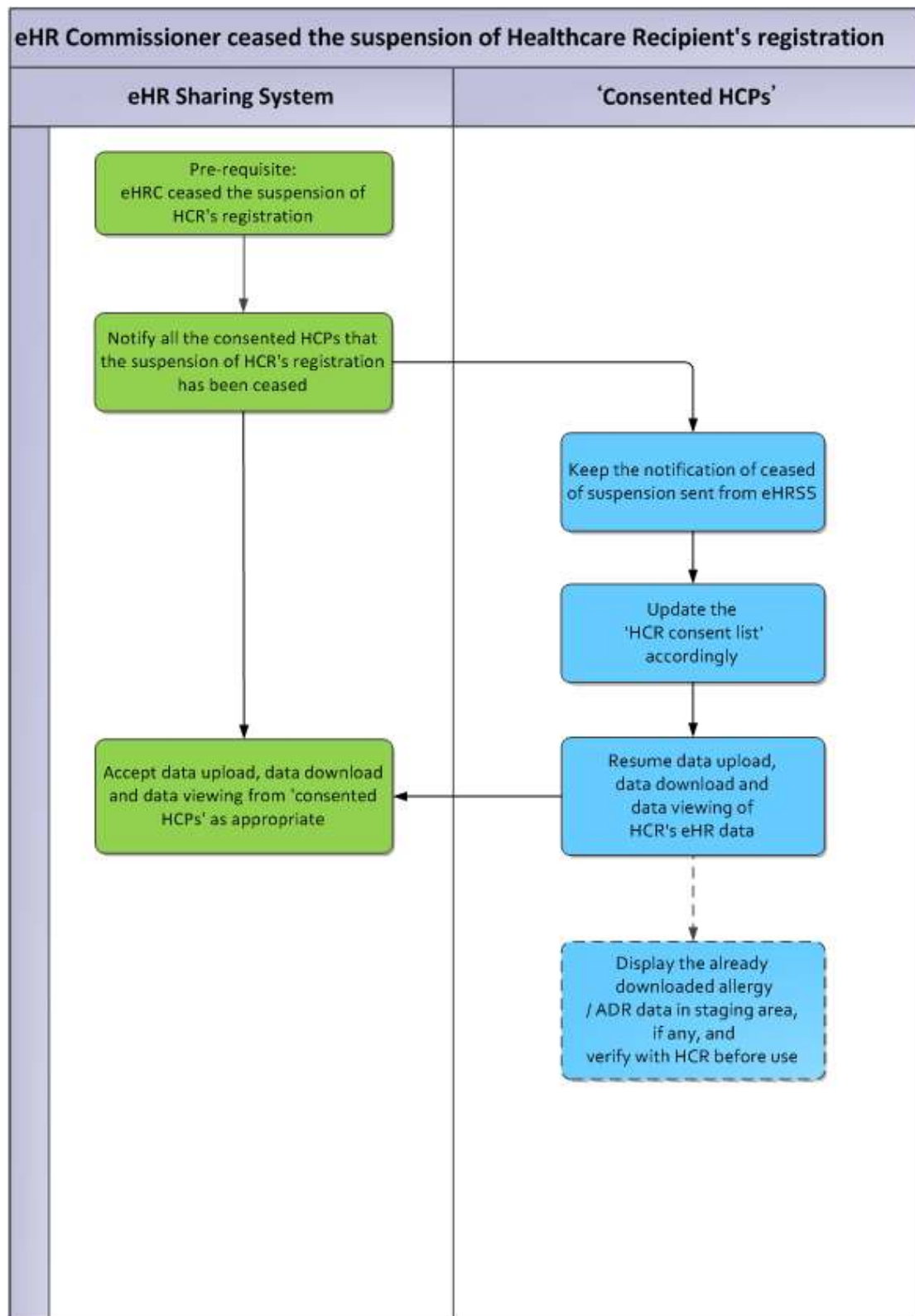
- c. Data download
  - (i) Downloading of HCR's allergy / ADR data from eHRSS to HCPs' eMR / ePR system is provided.

**Handling in consented HCPs**

- a. Data viewing – 'eHR button' at eMR / ePR system
  - (i) Enable the 'eHR button' at eMR / ePR system.
- b. Data upload
  - (i) Resume uploading HCR's sharable health data to eHRSS.
- c. Data download
  - (i) Resume downloading of HCR's allergy / ADR data from eHRSS.
  - (ii) Display the already downloaded data at staging area (if any) and verify with HCR before use.

For detailed workflow please refer to the flowchart.

## Illustration of workflow in scenario 2.3.1.6



## 2.3.2 Change of HCR's identity

### 2.3.2.1 HCR changed major keys in eHRSS

This scenario is applied when a HCR requests for changing his / her Major Keys (i.e. HKIC number or identity / travel document number, Name, Sex and DOB) in eHR HRI in person to eHR Registration Office or eHRC. This scenario only involves the HCPs with sharing consent given by the HCR, so-called the 'consented HCP'.

#### *Roles of eHRSS (towards HCPs with HCR's giving of sharing consent)*

- a. Notify the HCPs that HCR's major keys in eHRSS had been changed.

#### *Roles of consented HCPs*

- a. Keep the notification of major keys change<sup>10</sup> sent from eHRSS.
- b. Update the HCR details in the 'HCR consent list' accordingly.
- c. Set remark in the HCPs eMR / ePR system for verifying the identity with the HCR and updating the HCPs Patient Master Index (PMI) upon HCR re-attends as appropriate.
- d. Continue data uploading, data downloading and data viewing to HCR's eHR data. Also see '[Section 2.4 Summary of eHR Data Access Scenarios](#)'.

#### *Conclusion on eHR data access (Also see '[Section 2.4 Summary of eHR Data Access Scenarios](#)')*

#### **Handling in eHRSS**

- a. Data viewing
  - (i) Viewing of HCR's sharable data in eHRSS is supported with pop-up message alerting the healthcare professionals that Major Keys of the HCR are changed in eHRSS. Healthcare professionals can choose whether to proceed viewing. Pop-up message also serves to (i) enable

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<sup>10</sup> This notification includes, at least, eHR number and new major keys of HCR.

the healthcare professionals to re-check the HCR demographics (HKIC no., name, sex, DOB) if the HCR / relative is on the spot; and (ii) encourage the healthcare professionals to remind the HCR to update major keys at all consented HCPs, if possible.

b. Data upload

- (i) HCR's sharable health data uploaded from HCPs' eMR / ePR system is accepted if HCR's major keys are matched with those in eHR HRI or eHR HRI change history.

c. Data download

- (i) Downloading of HCR's allergy / ADR data from eHRSS to HCP's eMR / ePR system is provided if major keys are matched with those in eHR HRI or eHR HRI change history.

**Handling in consented HCPs**

a. Data viewing – 'eHR button' at eMR / ePR system

- (i) Enable the 'eHR button' at eMR / ePR system.

b. Data upload

- (i) Continue uploading HCR's sharable health data to eHRSS.

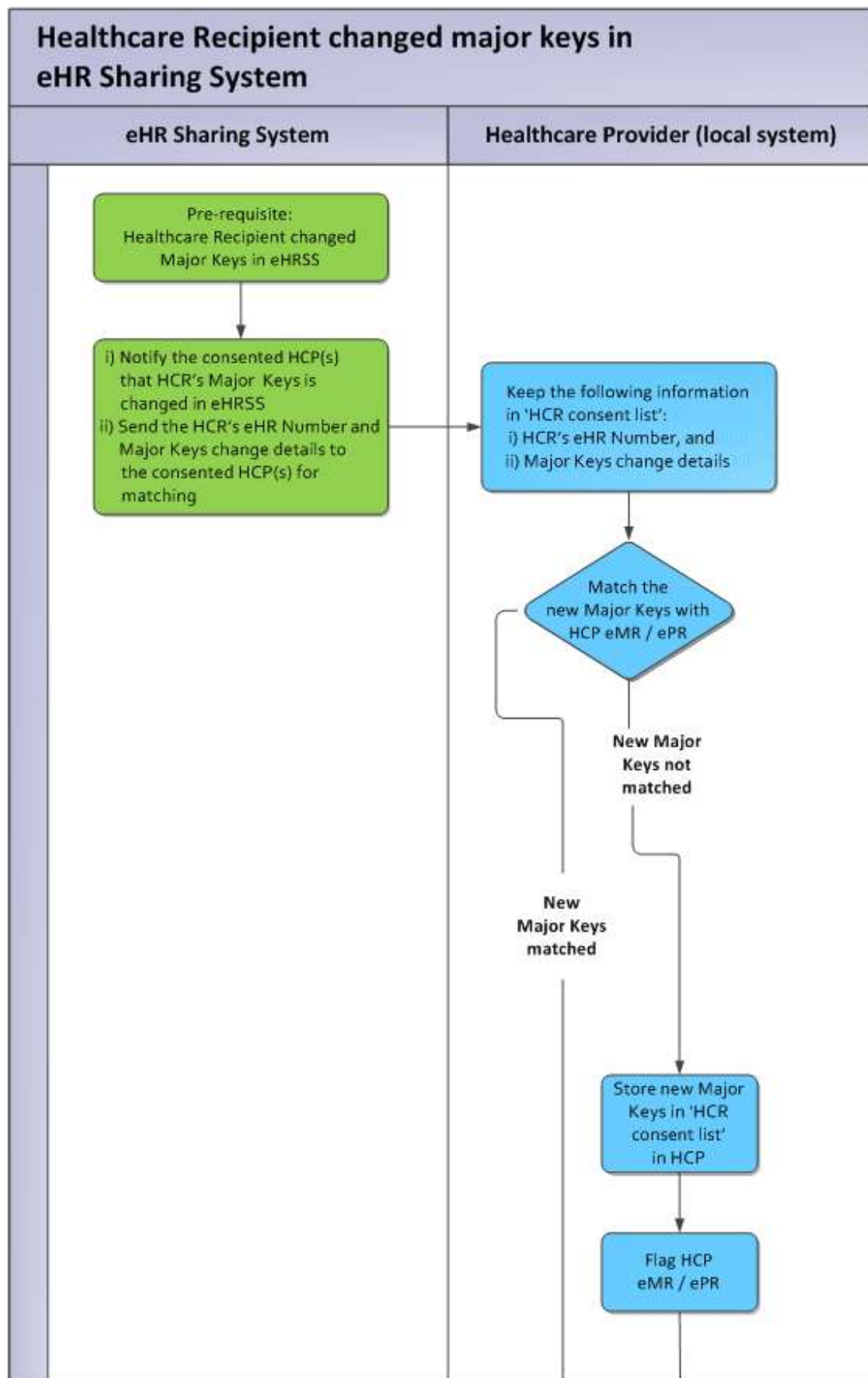
c. Data download

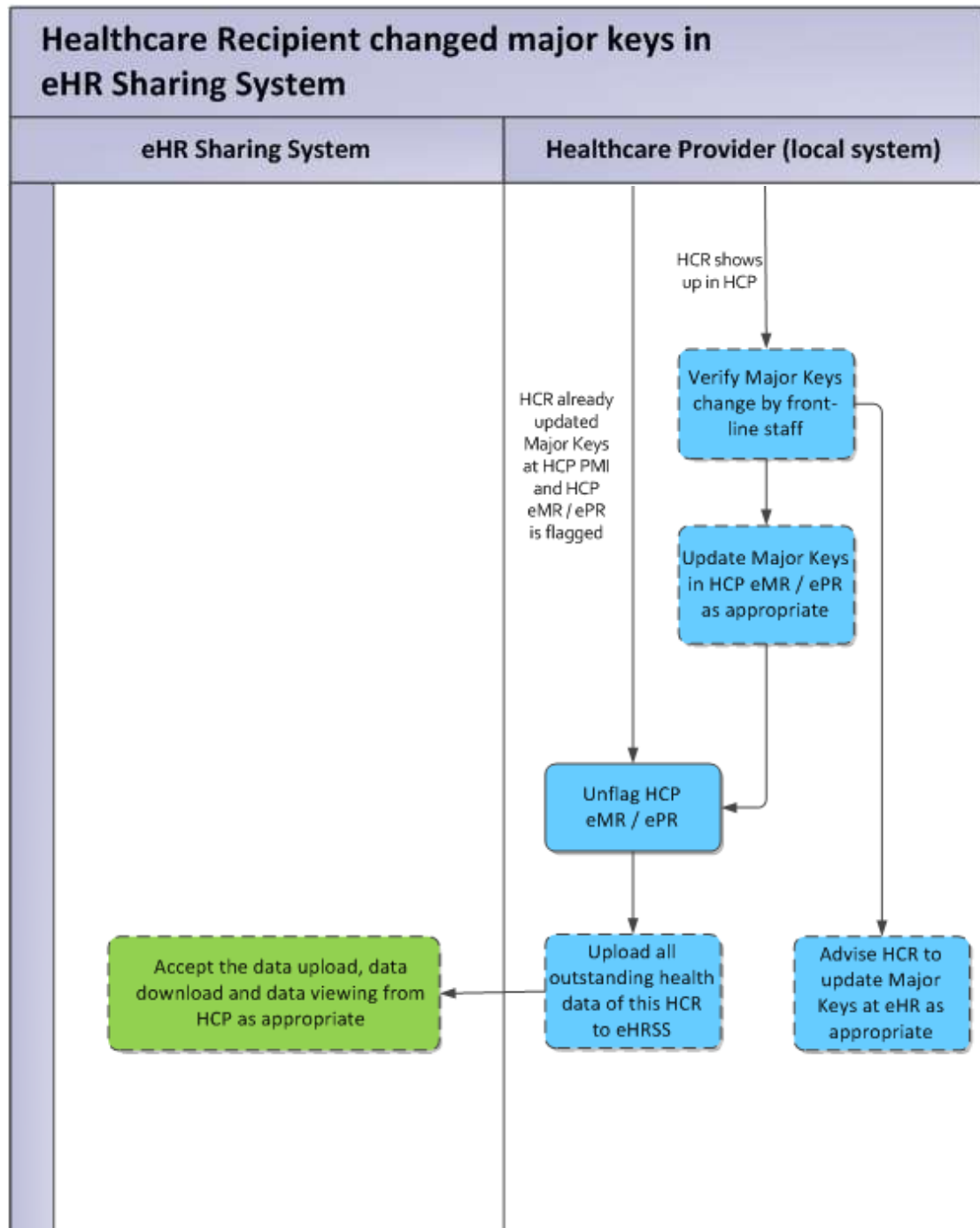
- (i) Continue downloading HCR's allergy / ADR data from eHRSS.
- (ii) Display the already downloaded data at staging area (if any) and verify with HCR before use.

For detailed workflow please refer to the flowchart.



## Illustration of workflow in scenario 2.3.2.1





### 2.3.2.2 HCR changed major keys in HCPs

This scenario is applied when a HCR changed his / her Major Keys (i.e. HKIC number or identity / travel document number, Name, Sex and DOB) in HCPs which is found to be unmatched with Major Keys in eHRSS. This scenario only involves the HCPs with HCR's major keys changed. It is a good practice for HCPs to notify eHRSS on the change of HCR's major keys.

#### Roles of the HCPs with HCR's major keys changed

- a. Notify eHRSS that HCR's major keys in HCPs Patient Master Index (PMI) had been changed.
- b. Continue data viewing to HCR's eHR data.
- c. Continue data downloading of HCR's eHR data. See [Section 2.2.6](#) for details of data downloading using (i) Push mode or (ii) Pull mode.
  - (i) HCPs adapt with push mode – eHRSS will send allergy / ADR data to HCP's eMR / ePR system once the HCP replied eHRSS the major keys are matched upon / after sharing consent. Any subsequent major keys change in HCP will not affect the data download. Nevertheless, the HCP should verify the downloaded data before use.
  - (ii) HCPs adapt with pull mode – HCPs' eMR / ePR system to request eHRSS for allergy / ADR data download by providing HCR's major keys:
    - if the major keys sent to eHRSS are matched with those in eHRSS (e.g. sending eHR major keys to eHRSS), downloading allergy / ADR data will be continued;
    - if the major keys sent to eHRSS are not matched with those in eHRSS (e.g. sending HCP major keys to eHRSS, which subsequently changed and not matched with those eHR HRI or eHR HRI change history), downloading allergy / ADR data will not be provided. HCP is suggested to check the allergy / ADR history with the HCR as usual practice.
- d. Cease uploading data to HCR's eHR. *[Remarks: HCPs are required to notify eHRSS that HCR's major keys in HCP PMI had been changed, i.e. adhere to*

*step (a) so that eHRSS is aware that the cease of data upload is due to the unmatched major keys.]*

- e. If continue uploading data to HCR's eHR, eHRSS will reject the data due to unmatched of HCR's major keys in eHRSS.
- f. Once HCPs observe that the major keys in HCPs and eHRSS are matched (by cross-checking the list of consented HCR in HCP eMR / ePR system, see '[Section 2.2.1 – Principles](#)' for details), upload HCR's health data which have not yet been uploaded in step (c) or re-upload HCR's health data in step (d).

*Conclusion on eHR data access (Also see '[Section 2.4 Summary of eHR Data Access Scenarios](#)')*

### **Handling in eHRSS**

- a. Data viewing
  - (i) Viewing of HCR's sharable data in eHRSS is supported with pop-up message to alert healthcare professionals that Major Keys of the HCR are unmatched between HCPs and eHRSS. Healthcare professionals can choose whether to proceed viewing. Pop-up message also serves to (i) enable the healthcare professionals to re-check the patient demographics (HKIC no., name, sex, DOB) if the HCR / relative is on the spot; and (ii) encourage the healthcare professionals to remind the HCR to update major keys at eHRSS and other consented HCPs, if possible.
- b. Data upload
  - (ii) HCR's sharable health data uploaded from HCPs' eMR / ePR system is rejected due to major keys unmatched with eHRSS.
- c. Data download
  - (i) Downloading of HCR's allergy / ADR data from eHRSS to HCP's eMR / ePR system is provided if major keys are matched with those in eHR HRI or eHR HRI change history.
    - HCPs adapt with push mode – eHRSS will start pushing the allergy / ADR data to HCP's eMR / ePR system once the HCP replied eHRSS the major keys are matched upon / after sharing consent.

Any subsequent major keys change in HCP will not affect the data download.

- HCPs adapt with pull mode – HCPs’ eMR / ePR system to request eHRSS for allergy / ADR data download by providing HCR’s major keys:
  - if the major keys provided by HCP are matched with those in eHRSS (e.g. the HCP requests for data download by eHR major keys), eHRSS will provide the allergy / ADR data;
  - if the major keys provided by HCP are not matched with those in eHRSS (e.g. the HCP requests for data download by HCP major keys, which subsequently changed and not matched with those eHR HRI or eHR HRI change history), eHRSS will not provide the allergy / ADR data and reply HCP with the reason of unmatched major keys.

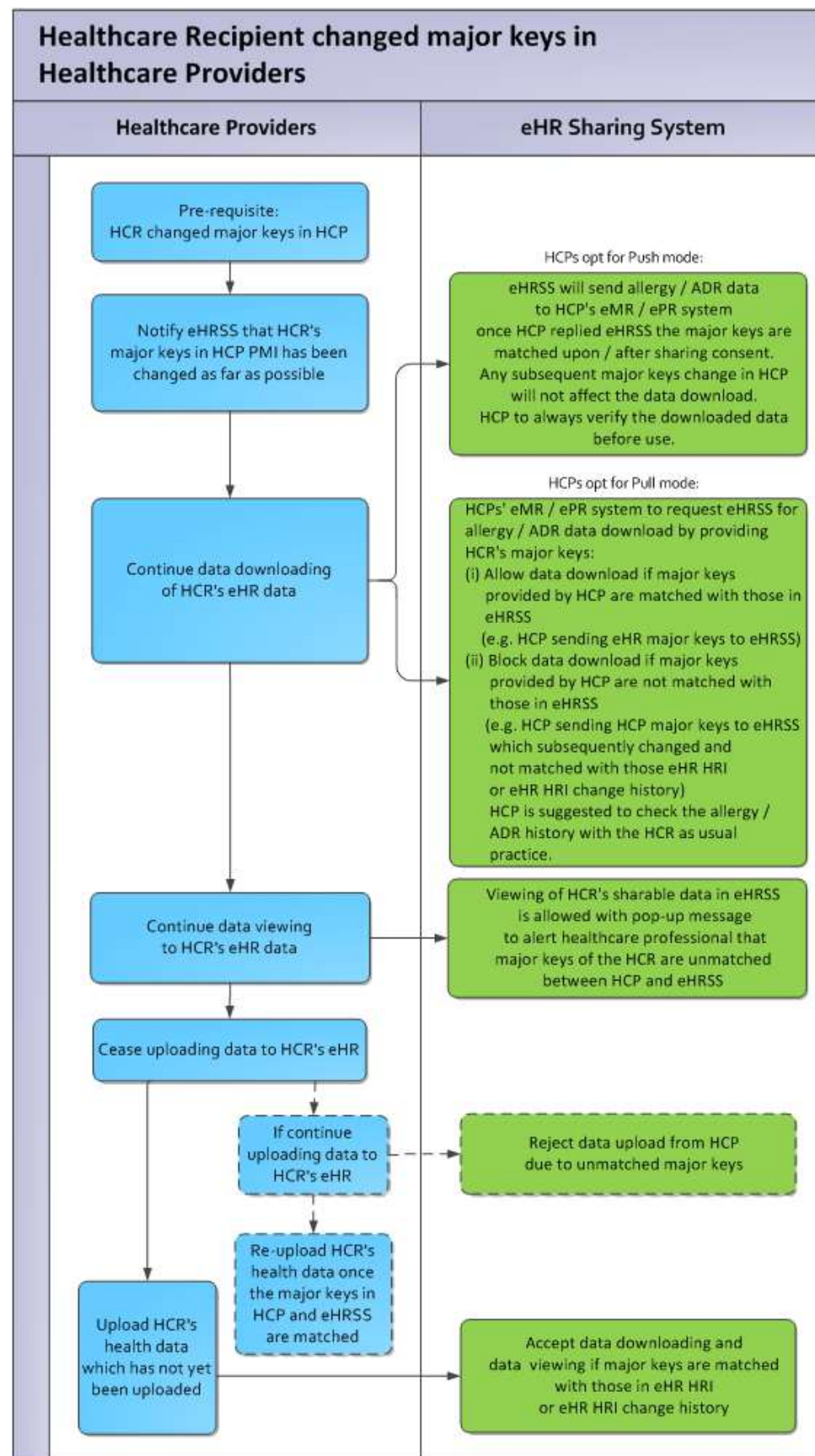
#### **Handling in consented HCPs**

- b. Data viewing – ‘eHR button’ at eMR / ePR system
  - (i) Enable the ‘eHR button’ at eMR / ePR system.
- c. Data upload
  - (i) Cease uploading HCR’s sharable health data to eHRSS.
- d. Data download
  - (i) Continue downloading HCR’s allergy / ADR data from eHRSS.
    - HCPs adapt with push mode – eHRSS will send allergy / ADR data to HCP’s eMR / ePR system once the HCP replied eHRSS the major keys are matched upon / after sharing consent. Any subsequent major keys change in HCP will not affect the data download. Nevertheless, the HCP should verify the downloaded data before use.
    - HCPs adapt with pull mode – HCPs’ eMR / ePR system to request eHRSS for allergy / ADR data download by providing HCR’s major keys:
      - if the major keys sent to eHRSS are matched with those in eHRSS (e.g. sending eHR major keys to eHRSS), downloading allergy / ADR data will be continued;

- if the major keys sent to eHRSS are not matched with those in eHRSS (e.g. sending HCP major keys to eHRSS, which subsequently changed and not matched with those eHR HRI or eHR HRI change history), downloading allergy / ADR data will not be provided. HCP is suggested to check the allergy / ADR history with the HCR as usual practice.
- (ii) Display the already downloaded data at staging area (if any) and verify with HCR before use.

For detailed workflow please refer to the flowchart.

## Illustration of workflow in scenario 2.3.2.2



### 2.3.3 Problem record scenario

#### 2.3.3.1 Problem identity in HCR's record

There are occasions that PMI records of two, or more, different patients (which are also HCRs) under a HCP (so-called, the 'concerned HCP') have been mixed up, that is, episodes of different patients are mixed and registered under a single patient identifier.

To ensure the health data is correctly tagged to the right patient, when error in patient identity is found, the 'concerned HCP' should notify the eHRSS of such problem and contact the HCR as soon as possible for verifying his / her identity. After the patient identity is ascertained and the health data is verified and rectified in HCP eMR / ePR system, the 'concerned HCP' should re-upload the sharable health data of the HCR involved to eHRSS. See '[Appendix I. Considerations for Healthcare Provider – Rectifying errors in patient identity – PMI and health data](#)' for details.

To protect the integrity and ensure the correctness of HCR's health data in eHRSS, eHRSS will delete<sup>11</sup>, as soon as possible, the problematic health record of the HCR which was previously uploaded to eHRSS by the 'concerned HCP'. eHRSS will continue the deletion until all problematic health record of the HCR (previously uploaded to eHRSS by the 'concerned HCP') in eHRSS is deleted even when (i) the 'concerned HCP' notified eHRSS that the health data in HCP eMR / ePR system is rectified or (ii) the HCR revoked sharing consent to the 'concerned HCP'.

#### Roles of eHRSS

- a. Upon receiving notification from the 'concerned HCP' on the problem record, handle the problematic eHR records in eHRSS with the following steps:

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<sup>11</sup> Data deletion in eHRSS will be effective in Jun 2016.



- (ii) identify the concerned HCR and turn on a ‘problem record indicator’<sup>12</sup>, in the HCR’s eHR account,
- (iii) delete the problematic health records from the HCR’s eHR contributed by the ‘concerned HCP’, and
- (iv) notify the consented HCPs that there is problem record of a HCR.
- (v) manage eHRSS access as follows:
  - do not support data downloading and data viewing of that HCR’s sharable data of all consented HCPs temporarily until the problematic eHR records are deleted in eHRSS,
  - send the deletion of ‘concerned HCP’ data to consented HCPs opt for push mode, and
  - accept data uploaded by other consented HCPs and reject data uploaded by the ‘concerned HCP’.

*[Remarks: For data management in eHRSS mentioned in (a)(iv), please see ‘Conclusion of eHR data access’ in this section.]*

- b. Upon receiving notification from the ‘concerned HCP’ that the HCR’s record has been rectified, handle the eHR records in eHRSS with the following steps:
  - (i) turn off the ‘problem record indicator’ of the ‘concerned HCP’ from the HCR’s eHR account,
  - (ii) notify the consented HCPs that the problem record is rectified,
  - (iii) manage eHRSS access as follows:
    - resume access to HCR’s eHR record,
    - send the insertion of ‘concerned HCP’ data to consented HCPs opt for push mode if the ‘concerned HCP’ has uploaded allergy / ADR data to eHRSS

*[Remarks: For data management in eHRSS mentioned in (b)(iii), please see ‘Conclusion of eHR data access’ in this section.]*

*Roles of ‘concerned HCP’ (with error in patient identity is found)*

- a. When error in patient identity is found,

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<sup>12</sup> The ‘problem record indicator’ is per HCP.

- (i) notify eHRSS that error in patient identity on a particular HCR is found, and
  - (ii) rectify HCR's eHR data in HCP's eMR / ePR system as appropriate, e.g. verify with the HCR upon his / her next visit, cross-check the HCR's data with attendance history and / or medical history...etc. See [\*'Appendix I. Considerations for Healthcare Provider – Rectifying errors in patient identity – PMI and health data'\*](#) for details.
- b. When correction of error in patient identity is completed,
  - (i) notify<sup>13</sup> eHRSS that the rectification is completed, and
  - (ii) re-upload the rectified HCR's sharable health data which is readily available to eHRSS. It is always a good practice to re-upload the data to eHRSS within 7 days.

*Roles of consented HCPs (HCPs with sharing consent given by the HCR)*

- a. Keep the notification of problem record sent from eHRSS.
- b. Always keep the health data downloaded from eHRSS at staging area<sup>14</sup> until verified with the HCR upon HCR re-attends, and adopt at HCPs' eMR / ePR system after verification.
- c. Handle the health data already downloaded to staging area as follows:
  - (i) For HCPs opt for push mode<sup>15</sup>:
    - Upon received the deletion of 'concerned HCP' data from eHRSS, follow the data deletion at staging area accordingly. Resume the display of downloaded data in staging area after data deletion is completed in staging area.
    - When the 'problem record indicator' is turned off in eHRSS, follow the insertion of 'concerned HCP' data from eHRSS as appropriate.

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<sup>13</sup> There are circumstances that 'concerned HCP' is unable to notify or re-upload health data to eHRSS (i.e. when the HCR revoked the sharing consent, the sharing consent is expired, the HCR is withdrew from eHRSS, or eHRC cancelled the HCR's registration), eHRSS will automatically turn off the corresponding 'problem record indicator'.

<sup>14</sup> An intermediate storage area to keep the downloaded data from eHRSS before adapting the data to eMR / ePR system of HCPs.

<sup>15</sup> Refer to [Section 2.2.6](#) for (i) Push mode and (ii) Pull mode.

- (ii) For HCPs opt for pull mode<sup>16</sup>:
- Always apply the updated data downloaded from eHRSS.

*Conclusion on eHR data access (Also see '[Section 2.4 Summary of eHR Data Access Scenarios](#)')*

### **Handling in eHRSS**

- a. When 'problem record indicator' of the 'concerned HCP' is turned on in the HCR's eHR account
- (i) Data viewing
- Viewing of HCR's sharable data in eHRSS is not supported with pop-up message to alert healthcare professionals on the existence of problem record.
- (ii) Data upload
- HCR's sharable health data uploaded from the concerned HCP's eMR / ePR system is rejected while data upload from other consented HCPs is allowed.
- (iii) Data download
- Downloading of HCR's allergy / ADR from eHRSS to all consented HCPs' eMR / ePR system is not provided.
- b. When 'problem record indicator' of the 'concerned HCP' is turned on while data deletion in eHRSS is completed
- (i) Data viewing
- Viewing of HCR's sharable data in eHRSS is supported with pop-up message to remind healthcare professionals that some health data in eHRSS is deleted.
- (ii) Data upload
- HCR's sharable health data uploaded from the concerned HCP's eMR / ePR system is rejected while data upload from other consented HCPs is allowed (i.e. same as that of a (ii) above).
- (iii) Data download

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<sup>16</sup> Refer to [Section 2.2.6](#) for (i) Push mode and (ii) Pull mode.

- Downloading of HCR's allergy / ADR from eHRSS to HCPs' eMR / ePR system is provided.
- c. When 'problem record indicator' is turned off from the HCR's eHR account,
  - (i) access to HCR's eHR record is resumed.

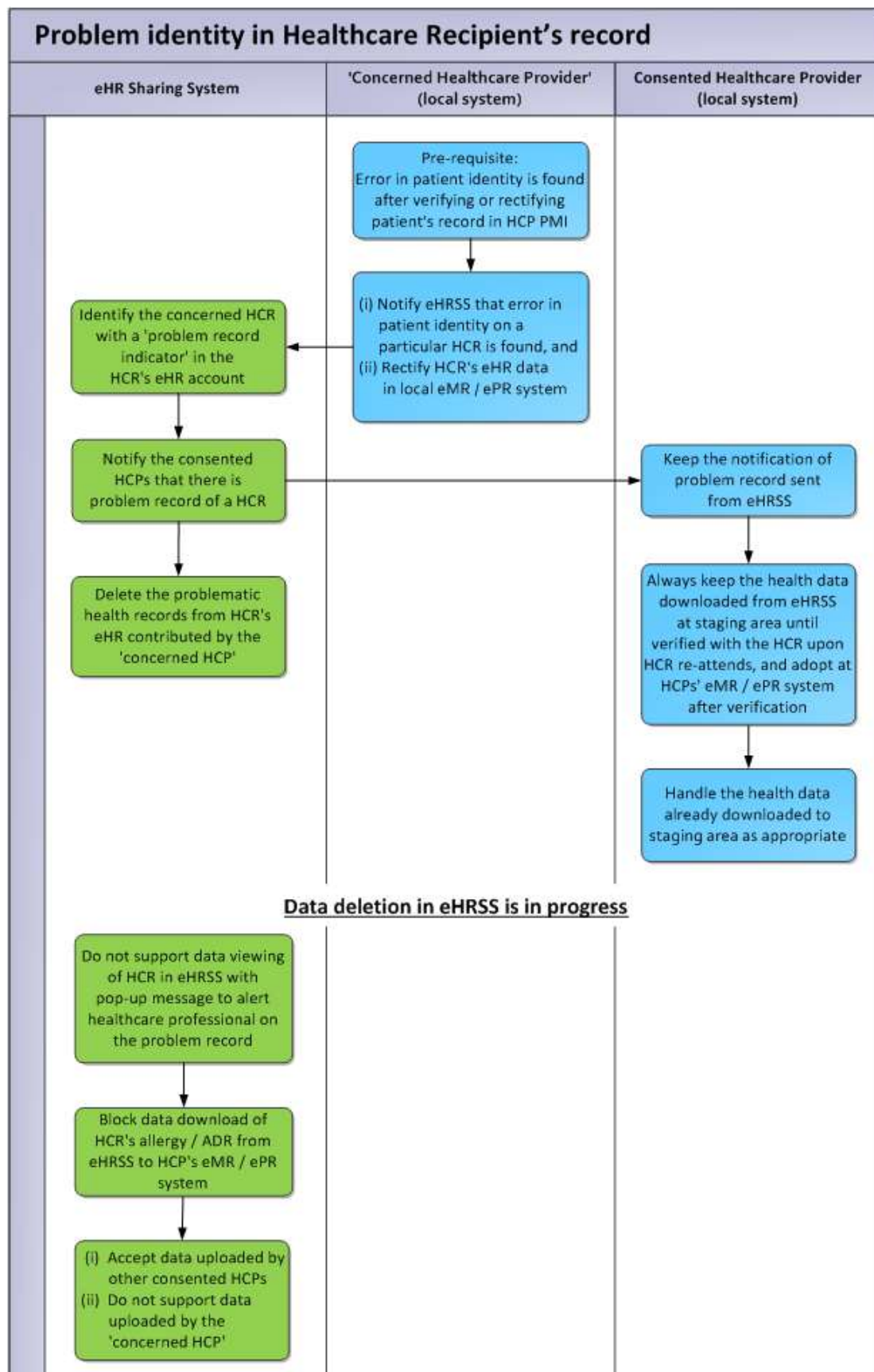
**Handling in 'concerned HCP' and other consented HCPs**

- a. Upon received from eHRSS the 'problem record indicator' is turned on in eHRSS
  - (i) Data viewing – 'eHR button' at eMR / ePR system
    - Disable the 'eHR button' at eMR / ePR system as appropriate.
  - (ii) Data upload
    - 'Concerned HCP' – Cease uploading HCR's sharable health data to eHRSS.
    - Other consented HCPs – Continue uploading HCR's sharable health data to eHRSS.
  - (iii) Data download
    - Downloading HCR's allergy / ADR data is not supported by eHRSS.
- b. Upon received the deletion of 'concerned HCP' data from eHRSS and data deletion in staging area in eMR / ePR system is completed
  - (i) Data viewing – 'eHR button' at eMR / ePR system
    - Enable the 'eHR button' at eMR / ePR system.
  - (ii) Data upload
    - 'Concerned HCP' – Cease uploading HCR's sharable health data to eHRSS.
    - Other consented HCPs – Continue uploading HCR's sharable health data to eHRSS.
  - (iii) Data download
    - Resume downloading HCR's allergy / ADR data from eHRSS.
    - Resume the display of already downloaded data at staging area (if any) and verify with HCR before use.
- c. Upon received from eHRSS the 'problem record indicator' is turned off in eHRSS
  - (i) Data viewing – 'eHR button' at eMR / ePR system

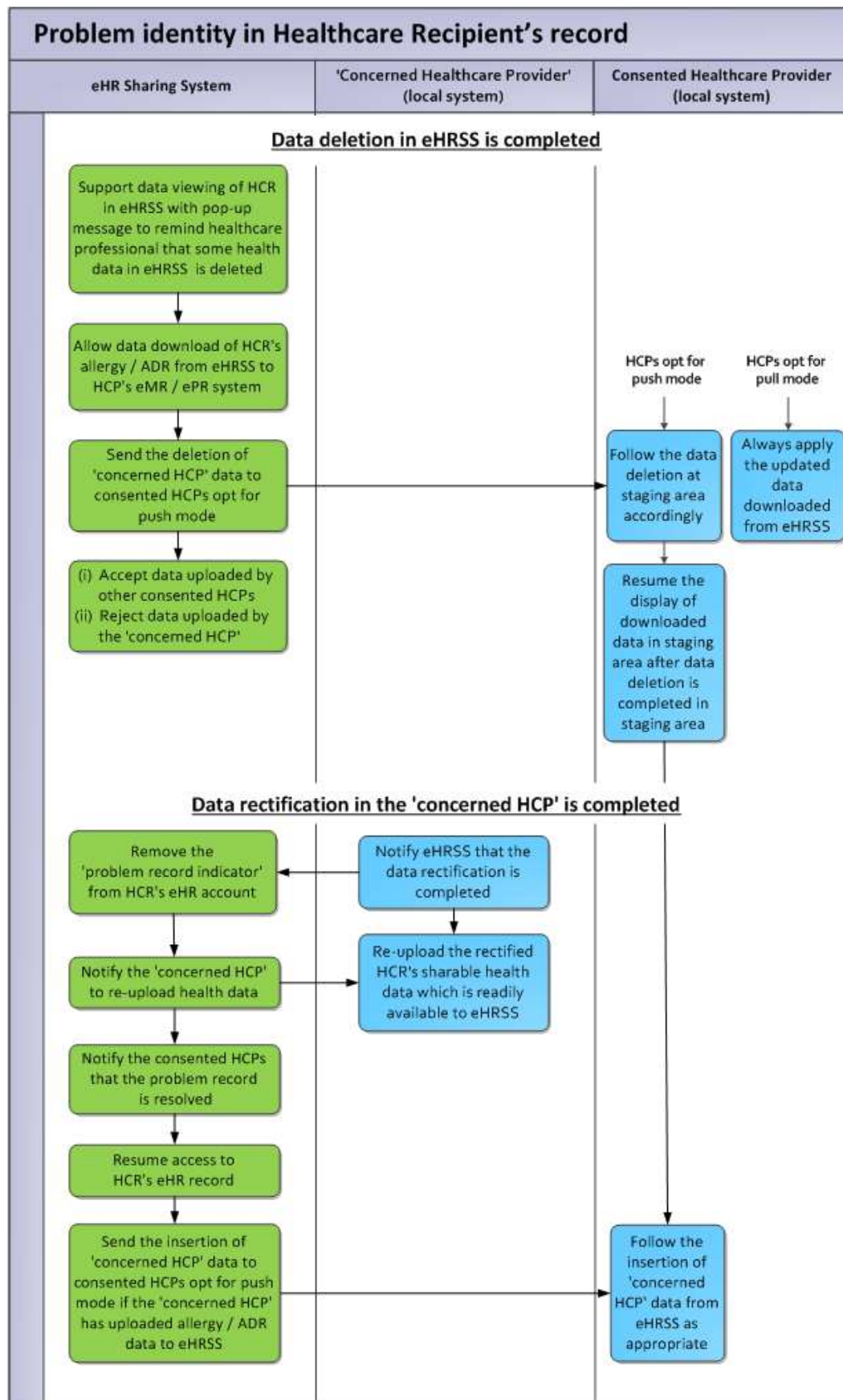
- Enable the 'eHR button' at eMR / ePR system.
- (ii) Data upload
  - Continue uploading HCR's sharable health data to eHRSS.
- (iii) Data download
  - Continue downloading HCR's allergy / ADR data from eHRSS.
  - Display the already downloaded data at staging area (if any) and verify with HCR before use.

For detailed workflow please refer to the flowchart.

## Illustration of workflow in scenario 2.3.3.1



## Illustration of workflow in scenario 2.3.3.1 (continue)



### 2.3.4 Handling record rejection from eHRSS

This scenario is applied when eHRSS rejects the data upload from HCPs' eMR / ePR system, for example due to (i) unmatched major keys and (ii) not comply with data compliance level.

#### *Roles of eHRSS (towards HCPs with HCR's sharing consent)*

- a. Reject the data uploading after checking of major keys and data compliance.

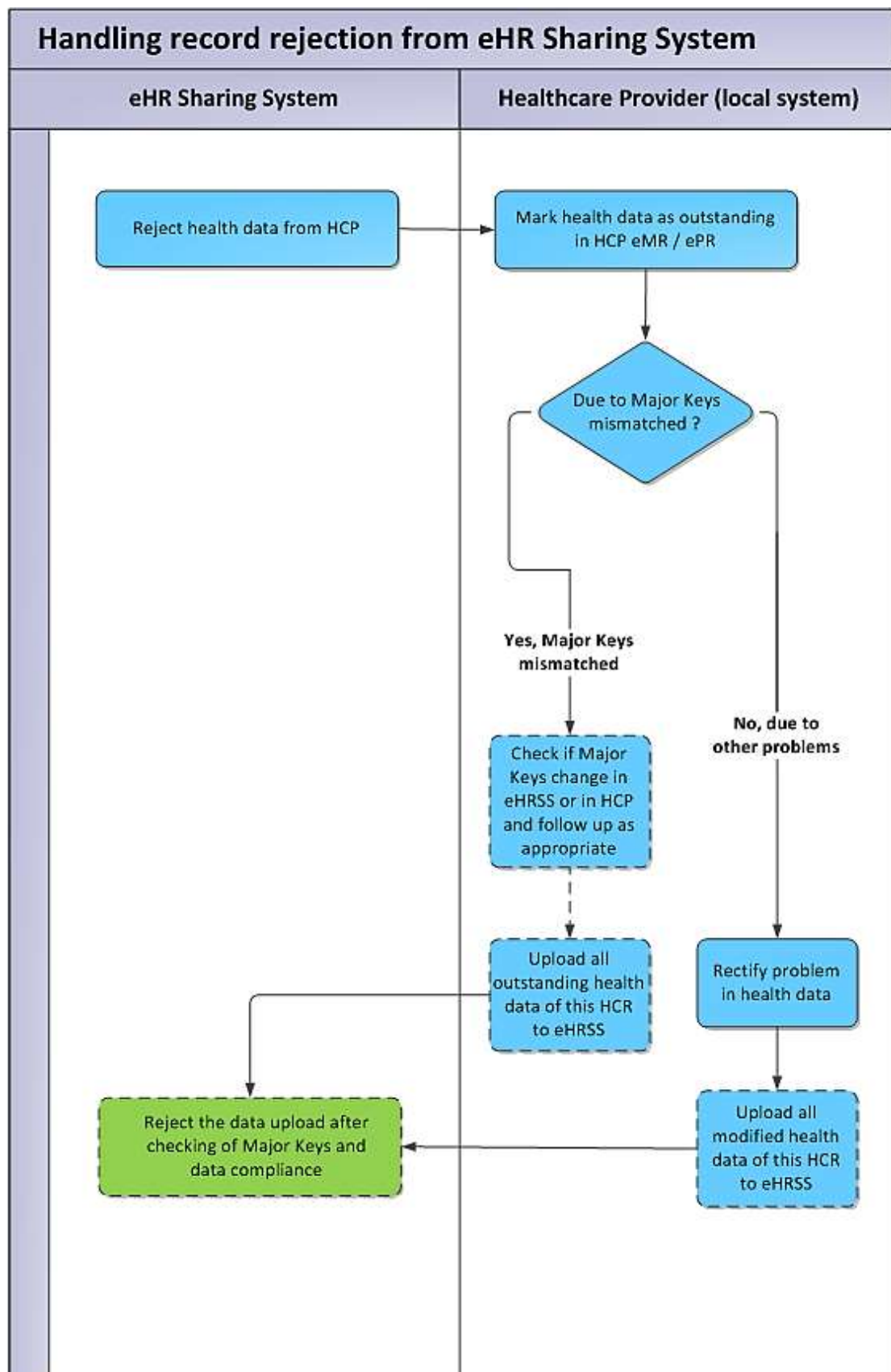
#### *Roles of HCPs (with uploaded record being rejected by eHRSS)*

- a. Mark the record being rejected by eHRSS.
- b. Rectify the problem in clinical data as appropriate.
- c. Re-upload the rectified data to eHRSS.

For detailed workflow please refer to the flowchart.



## Illustration of workflow in scenario 2.3.4



## 2.4 SUMMARY ON EHR DATA ACCESS SCENARIOS

- 2.4.1 In some occasions, there are different controls in eHRSS to enable or disable the (i) viewing the HCR's sharable data in eHRSS, (ii) contributing the HCR's eHR through uploading the readily sharable health data in HCPs' eMR / ePR system to eHRSS, (iii) and / or downloading HCR's allergy / ADR from eHRSS to HCPs' eMR / ePR system in different eHR workflow scenarios. Such design is under the consideration that health data of HCR in eHRSS may not be ready to share in some scenarios, e.g. identification of HCR is not verified, the sharing consent to HCPs is no longer valid, etc. The summary of the eHRSS controls is listed in table 1 below.
- 2.4.2 It is highly recommended that a 'eHR button' is made available in HCPs PMI and eMR / ePR system to indicate the patient has consented the HCP for data sharing to eHRSS. For HCPs who are connecting the eHRSS using mode A / B, the HCPs can also consider using the button at the eMR / ePR system to call up the eHR Viewer to facilitate the healthcare professionals to view the patient's eHR data.
- 2.4.3 Table 1 summarise the controls on data access to eHRSS and suggested handlings at the HCPs. Details of the relevant workflows can be found in separate workflow sections in Section 2.3.1 to 2.3.3.

*Table 1: Data Access Summary*

eHR Scenario		eHRSS			Handling in consented HCPs			
		Data viewing	Data uploading	Data downloading <sup>1</sup>	Data viewing – ‘eHR button’ at eMR / ePR system	Data uploading	Data downloading (for pull mode <sup>1</sup> )	Data already downloaded to staging area <sup>2</sup> (if any)
<b>HCR registration / consent status</b>	Give sharing consent to HCPs	Support	Accept	Provide	Available	Start	Start	Display and verify before use
	Revoke sharing consent to HCP / expiry of ‘one-year’ sharing consent	Not support	Reject	Not provide	Not available	Cease	Not supported by eHRSS	Display and verify before use
	Withdraw registration from eHRSS / Registration of HCR is cancelled by eHRC	Not support	Reject	Not provide	Not available	Cease	Not supported by eHRSS	Display and verify before use
	Death of HCR	Not support	Reject	Not provide	Not available	Cease	Not supported by eHRSS	Retain according to HCP retention policy
	Registration of HCR is suspended by eHRC	Not support	Accept	Not provide	Not available	Continue	Not supported by eHRSS	Display and verify before use
	Suspension of HCR’s registration is ceased by eHRC	Support	Accept	Provide	Available	Continue	Resume	Resume display

		eHRSS			Handling in consented HCP			
eHR Scenario		Data viewing	Data uploading	Data downloading <sup>1</sup>	Data viewing – ‘eHR button’ at eMR / ePR system	Data uploading	Data downloading (for pull mode <sup>1</sup> )	Data downloaded at staging area <sup>2</sup> (if any)
Change of HCR’s identity	eHRSS major key change and unmatched with HCP’s eMR / ePR system	Support <sup>4</sup>	Accept	Provide <sup>6</sup>	Available	Continue	Continue	Display and verify before use
	HCP’s major key change and unmatched with eHRSS	Support <sup>5</sup>	Reject	Provide <sup>6</sup>	Available	Cease	Push mode – Continue <sup>9</sup> Pull mode – Depend <sup>10</sup>	Display and verify before use
Problem record scenario – Problem identity in HCR’s record	Problem record in eHRSS - Before or during data cleansing	Not support <sup>7</sup>	Concerned HCP – Reject Other HCPs – Accept	Not provide	Not available	Concerned HCP – Cease Other HCPs – Continue	Not supported by eHRSS	Handle according to eHR deletion <sup>3</sup>
	Problem record in eHRSS - After data deletion	Support <sup>8</sup>	Concerned HCP – Reject Other HCPs – Accept	Provide	Available	Concerned HCP – Cease Other HCPs – Continue	Resume	Display (after completed data deletion in staging area)
	Problem record in eHRSS - Rectified	Support	Accept	Provide	Available	Concerned HCP – Resume Other HCPs – Continue	Continue	Display and verify before use

*Explanatory notes for Table 1*

- <sup>1</sup> Refer to [Section 2.2.6](#) for (i) Push mode and (ii) Pull mode.
- <sup>2</sup> An intermediate storage area to keep the downloaded data from eHRSS before adapting the data to eMR / ePR system of HCPs. Refer to [Section 2.2.7 – 2.2.8](#) for details.
- <sup>3</sup> eHRSS will send a system message to the consented HCPs (adapt with push mode) to delete the downloaded data for problem record cases. It is recommended that the HCPs to delete these records accordingly.
- <sup>4</sup> Pop-up message in eHR Viewer to remind user that Major Keys are changed in eHRSS and user to choose whether to proceed viewing or not.
- <sup>5</sup> Pop-up message in eHR Viewer to remind user that Major Keys are unmatched with that in eHRSS and user to choose whether to proceed viewing or not.
- <sup>6</sup> Data download is provided if major keys matched with eHRSS or major keys change history of eHRSS.
- <sup>7</sup> Pop-up message in eHR Viewer to alert user the existence of problem record.
- <sup>8</sup> Pop-up message in eHR Viewer to remind user that some health data in eHRSS is deleted.
- <sup>9</sup> HCPs adapt with push mode – eHRSS will start pushing the allergy / ADR data to HCP's eMR / ePR system once the HCP replied eHRSS the major keys are matched upon / after sharing consent. Any subsequent major keys change in HCP will not affect the data download.
- <sup>10</sup> HCPs adapt with pull mode – if the major keys provided by HCP are matched with those in eHRSS (e.g. the HCP requests for data download by eHR major keys), eHRSS will provide the allergy / ADR data; if the major keys provided by HCP are not matched with those in eHRSS (e.g. the HCP requests for data download by HCP major keys, which subsequently changed and not matched with those eHR HRI or eHR HRI change history), eHRSS will not provide the allergy / ADR data and reply HCP with a reason.

## APPENDIX

### I. CONSIDERATIONS FOR HEALTHCARE PROVIDERS – RECTIFYING ERRORS IN PATIENT IDENTITY – PMI AND HEALTH DATA (IN HCP’S EMR/EPR SYSTEM)

#### Problem Record due to error in patient identity

There are a few occasions when two, or more patients are registered under a single Patient Master Index (PMI) record in Healthcare Providers (HCPs) due to error in patient identity. As such, the health data of the patient are mixed in the HCPs and might have been uploaded to the eHR Sharing System (eHRSS). To ensure patient’s data accuracy, it is necessary to manage any incorrect data in both HCPs and eHRSS.

#### Suggested actions for Healthcare Providers with problem record

When this happens, the HCPs have to verify the patient identity and rectify the patient’s health data in HCPs to ensure the health data in their eMR / ePR system are correctly linked to the correct patient(s).

If the verification needs to take a period of time (e.g. later than the next available data upload time) when the correctness of health data in eHRSS is in doubt, the HCP (named as ‘concerned HCP’) should notify the eHRSS either through system notification or in writing (see ‘[Appendix II. Written template – HCP notifies eHRSS on problem record](#)’). eHRSS will then ‘clear’ the incorrect data of the Healthcare Recipient (HCR) uploaded by the HCP to eHRSS and alert other HCPs with the HCR’s sharing consent (named as consented HCP) to take necessary actions as appropriate.

As a good practice, the HCPs are strongly advised to take the following actions:

#### **1. Verify the patient identity in HCP PMI**

- a. Flag the PMI of concerned patient in HCP PMI to alert staff upon patient’s next visit

- b. Verify the identity of the concerned patient(s) by checking his / her identity document upon next visit / the patient comes back in particular for verification of identity
- c. Update the HCP PMI as appropriate

**2. Rectify the health data in HCPs' eMR / ePR system**

- a. Flag the patient in HCPs' eMR / ePR system to alert clinicians on the uncertainty of patient's health data
- b. Verify with the patient if the corresponding health data is belonged to him / her upon his / her next visit
- c. Cross-check the patient's health data with reference to the following data in HCPs' eMR / ePR system:
  - i. attendance history
  - ii. date/time of the health data created in HCPs' eMR / ePR system, and
  - iii. medical history
- d. Rectify the health data (which may need the support from IT department of HCPs) so that it is linked to the correct patient

**3. Communication with eHRSS**

- a. When an error in patient identity is detected, notify eHRSS
- b. When the correction of the patient record in HCPs' ePR / eMR system is completed, notify eHRSS and re-upload the patient's rectified health data to eHRSS

To support the continuity of care of the HCR, namely the patient, the 'concerned HCP' have to re-upload all rectified health data of the HCR to eHRSS.

In case of any difficulties, you may contact eHR Registration Office at xxxx-xxxx or [ehr@ehealth.gov.hk](mailto:ehr@ehealth.gov.hk).

## II. WRITTEN TEMPLATE – HEALTHCARE PROVIDER NOTIFIES EHRSS ON PROBLEM RECORD

From: [Designated HCP email]

To: [ehr@ehealth.gov.hk](mailto:ehr@ehealth.gov.hk)

Email subject: Problem record in [HCP]

Dear eHR Registration Office,

We identified an error in patient identity on the following healthcare recipient (HCR), please refer to below details and mark the problem record in the HCR's eHR as soon as possible:

Details of requested Healthcare Provider (HCP)	
Name of HCP	
HCP identifier	
Details of problem record	
Date of problem record created at HCP (i.e. transaction datetime)	
Details of involved Healthcare Recipient (HCR)	
eHR number	
Details of identity document	
➤ HKID no.	
Or	
➤ Identity document no. (if HKIC no. is not available)	
➤ Type of identity document (if HKIC no. is not available)	
Name (Surname, given name)	
Sex	
Date of Birth	
Date of Birth indicator	
Problem record status (P = Set, C = clear)	

You may contact the following person for further details if needed:

Name:

Tel no:

Email:



### III. PREPARATION FOR JOINING EHRSS – PATIENT MASTER INDEX

To support data sharing between Healthcare Providers (HCPs) and eHRSS, it is recommended that HCPs to prepare the following items in HCP Patient Master Index (PMI) and / or HCP eMR / ePR system.

Category	Items	Workflow	System enhancement
<b>Fundamental</b>			
Standard	Adopt eHR standards relating to patient registration, including the codex tables and the registration guidelines (Management of Healthcare Recipient Index)	Y	Y
Standard / consent	Add the following data fields in HCP PMI, e.g. : i) eHR number ii) eHR sharing consent start date		Y
Data quality	To download the eHR PMI data upon providing major keys to eHRSS	Y	Y
Consent	Receive eHRSS message on healthcare recipients (HCR) who consented for data sharing and update the list		Y
Consent	Maintain a list of HCRs who have consented the HCP for eHRSS data sharing		Y
Consent	Add icon to HCP Patient Administration System and eMR / ePR system to indicate patient has consented for eHRSS data sharing		Y
Consent	Update the 'HCR consented list' (a list of consented HCR who gave sharing consent to HCPs) upon receiving eHRSS message on HCRs' registration suspension / consent revocation / consent expiry / withdrawal / death		Y
Consent	Send event message to eHRSS for update / cancel death records		Y
Data quality	Follow up on PMI data quality issues arising from eHRSS, e.g. notification of problem record cases	Y	Y
<b>Data Quality</b>			
eHRSS major key changes	Major keys have been updated at eHRSS: (i) Receive eHRSS message (ii) Flag the HCP PMI (iii) Alert the frontline staff on verify and update of HCP major keys (where applicable) upon HCR re-attends	Y	Y

Category	Items	Workflow	System enhancement
HCP major key changes	Change of major keys at HCP PMI: (i) Send event message to eHRSS (ii) Advise HCR to update one's major keys at eHRSS	Y	Y
HCP problem record	Notify / send event message to eHRSS for detected problem record cases <sup>17</sup> and resolved cases	Y	Y
eHRSS / HCP major key changes	Follow up on patient identity upon receiving eHRSS message on data rejection due to unmatched major keys	Y	Y
Merge record	Merge of HCP PMI record and update eHRSS on shared data	Y	Y

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<sup>17</sup> Refer to [Appendix I](#) for recommended handling on HCP problem record.