Guide on Implementation & Maintenance of the Hong Kong Clinical Terminology Table
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The Government of the Hong Kong Special Administrative Region
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## Amendment History

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1 INTRODUCTION

1.1 BACKGROUND

1.1.1 Over the past decades, the need for controlled vocabularies for electronic based medical record systems is widely recognised. While a number of international terminologies have been developed, some of these terminologies are designed for statistical purpose and not granular enough to support clinical documentation. Accurate data capturing based on these international terminologies would require look up of a manual which cannot be supported in the clinical environment. Furthermore, the update frequency of these international terminologies (i.e. could be on half-yearly, or yearly basis) is not able to meet the demand of the requirement of clinical documentation. In short, there is a need to develop a structured terminology to capture clinical data for on-going patient care at a local level and to support the development of an interoperable electronic health record (eHR).

1.1.2 Standard terminology ensures that shared health data can be accurately interpreted, and thus can be reused to improve care delivery and optimise workflow. Standard terminology also supports disease surveillance to improve population health and to generate medical knowledge for facilitation of decision support and health services planning. As standard terminology is the foundation for the development of an interoperable eHR, a set of reference terminologies have been identified and acknowledged to be used in HKSAR Electronic Health Record Sharing System (eHRSS) known as 'recognised terminology.’ For more details, please refer to Section 1.1 of ‘Editorial Guide on Hong Kong Clinical Terminology Table – Overview.’
1.2 PURPOSE

1.2.1 The guide on implementation and maintenance of the Hong Kong Clinical Terminology Table (HKCTT) provides a general overview on the aspects of:

- Licensing of HKCTT
- Adoption of HKCTT
- Release and update of HKCTT
- Transmission of patient data to eHR using HKCTT
- Maintenance of HKCTT
- Mapping

This guide is intended for people from various disciplines who may be involved in the initial terminology development and planning on use of HKCTT, technical implementation and adoption of HKCTT, and decision support and other aspects of health information management in their organisations.

1.2.2 It is recommended to read this document in conjunction to the ‘Editorial Guide on Hong Kong Clinical Terminology Table – Overview’, which provides an introductory overview of the structure and content of HKCTT. Additionally, for more details on the structure and content of individual knowledge domain natures, the following documents are available for reference:

- Editorial Guide on Hong Kong Clinical Terminology Table – Problem & Procedure
- Editorial Guide on Hong Kong Clinical Terminology Table – Laboratory
- Editorial Guide on Hong Kong Clinical Terminology Table – Drug (Medication Terminology Table)
1.3 ROLES OF ELECTRONIC HEALTH RECORD INFORMATION STANDARDS OFFICE

To support the development and operation of an interoperable eHR, the Electronic Health Record Information Standards Office (eHRISO):

- Is responsible for the development, promotion, implementation, licensing and maintenance of various health information standards;
- Monitors the use of the health information standards to ensure the compliance of these health information standards;
- Acts as a release centre to liaise with the international standards development organisations on using, sublicensing, distributing and maintaining various health information standards being used in HKSAR eHR;
- Extends the standards developed by various standards development organisations in accordance to the license agreement to meet the local requirement; and
- Develops relevant tools for managing various health information standards.
2 OVERVIEW OF HKCTT

The Hong Kong Clinical Terminology Table (HKCTT) is a standardised clinical terminology table, which is built to support the interoperable eHRSS in Hong Kong. The table facilitates clinicians to document and review patient’s condition. It also assists in the retrieval of data at the granular level as desired to support building of decision support system and other secondary purposes (such as conducting research or reporting data to various authorities). The HKCTT is developed and maintained by the eHRISO through the Information Architecture Management System (IAMS).

The building of the HKCTT is based on the composition of terms from different knowledge domains, including diagnosis, procedure, laboratory tests, specimen, organism and drug. Each HKCTT term represents a unique concept which is assigned with a unique term identifier (Term ID) and description(s). For details on the structure and content of HKCTT, please refer to Section 3 of ‘Editorial Guide on Hong Kong Clinical Terminology Table – Overview.’

As health information is dynamic and complex, no single set of terminology is able to represent all clinical concepts. In relation to this, the HKCTT is referenced to various international terminologies commonly used in Hong Kong, with an aim to befit the adoption by different domains. The international terminologies in which HKCTT terms can be mapped to are known as ‘Reference terminologies (RT).’ By linking the content of HKCTT to international terminologies or classification schemes via mapping, comparability of data records between multiple practitioners using different references across diverse platforms is ensured.
The reference terminologies (RT) in which HKCTT are referenced to are listed as below:

- Systematised Nomenclature of Medicine – Clinical Terms (SNOMED CT)
- International Classification of Diseases, 10th Revision (ICD 10), 2001 release
- International Classification of Diseases, 10th Revision (ICD 10), 2010 release
- International Classification of Diseases, 10th Revision (ICD 10), Mental Health & Behavioural Disorders (MBD)
- International Classification for Primary Care, Second edition (ICPC-2)
- Logical Observation Identifiers Names and Codes (LOINC)
- Registered Pharmaceutical Products (RPP)

While the healthcare sector in Hong Kong has already had her local experience in managing a terminology set, it is recommended to leverage on the local experience and also make reference to the overseas ones in the building of the Hong Kong Clinical Terminology Table to support the eHR development. In relation to this, a set of principles have been developed to ensure the quality of the table and to guide its development and future management (1).

i. Non-vagueness
   - Terms must correspond to at least one meaning.

ii. Non-ambiguity
    - Terms should not contain more than one meaning

iii. Non-redundancy
    - Meanings correspond to no more than one term.

iv. Permanence
    - Once created, the meaning of a HKCTT term becomes inviolate.

v. Expandable
   - A meaningless identifier is used to represent each HKCTT term. This allows the HKCTT to be expanded without any limitation due to the identifier structure or the hierarchical design of the identifier.

vi. Perpetual
    - Avoid changing patient data even the table is updated.

For details on terminology management of HKCTT, please refer to Section 4 of ‘Editorial Guide on Hong Kong Clinical Terminology Table – Overview.’
3 LICENSING OF HKCTT

3.1 ELIGIBILITY FOR USE OF HKCTT

Healthcare Providers (HCPs) in both public and private sectors who will involve in capturing, retrieving, storing and using of data provided by HKCTT should obtain license for use of HKCTT. All HCPs who join the eHRSS will be licensed to use the HKCTT within the HKSAR healthcare environment. Other HCPs who have not joined eHRSS is required to obtain stand-alone licensing for use of HKCTT. eHRISO reserves the right to revoke access to use of HKCTT upon violation of the stated terms and conditions.

3.2 CONDITIONS FOR USE OF HKCTT

3.2.1 HKCTT will only be distributed to authorised licensee residing, researching or carrying on business within the territory of HKSAR for not-for-profit purposes.

3.2.2 HKCTT can only be used by authorised licensee, for the collection, compilation, analysis, research, mapping and/or reporting of clinical terminology data within the Hong Kong SAR, in relation to healthcare services (e.g. supporting clinical documentation, preparation for data for sharing with eHRSS, supporting interoperability of eHRSS), healthcare administration (e.g. data reporting, healthcare planning and evaluation, reimbursement) or healthcare development (e.g. teaching and research).

3.2.3 For details on Terms of Use of the Hong Kong Clinical Terminology Table (“HKCTT”), please refer to Appendix A.
3.3 THE HKCTT LICENCING ARRANGEMENT

3.3.1 HCPs should base on the local situation to determine the most suitable adoption mode; and the type of licences they should acquire may vary according to the adoption mode they chose. (Please refer to chapter 5 “Adoption of HKCTT”, for more details of the HKCTT adoption modes.)

i. For CMS Extension users, license of the HKCTT has already been incorporated in the CMS Adaptation / CMS On-ramp license. Nevertheless, the HCP should read the Terms of Use for the Hong Kong Clinical Terminology Table.

ii. HCPs who wish to adopt the HKCTT (ELSA) or HKCTT (Core) mode should acquire the “Licence for Use of ELSA and HKCTT”.

iii. Vendors who wish to include the HKCTT in their clinical software or system should first sign “the Agreement with Information Technology (IT) Service Provider to Establish eHealth Record Sharing System (eHRSS) Connectivity and Incorporate the Hong Kong Clinical Terminology Table (HKCTT)” with the Government. After signing this agreement, vendors would be provided with the HKCTT Testing Version for developing their system.

3.3.2 Vendors or HCPs who are interested in using HKCTT may approach the eHRISO for more details. For more reference on the licensing arrangement of different mode of adoption of HKCTT, please refer to Appendix B.
4 ROLE OF HKCTT LICENSEE

4.1 INTRODUCTION

4.1.1 HKCTT licensee is any HCPs who have obtained licensing right for using HKCTT within the HKSAR healthcare environment.

4.1.2 All HKCTT licensees (HCPs) are responsible to designate a single point of contact to facilitate communication with the eHRISO in terminology matters related to HKCTT, known as ‘HCP Terminology Coordinator’. For eHR users, the contact person for each enrolled HCP would be appointed as ‘HCP Terminology Coordinator. For non-eHR users, registration can be made by submitting a form to eHRISO Terminology Coordinator. A copy of the registration form can be referred to Appendix C.

4.1.3 There shall only be one member per HCP appointed as the role of HCP terminology coordinator at any given time. Where required, the HCP may also appoint sub-coordinator(s) as ‘Nature Specific Terminology Coordinator’ for each domain area, e.g. drug, laboratory, and problem/procedure. For details, please refer to ‘Section 4.3 Roles of nature specific terminology coordinator’ in the later section.

4.2 ROLES OF HCP TERMINOLOGY COORDINATOR

4.2.1 The following outlines tasks in which the appointed HCP terminology coordinator may be involved in:

i. Administration

- To liaise between HCP and eHRISO on terminology related matters
- To distribute updates and materials received from eHRISO to corresponding staff (i.e. Nature specific terminology coordinator, health care staff, IT team) within the HCP
- To download HKCTT list (including HKCTT delta report) and other reference terminology list from eHR portal where necessary (Note: The eHR portal is a web-interface system that provides functions and features for eHR subscribers to access information
and eHR related services. For details on download, please refer to ‘Section 6.2 Release update of HKCTT.’

- To receive, distribute and follow up on data compliance report from eHRISO (Note: The data compliance report is sent to HCP when transmitted patient data fails to comply with the standards of the eHR data set. For details, please refer to Chapter 8 and Appendix C of the eHR Content Standards Guidebook.)

ii. Submission of requests

- To submit HKCTT request through request submission system via eHR portal when an addition or amendment of HKCTT term is requested by user within HCP
- To submit any recommendations related to SNOMED CT via eHR portal as requested by user within HCP

4.3 ROLES OF NATURE SPECIFIC TERMINOLOGY COORDINATOR

4.3.1 As the HCP terminology coordinator plays a major role as single contact point between HCP and eHRISO, the HCP may also appoint nature specific coordinator(s) to handle tasks related to any specific domain areas. For example, a HCP may appoint staff to oversee operations in drug, laboratory or problem/procedure domain respectively. The appointment of nature specific terminology coordinator is optional and would vary depending on the operation of the HCP.

4.3.2 The following outlines tasks in which the appointed nature specific coordinator(s) may be involved in:

i. Submission of requests

- To submit HKCTT request through request submission system via eHR portal when an addition or amendment of HKCTT term is requested by user within HCP related to the assigned domain
- To submit any recommendations related to SNOMED CT via eHR portal as requested by user within HCP related to the assigned domain
5 ADOPTION OF HKCTT

5.1 INTRODUCTION

5.1.1 With the aim of supporting data interoperability amongst various HCPs, it is the strategy of the eHRISO to promote the use of the HKCTT within the Hong Kong Special Administrative Region. The HKCTT can be distributed to the local healthcare providers for not-for-profit purposes.

5.1.2 As each HCP have different clinical systems with varying technical compatibility and usage, eHRISO have made available three modes of HKCTT adoption for HCP to choose from, namely HKCTT (CMS Extension), HKCTT (ELSA), and HKCTT (Core). The three modes are comprised of combinations of three components, including:

i. the search panel which is a frontend module which facilitates searching of the HKCTT content,

ii. the terminology service which includes program logics to facilitate searching of the HKCTT content and

iii. the HKCTT content.

5.1.3 Depending on the local situation, HCP may select the components needed to determine the most suitable adoption mode. Regardless of how the HKCTT will be used, all HKCTT users should observe the terms and conditions as included in the Terms of Use for the Hong Kong Clinical Terminology Table (“HKCTT”), please refer to Appendix A.
5.2 HKCTT (CMS EXTENSION)

5.2.1 HKCTT (CMS Extension) is an application module designed to provide access to HKCTT content with terminology service and search panel. It is an open standard clinical management system with the ability to share clinical data of patients with the eHR Sharing System. For HCP who would like to adopt a total application replacement or to implement a complete solution, the HKCTT (CMS Extension) could be a suitable option. There are two modules available for selection:

i. CMS On–ramp: is designed for the use of private solo or group practice healthcare providers

ii. CMS Adaptation module: is designed for the use of private hospitals or institutions

The HKCTT has already been incorporated in CMS On-ramp/Adaptation. HCP who would like to install the CMS On-ramp/Adaptation should contact eHR Commissioner Office for the detail procedures and system requirements. Once CMS On-ramp/Adaptation module is adopted, HKCTT content could be retrieved when user searches a clinical term on the provided search panel. For details on how to search HKCTT content with the provided terminology service, please refer to Appendix D.

Since each HKCTT term returned is already assigned with a unique Term ID at backend, HCPs are encouraged to store the Term ID together with the patient data and send the Term ID to eHR core system when uploading patient data. HCP could also store other reference terminology data if necessary.

5.2.2 There will be regular release of HKCTT when new version of HKCTT is available. HCPs should follow the procedure stipulated in the User Guide of On-ramp and Adaptation in order to keep the HKCTT content update.
5.3 HKCTT (ELSA)

5.3.1 HKCTT (ELSA) is a pluggable module designed that provides HKCTT content and a terminology searching service to facilitate searching of the HKCTT. HCP/vendor who is using her own clinical software but still wish to use the HKCTT via her own system can choose this mode to adopt the HKCTT.

5.3.2 HKCTT (ELSA) is installed within an eHR secured communication channel called Encapsulated Linkage Security Application (ELSA) which includes both the HKCTT content and the terminology service to facilitate searching of the HKCTT. To support clinicians to use the HKCTT, vendor or HCP has to develop her own searching panel and invoke the HKCTT Offline terminology service based on a standard protocol in order to access the HKCTT content. The detail implementation guide and mechanism to invoke the terminology service will be described in the “The Implementation of A Secured Communication Module for the eHR Project Encapsulated Linkage Security Application (ELSA)” manual. Vendors/HCPs wish to adopt the HKCTT using this mode should approach the eHRISO for details.

5.3.3 Update of the HKCTT content will involve acquiring the updated HKCTT content from the eHRISO and also applying these updates to the ELSA (HKCTT) which connects to the HCP’s clinical system. When new release of HKCTT is available, the HKCTT data content can be refreshed by following the ELSA system patch management module if the HCP has joined the eHR program with connectivity to eHRSS. Vendor or HCP should follow the system patch management section in the ELSA implementation guide and develop the required system changes in order to check, download, query and apply the patches available in eHR core system. The details of hardware and software (including supporting operating system) information can be found in the ELSA implementation guide.

5.3.4 If the HCP has not joined eHR and does not connect to eHRSS, the HKCTT content update cannot be refreshed by the ELSA system patch management module. HCP should contact eHRISO periodically for the latest content and apply the update to ELSA (HKCTT) manually. The update procedure will be included together with the HKCTT content when released by eHRISO.
5.4 HKCTT (CORE)

HKCTT (Core) is a channel designed to provide access to full HKCTT content and documentation. HCPs who are capturing patient data using her own clinical system, and yet wish to send patient data as Level 3 data to the eHRSS, they may consider mapping their own terms to HKCTT and thus adopt this option. HCPs are recommended to ensure the version of the HKCTT in its own system is updated regularly and as appropriate. Vendors/HCPs wish to adopt the HKCTT using this mode should approach eHRISO for details.
6 RELEASE AND UPDATES

6.1 INTRODUCTION

6.1.1 To accommodate with the continuous advancement and development in health sciences, the content of HKCTT will change and evolve over time. Furthermore, as HKCTT is referenced to various international terminologies, any updates and changes of these reference terminologies (RT) could also trigger changes in content of HKCTT. Thus, efforts are made to carefully review changes and adjust for any impact on data entry, retrieval and comparability of data.

6.2 RELEASE UPDATE OF HKCTT

6.2.1 HKCTT is scheduled for regular monthly update release by leveraging on existing practice of the Hospital Authority Clinical Vocabulary Table (HACVT). The monthly release update has been validated to be efficient in keeping abreast of new medical developments, as well as providing adequate time for maintenance and internal procedures to be conducted. Ad hoc release could occur more than once a month and will be arranged by eHRISO when necessary.

6.2.2 HKCTT licensee (HCP) is recommended to ensure the version of the HKCTT in its own system is kept up to date. It is highly recommended that HCP should at least update once every 12 months. HKCTT licensee with delayed upgrades could fail to be interoperable with other system using the latest versions. Problematic content addressed in the latest version could perpetuate if update is not implemented. In addition, improvements made available by later releases could not be applied. Thus, it is strongly recommended that HCP should not become too out of date with the latest release version.
6.2.3 For eHRSS user, notification message would be received via eHR Inbox upon availability of new HKCTT release. The HKCTT content can be accessed through the download module in eHR portal after successful logon. Upon access to eHR portal, user may select the ‘Download’ option from the dropdown menu for downloading of HKCTT and other recognised terminologies content (see Figure 1). Prior to access to the download page, user must read and accept the constituted terminology acknowledgements (see Figure 2). User will also be prompted to comply with the terminology acknowledgement prior to download of content each time (see Figure 3).

The download of HKCTT includes the full list of HKCTT content and HKCTT delta report. The HKCTT delta report is a report that documents addition and changes identified between the previous HKCTT release version and the current one. The delta report aims to outline any new addition of terms in each release and any significant modifications that may require attention.

6.2.4 For HKCTT licensee who does not join eHR, eHRISO will arrange distribution separately.

![Figure 1 - Download module in eHR portal](image-url)
Figure 2 - Terminology acknowledgement prior to download

Figure 3 - Terminology acknowledgement confirmation when user clicks "download"
**Figure 4 - Sample download screen**
6.3 IMPACT OF UPDATE ON REFERENCE TERMINOLOGIES TO HKCTT

6.3.1 As HKCTT is referenced to multiple reference terminologies (RT), HKCTT release would adopt the most up to date release of each RT as far as possible. The incorporation of RT release into subsequent HKCTT update release will be reviewed and prioritised as per eHRISO’s internal policies and procedures. Frequency of official release of reference terminologies are subject to the corresponding standard development organization as follows:

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<th>Reference Terminology</th>
<th>Frequency of Official Release</th>
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<tr>
<td>Systematized Nomenclature of Medicine Clinical Terms (SNOMED CT)</td>
<td>January and July of each year by International Health Terminology Standards Development Organisation (IHTSDO)</td>
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<tr>
<td>International Classification of Diseases 10th Revision (ICD-10)</td>
<td>No regular updates</td>
</tr>
<tr>
<td>International Classification of Primary Care 2nd edition (ICPC-2)</td>
<td>No regular updates</td>
</tr>
<tr>
<td>Logical Observation Identifiers Names and Codes (LOINC)</td>
<td>Twice per year by Regenstrief Institute</td>
</tr>
</tbody>
</table>

6.3.2 Since each HKCTT term is mapped to at least one RT, any amendment or version update of the relevant RT could impact the mappings of HKCTT. Some RT update may introduce new codes which could involve amendment of the existing mapping of HKCTT term or creation of new HKCTT term. As there are necessary procedures to review affected terms prior to the implementation of each update, a short delay subsequent to RT update is expected.

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<th>Code in ICD10 2010</th>
<th>Changes incurred</th>
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<tr>
<td>Congenital spastic paralysis</td>
<td>G80.0</td>
<td>G80.1</td>
<td>Classification of condition changed</td>
<td>Amend existing mapping</td>
</tr>
<tr>
<td>Mucosal proctocolitis</td>
<td>K51.5</td>
<td>K51.3</td>
<td>Classification of condition changed</td>
<td>Amend existing mapping</td>
</tr>
<tr>
<td>Chronic kidney disease stage 1 to Stage 5</td>
<td>N/A</td>
<td>N18.1 to N18.5</td>
<td>Code added</td>
<td>Amend existing mapping and create new concepts</td>
</tr>
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</table>
6.3.3 When a new RT release is available, eHRISO would review and incorporate changes to HKCTT as appropriate. SNOMED CT is described here as an example, please refer to Appendix E – Recognised Terminology Update Workflow for more details. Similar steps would also be applied for other reference terminologies release update.

i. New release updates of SNOMED CT international release from International Health Terminology Standards Development Organisation (IHTSDO) are available biannually in January and July each year.

ii. Copy of the release would be obtained from IHTSDO and made accessible in the Download Centre of eHRSS.

iii. Concepts containing changes in the latest SNOMED CT release version and are concurrently used in HKCTT are identified.

iv. All HKCTT terms with SNOMED CT mappings that are affected by the changes made from the latest SNOMED CT release would be reviewed.

- Addition of SNOMED CT concept
- Change of SNOMED CT concept definitions
- Amendment on descriptions of SNOMED CT concept

v. Updated SNOMED CT mappings of the affected HKCTT terms would be approved in IAMS the HKCTT management tool accordingly.

vi. New HKCTT release update will be made accessible in the eHR portal
7 TRANSMISSION OF PATIENT DATA TO eHR

Please refer to Chapter 8 and Appendix C of the eHR Content Standards Guidebook.
8 REQUEST SUBMISSION TO EHRISO

8.1 INTRODUCTION

On the occasion where some terms may not be readily available for use in the existing HKCTT, HCPs are encouraged to submit a request for addition of new term(s). Moreover, HCPs can also submit request for amendment of any existing HKCTT term should change(s) is deemed necessary. On both aforementioned instances, ‘HCP Terminology Coordinator’ or ‘Nature Specific Terminology Coordinator’ may submit requests to eHRISO via eHR portal (see Figure 5). For details on roles of HCP terminology coordinator or Nature specific terminology coordinator, please refer to ‘Section 4 Role of HKCTT licensee’.

For all request submissions, HCPs are recommended to provide as much detail as possible to facilitate review by eHRISO. While eHRISO will place effort in processing requests in a timely manner, the time frame for promotion of newly added or amended terms would be subject to eHRISO’s internal review and procedures. For all submitted requests, a request number would be automatically generated and an email acknowledgement would be sent to the requestor with the corresponding request number for future perusal (see Figure 6). For details on the work flow of Request Submission, please refer to “eHRSS User Manual for Terminology Related Functions”.

Figure 5 Access to request submission system in eHR portal
The submitted requests could be assigned to the following stages:

<table>
<thead>
<tr>
<th>Request stage</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Submitted</td>
<td>Newly submitted request, pending review by eHRISO</td>
</tr>
<tr>
<td>In Progress</td>
<td>Request is in progress of review by eHRISO</td>
</tr>
<tr>
<td>Accepted</td>
<td>Request has been accepted (The requested addition or amendment will be incorporated into HKCTT content)</td>
</tr>
<tr>
<td>Rejected</td>
<td>Request has been rejected (The requested addition or amendment will not be incorporated into HKCTT content. Reason for rejection will be provided to requestor)</td>
</tr>
</tbody>
</table>

Figure 6 Sample of Acknowledgement of request
8.1.1 New addition of HKCTT term

i. Request of new HKCTT term should be made only when the requested term does not exist in the HKCTT. It is recommended for requestor to browse HKCTT in eHR portal under “eHR Recognised Terminologies Search” function prior to submission, where the latest available HKCTT version would be accessible.

ii. Reference to the terminology management principles as documented in Section 4 of the current set of Editorial Guide of Hong Kong Clinical Terminology Table should be made before submission

iii. Request on term creation is available for HKCTT terms under the domain of diagnosis, procedure, laboratory test, organism and specimen. (see Figure 8) (Note: Request submission for Registered Pharmaceutical Products is not available for Public, it is solely maintained by the Drug Office, Department of Health.)

iv. Requestor should provide mandatory information required under the relevant domain. For details, please refer to the Appendix F – Request submission requirements.

v. Requestor may withdraw any submitted requests in the ‘Submit’ stage. However, once the request has been promoted as ‘In progress,’ the request is no longer available for withdrawal as the approval process of the request has begun. All submitted requests and its details are available for review in the request summary list (see Figure 7).
**Figure 7** Summary of request submissions in eHR portal

<table>
<thead>
<tr>
<th>Request Date</th>
<th>Request No.</th>
<th>Request Stage</th>
<th>Request Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>15/11/2013</td>
<td>22</td>
<td>Rejected</td>
<td>New concept “17-Hydroxycorticosteroids/Creatinine (Motor ratio) in Urine”</td>
</tr>
<tr>
<td>15/11/2013</td>
<td>21</td>
<td>In Progress</td>
<td>Add alias to Cervical radicular discogenic pain</td>
</tr>
<tr>
<td>15/11/2013</td>
<td>20</td>
<td>Submitted</td>
<td>Map ICD-10 code to concept “Periapical sinus infection”</td>
</tr>
<tr>
<td>10/11/2013</td>
<td>19</td>
<td>In Progress</td>
<td>Need a new concept for red eye</td>
</tr>
<tr>
<td>15/11/2013</td>
<td>18</td>
<td>Submitted</td>
<td>Request creates concept for “Plastic operation on trachea (procedure)”</td>
</tr>
</tbody>
</table>

**Figure 8** New HKCTT term request for diagnosis nature in eHR portal
8.1.2 Amendment of HKCTT term

i. Request of amending HKCTT term should be made only when the change(s) is deemed necessary. Before submitting the request, the requestor should check the HKCTT in eHR portal under “eHR Recognised Terminologies Search” function, where the latest available HKCTT version would be accessible.

ii. Requestor should also reference to the terminology management principles as documented in Section 4 of the current set of Editorial Guide of Hong Kong Clinical Terminology Table before submission.

iii. Request for amendment of HKCTT terms under the domain of problem, procedure, laboratory test, specimen and organism are accepted (see Figure 9). (Note: All drug data in the HKCTT are originated from the Registered Pharmaceutical Products which is maintained by the Drug Office, Department of Health.)

iv. Requestor should provide mandatory information required under the relevant domain. For details, please refer to the Appendix F – Request submission requirements.

v. Requestor may withdraw any submitted requests in the ‘Submit’ stage. However, once the request has been promoted as ‘In progress’, the request is no longer available for withdrawal as the approval process of the request has begun. All submitted requests and its details are available for review in the request summary list (see Figure 7).
8.2 PROCESSING

8.2.1 The roles and responsibilities of eHRISO are to manage any submission requests and to respond to any queries from requestor regarding submission requests. Please refer to Appendix G - Request submission workflow for details.

8.2.2 Request would be processed on the following criteria:

i. Upon submission of new HKCTT term request, the requested term is checked if it already exists in HKCTT. If a requested term is found to be semantically matching with an existing HKCTT term, the request would be declined. However, the description of the request may be added as alias to the existing HKCTT term to facilitate searching.

ii. The submitted new or amend term request would be assessed base on the terminology management principles as documented in Section 4 of ‘Editorial Guide of Hong Kong Clinical Terminology Table – Overview.’ Base on the established principles, the request would be assessed on its applicability and value for usage and need in HKCTT. eHRISO will review details of the request and determine the action required.

iii. Submitted request and its mapping to reference terminology will be verified. Submitted request will be cross referenced to reference terminologies, including SNOMED CT, ICD-10, ICPC-2 and LOINC. If the semantic meaning of the request submission is precisely preserved.
during the mapping process, the mapping is regarded as an exact match. In such case, the newly requested term will proceed to be added into HKCTT with the appropriate reference terminologies mapping. On occasions where the newly requested term does not exist in the reference terminologies, eHRISO may submit the requested term to standards development organisation, such as IHTSDO and Regenstrief Institute, for addition to the reference terminologies (For details, please refer to ‘Section 9 – Submission to standards development organisation (SDO’)’.)

iv. eHRISO will verify the submitted request on an individual basis. As eHRISO may seek further clarification on the request submission, it is encouraged for the requestor to maintain liaison with eHRISO.

v. Under some circumstances, eHRISO may also seek recommendation from relevant specialists or working groups where necessary. Some general guidelines have been established on the vetting of HKCTT requests, but final approval would be subject to eHRISO’s decision on an individual basis of each request. The following guidelines pertain to the vetting of HKCTT request in the diagnosis and procedure nature:

- Medical term instead of lay term
  For example, use ‘intestine’ instead of ‘gut’ (Gut can be added as alias, which is an alternative description to facilitate search of a specific term)

- Precision of the meaning of the concept definition
  For example, the concept request of ‘operation on brain’ would be considered as a concept with vague meaning as it did not explicit express what operation and part of the brain the procedure is involved in.

- Appropriate use for local practice
  For example, the concept request of ‘osteochondroplasty of femur’ is invalid as this procedure is only performed at knee locally.

- Anatomical and physiological plausibility of the concept
  For example, the concept request of ‘Torkildsen shunt to cistern of spinal cord’ is invalid as this procedure is done only for ventricle-cisterna magna (subarachnoid space), not spinal cord
8.3 APPROVAL AND FEEDBACK

8.3.1 Requestor(s) are notified via eHR portal inbox when the request is closed (either accepted or rejected). If a request has been rejected, a reason and explanation will be provided to the requestor in the notification (see Figure 10). Requestor can review the all requests by accessing the ‘HKCTT Request Submission’ module in eHR portal.

Reject reasons are listed as follows:

<table>
<thead>
<tr>
<th>Duplicate request</th>
<th>Another request on the same issue has already been submitted by another requestor.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duplicate concept</td>
<td>The requested concept is duplicated with another existing HKCTT concept.</td>
</tr>
<tr>
<td></td>
<td>For example: Facial nerve palsy</td>
</tr>
<tr>
<td></td>
<td>• This term was declined due to duplicated concept meaning with “Seventh nerve palsy”</td>
</tr>
<tr>
<td>Inappropriate/vague concept</td>
<td>The meaning or description of the request is ambiguous or vague</td>
</tr>
<tr>
<td></td>
<td>For example: Lupus erythematosus, lupoid type</td>
</tr>
<tr>
<td></td>
<td>• This concept was declined as Lupus erythematos does not manifest as lupoid type. Hence, the concept is inappropriate for use.</td>
</tr>
<tr>
<td>Others</td>
<td>Reasons would be provided for all other exception cases</td>
</tr>
</tbody>
</table>

Your HKCTT request (Request number 12345) has been closed with the status Rejected on 20/11/2013

Request Summary

<table>
<thead>
<tr>
<th>Type</th>
<th>Create new concept</th>
</tr>
</thead>
<tbody>
<tr>
<td>Request Summary</td>
<td>Request for new concept – “Acute respiratory distress”</td>
</tr>
<tr>
<td>Description</td>
<td>Acute respiratory distress</td>
</tr>
<tr>
<td>Nature</td>
<td>Diagnosis (Dx)</td>
</tr>
</tbody>
</table>

Request Progress

Your request has been rejected with the following reason:
Duplicate concept.

Editor Comment: On revision, there is already an existing concept “Term IU 311/4: respiratory distress” with the alias “acute respiratory distress”.

You may view the status of this request at HKCTT Request Submission.

Thank you very much for using the HKCTT Request System.
Thank you for your contribution to HKCTT

eHR Information Standards Office

Disclaimer

All requests will be reviewed and prioritized as per the eHRISO’s internal policies and procedures.

Figure 6 - Acknowledgement for close request - Rejected
9  SUBMISSION TO STANDARDS DEVELOPMENT ORGANISATION (SDO)

9.1 INTRODUCTION

There may be some occasions where the requested term may not be readily available in the reference terminologies in which the HKCTT is cross referenced to. Since the requested term may require mapping to these reference terminologies, eHRISO may submit a request to corresponding Standards Development Organisation (SDO) for addition. The addition of the new term to SDO could contribute to the quality and practical use of international reference terminologies. Additionally, the adding of local terms to international reference terminologies would enable reuse of these terms for future mapping of HKCTT to reference terminologies. eHRISO may also submit recommendations for amendment of reference terminology content to corresponding SDO where necessary.

9.2 REQUEST TO IHTSDO

9.2.1 Some requested terms to be added into HKCTT may require mapping to SNOMED CT. Upon the circumstance where the requested term is found to be non-existent in SNOMED CT, building of mapping of the requested term using a combination of two or more existing SNOMED CT concept, known as post-coordination, may be necessary (For details on post-coordination, please refer to Section 5.2.4 in ‘Editorial Guide on Hong Kong Clinical Terminology Table – Problem & Procedure.’)

9.2.2 The submitted request by eHRISO would be reviewed by IHTSDO Support Organisation staff for evaluation and would be deemed as accepted, pending or rejected according to their policies. Subsequently, eHRISO would take action depending on the result of the submission. For accepted submissions, eHRISO would notify requestor of the result and may incorporate the update into HKCTT accordingly. The SNOMED mapping of existing HKCTT term may also be impacted and change could occur.
9.3 REQUEST TO REGENSTRIEF INSTITUTE

9.3.1 Some requested concepts to be added into HKCTT may require mapping to LOINC. If necessary, eHRISO may submit requests to Regenstrief Institute for request on addition or amendment of LOINC content. The Regenstrief Institute is only able to respond quickly to new requests provided that with clear information of the submission. In general, the request may have the laboratory test information about the component, property, timing aspect, system, scale and method. It is also very useful to provide the units of measure and example results of the test that is being requested.

9.3.2 The submitted request by eHRISO would be reviewed by Regenstrief Institute. Subsequently, eHRISO would take action depending on the result of the submission. For accepted submissions, eHRISO would incorporate updated release content into HKCTT accordingly. The time frame of the promotion of newly added terms into HKCTT release would be subject to eHRISO’s review and evaluation.
10 MAPPING

10.1 INTRODUCTION

The eHR Sharing System provides a platform through which patient data can be shared among various HCPs. As described in the eHR Content Standards Guidebook, HCPs are recommended to transmit standard structured data (Level 3) to eHR. There are options in which HCP may consider in preparing its local data for record sharing:

10.1.1 Direct adoption of HKCTT or other recognised terminologies

It is highly recommended for HCP to adopt HKCTT or any of the recognised terminologies and incorporate it directly into its clinical systems. Patient data would be captured with HKCTT or recognised terminologies, which facilitates a seamless transmission of data to eHR without conducting any data conversion or mapping. This option allows HCP to enjoy the benefits of a fully interoperable eHR while bearing less effort than mapping their local terms to HKCTT or other recognised terminologies.

10.1.2 Mapping of local terms to HKCTT

Alternatively, HCP may also map her local terms to HKCTT and transmit patient data to eHRSS as standard structured data (Level 3) if desired. HCP should be aware that mapping of local terms to HKCTT could be labour intensive and would require management and resources for the initial task and future maintenance. Accurate mapping is vital in ensuring correct patient health information is displayed such that proper patient treatment care can be provided. Mapping should always be done with caution as inaccurate mapping may introduce error or loss of meaning which may cause serious consequences. While the eHRISO could provide professional advice on mapping related issues, individual HCP has to be responsible for the mapping and the quality of the mapped data (please refer to Appendix H – Disclaimer for mapping advice).
10.2 PURPOSE OF MAPPING LOCAL TERMS TO HKCTT

The purposes of mapping of local terms to HKCTT are to support health information exchange, facilitate interoperability of systems and maintain consistent and understandable recording of clinical events accessible in eHR. For some cases, mapping may be required to convert legacy data to structured data in order to facilitate compliance for data transmission.

10.3 DEFINITION OF MAPPING

Mapping is defined as 'the process of associating concepts or terms from one coding system or terminology to concepts or terms in another coding system or terminology and defining their equivalent in accordance with a documented rationale and a given purpose.' In simpler words, mapping is linking content from one terminology or classification scheme to another. Data maps also enable the comparison of data collected via different systems and minimize risk of costs and errors from multiple data entry.

10.4 GENERAL PROCESS OF MAPPING

10.4.1 Identify the source and target map

It is important to clearly define the source and target map and to be familiarise with the content structure of both coding systems / terminologies. For examples:

In ICD10, some codes have Inclusion / Exclusion notes following the main terms and those information are crucial in deriving the most appropriate mapping.

<table>
<thead>
<tr>
<th>Local Term</th>
<th>ICD10</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Carbuncle in auricle</td>
<td>H60.0 Abscess of external ear</td>
</tr>
<tr>
<td>2 Napkin dermatitis</td>
<td>L22 Diaper dermatitis</td>
</tr>
</tbody>
</table>

In example 1 above, the local term should be mapped to H chapter (Disease of ear and mastoid process) rather than L chapter (Disease of skin).

In example 2, the local term should be mapped to L chapter (Disease of skin) rather than P chapter (Certain conditions originating in the perinatal period)

In SNOMED CT, the identifier and descriptions of a concept form only a part of its content, where the complete meaning of the concept could only be obtained
by referencing the concept definition (i.e. defining relationships) and hierarchy, for example.

<table>
<thead>
<tr>
<th>Local Term</th>
<th>SNOMED CT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Description</td>
</tr>
<tr>
<td>1 Acute leukaemia</td>
<td>Acute leukaemia</td>
</tr>
<tr>
<td></td>
<td>Acute leukaemia</td>
</tr>
<tr>
<td>2 Penicillins</td>
<td>Broad spectrum penicillins</td>
</tr>
<tr>
<td></td>
<td>Broad spectrum penicillins</td>
</tr>
</tbody>
</table>

In example 1, if the local term refers to a disease, it should be mapped under Disorder. If the local term refers to a morphology, then it should be mapped under Morphologic abnormality.

In example 2, if the local term refers to a medication, it should be mapped under Product. If the local term refers to an allergen, then it should be mapped under Substance.

10.4.2 Delegate member to monitor and manage the mapping project

An individual or department is recommended to be solely responsible for implementing, maintaining and updating of mapping. The assigned individuals should have relevant clinical background with medical knowledge and should be familiar with various reference terminologies and attentiveness of detail to conduct mapping work.

Training should be provided for all responsible members for the creation and maintenance of mappings. Use of tools, such as spreadsheets, databases, mapping tools and user guides, may help to ensure accuracy and consistency of mappings.

10.4.3 Develop and document mapping principles

A set of mapping principles should be developed to ensure consistency among the mappings. Inevitably, as mapping progresses, the established set of mapping principles may also change accordingly. Mapping process that is well documented would help to produce understandable, reproducible and useful maps. The key principle to conduct mapping should be in ‘what you see, what you get’ manner, in which no assumption should be made beyond what is given.
10.4.4 Starts with the popular one

As there could be a lot of terms in the local table, the HCP may consider performing mapping by phases and start mapping those mostly commonly used terms first.

10.4.5 Use a mapping tool

A mapping tool will help to refine the target terms and improve the efficiency of the mapping work. It is recommended to make use of some computer tools to assist in the mapping process. Where required, the HCP may contact the eHRISO for advice. Nevertheless, all mappings (even it is done by a mapping tool) should be reviewed and confirmed by a domain expert of the clinical subject area to ensure the mapping accuracy.

10.4.6 Develop quality assurance check for mapping verification

Mapping is recommended to be validated internally by more than 1 person who has relevant clinical background and certain extent of knowledge on various clinical terminologies. It is also preferable to have the review conducted by an objective third party that has no financial or political interest with the project subsequently. HCP should develop a mechanism in ensuring the quality of the map. Depending on the use of the map, all mappings may be reviewed by different reviewers or domain experts.

HCP is recommended to verify the finalised mapping in the local system before putting it in use. HCP can upload the mapping table to the local system which will send the mapped patient data to the eHRSS, and then download the data from the local system for comparing the downloaded mapped data from the local

<table>
<thead>
<tr>
<th>Local description (Source)</th>
<th>HKCTT description (Target)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open wound of ear drum</td>
<td>Open wound of ear drum</td>
<td>Correct mapping – Equivalent meaning between source map and target map</td>
</tr>
<tr>
<td>Open wound of ear drum</td>
<td>Open wound of ear drum, complicated</td>
<td>Incorrect mapping – More meaning introduced in target map</td>
</tr>
</tbody>
</table>
system with the original mapping file to identify any discrepancy. This is to ensure system pitfall, which might impact on the mapping integrity, if any, could be detected before implementation.

While technological advances may aid in the automated process of creation and verification of data mapping, skilled professionals are still required to be involved in the process to ensure accuracy and quality.

10.4.7 Maintain an up-to-date source and target map set

Mappings should be updated when the source and/or target map sets are updated. HKCTT is scheduled for regular monthly update release. Additional releases may also be performed at any time and may occur more than once a month if necessary. It is crucial to keep to date with the most current versions to maintain data integrity.

10.4.8 Communicate with eHRISO

HCPs are encouraged to communicate with eHRISO on any mapping issues that require attention or to seek additional documentation for clarification. Advice might be given by eHRISO on the mapping initially performed by HCP. A disclaimer will be attached to the mapping file with advice from eHRISO, please refer to Appendix H. It is also recommended for HCP to attend relevant terminology related training to learn more about mapping and to exchange ideas with other parties.
10.5 MAPPING OF TERMINOLOGIES FOR DIAGNOSIS AND PROCEDURE

The following section outlines some general mapping principles and steps for mapping of local terms in diagnosis and procedure nature to HKCTT. HCPs are also encouraged to develop their own set of mapping guidelines base on their use case and structure of the local data schema.

10.5.1 General mapping principles

i. To fully comprehend the meaning of the local term prior to mapping to HKCTT. For example, the anatomical and physiological aspects of the diagnostic term should be clearly understood. Likewise, the approach and devices that are involved for the procedural term should be grasped fully.

ii. To conduct mapping in a manner where no further inference beyond the given patient data should be made. For example, one cannot make inference that ‘This patient has myocardial infarction’ would be equivalent to ‘This patient has angina’ as this is purely base on presentation of the patient and is beyond the context of the concept in itself.

iii. To map local terms to HKCTT from appropriate nature. In this case, local terms for diagnosis should be mapped to HKCTT in diagnosis nature while local terms for procedure should be mapped to HKCTT in procedure nature.

iv. To maintain one-to-one mapping where one local term would be mapped to one HKCTT term only. Upon circumstances where local term cannot be mapped to any of the existing HKCTT terms, HCP are encouraged to submit request for addition to eHRISO.

v. To ensure that the semantic meaning of the mapped HKCTT term is equivalent to the local term.
10.5.2  Mapping examples

i. Single mapping (one to one) between local term and HKCTT with equivalent meaning. For example, the local concept ‘Non-insulin dependent diabetes mellitus’ is clinically equivalent to the HKCTT concept ‘Type II diabetes mellitus.’

<table>
<thead>
<tr>
<th>Local code</th>
<th>Local description</th>
<th>HKCTT TermID</th>
<th>HKCTT Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>12346</td>
<td>Non-insulin dependent diabetes mellitus</td>
<td>3985</td>
<td>Type II diabetes mellitus</td>
</tr>
</tbody>
</table>

ii. Single mapping (one to one) between local term and HKCTT with related concepts. For example, the local concept ‘other hemoglobinopathies’ has no specification indicated. Thus, the HKCTT concept ‘Haemoglobinopathy’ would be adequate as an approximate mapping of this local term.

<table>
<thead>
<tr>
<th>Local code</th>
<th>Local description</th>
<th>HKCTT TermID</th>
<th>HKCTT Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>12347</td>
<td>Other hemoglobinopathies</td>
<td>4512</td>
<td>Haemoglobinopathy</td>
</tr>
</tbody>
</table>
10.6 MAPPING OF LABORATORY TERMINOLOGIES

The laboratory terminologies are grouped under three HKCTT natures, namely: laboratory test, organism and specimen. The general principles of mapping the local terms to HKCTT terms in laboratory domain are listed below:

10.6.1 General mapping principles

i. To assign at least one laboratory professional to perform and manage the mapping list.
   • Mapping laboratory data to LOINC requires one possesses laboratory domain knowledge. For example, any changes in specimen, test method or reporting unit in laboratory test would lead to a new mapping. It is essential to update the laboratory data and mapping list periodically.

ii. To develop quality assurance plan.
   • It is preferable to have another laboratory professional to review the mapping to ensure the quality of mapping.
   • Use computer tools to help with the validation.

iii. To provide training for laboratory staff
   • It is recommended to equip laboratory staff for mapping creation and maintenance. Laboratory data standardization is a contiguous project. It requires skilled laboratory professionals to maintain and review mapping list periodically. An updated mapping list would ensure accurate data transmission, which provides an interoperable health information sharing in eHR.

10.6.2 Mapping steps

i. To identify the laboratory data that require mapping.
   • Local test codes that are for reporting laboratory test result require mapping. For example, test code for blood glucose test result should be mapped to LOINC concept.
   • Operational test codes that are for supporting internal workflow do not need mapping. For example, mapping is not required for test code that is served as test result audit indicator. Those operational
test codes do not need to be interoperable with other HCP’s internally operational data for clinical care and treatment.

ii. To understand the definition of the HKCTT term:

- For details on the principles of defining laboratory test, organism and specimen, please refer to Section 2 to 4 in ‘Editorial Guide on Hong Kong Clinical Terminology Table – Laboratory.’

10.6.3 Example of Laboratory Test Mapping

Each LOINC concept contains six attributes -- test analyte, property, time aspect, specimen, scale of measurement and method. For example, a test using serum as specimen to detect the presence of DNA double strand antibody by immunofluorescence method is clinically equivalent to LOINC concept “DNA double strand Ab [Presence] in Serum by Immunofluorescence.”

<table>
<thead>
<tr>
<th>Local code</th>
<th>Local description</th>
<th>LOINC Code</th>
<th>LOINC Long Common Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>DNA</td>
<td>Anti-ds DNA</td>
<td>5131-8</td>
<td>DNA double strand Ab [Presence] in Serum by Immunofluorescence</td>
</tr>
</tbody>
</table>

10.6.4 Example of Organism Mapping

Each local organism description should match the HKCTT description or its defined aliases. For example, local organism code reporting “Pseudomonas maltophilia” is the alias of HKCTT organism term “Stenotrophomonas maltophilia”.

<table>
<thead>
<tr>
<th>Local code</th>
<th>Local description</th>
<th>HKCTT TermID</th>
<th>HKCTT Description</th>
<th>HKCTT Alias</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSEUMALT</td>
<td>Pseudomonas maltophilia</td>
<td>5001090</td>
<td>Stenotrophomonas maltophilia</td>
<td>Pseudomonas betel</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pseudomonas betle</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pseudomonas maltophilia</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Xanthomonas maltophilia</td>
</tr>
</tbody>
</table>
10.6.5 Example of Specimen Mapping

Each local specimen should conceptually match to the HKCTT term. For example, local specimen “Bronchoscopic aspirate” is clinically equivalent to HKCTT specimen term “Bronchial aspirate”.

<table>
<thead>
<tr>
<th>Local code</th>
<th>Local description</th>
<th>HKCTT TermID</th>
<th>HKCTT Description</th>
<th>HKCTT Alias</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bron Asp</td>
<td>Bronchoscopic Aspirate</td>
<td>5700051</td>
<td>Bronchial aspirate</td>
<td>Bronchial fluid sample</td>
</tr>
</tbody>
</table>

10.7 MAPPING OF MEDICATION TERMINOLOGIES

10.7.1 There is a nature of medication terminology in the HKCTT which contains concepts on pharmaceutical products (also known as the Hong Kong Medication Terminology Table (MTT)). The MTT provides concepts at different levels of granularity in concept attributes in a hierarchical structure. This structure of MTT includes the following concept types:

- Virtual Therapeutic Moiety (VTM)
- Routed Virtual Therapeutic Moiety (VTM+R)
- Virtual Therapeutic Moiety Routed Dose Form (VTM+R+F)
- Virtual Medicinal Product (VMP)
- Trade Name (TN)
- Routed Trade Name (TN+R)
- Trade Name Routed Dose Form (TN+R+F)
- Actual Medicinal Product (AMP)

In addition, the MTT concepts are supported by the Qualifier and Substance tables. For details, please refer to the ‘Editorial Guide on Hong Kong Clinical Terminology Table – Drug’.
10.7.2 Since mapping involves data manipulation and an increased risk of data loss / mapping error, the native use of HKCTT terms and codes is highly recommended to HCP in order to ensure data compliance and to enjoy full interoperability.

10.7.3 Mapping local drug information to the MTT may be done at one or more of the levels depending on the need and purposes. When deciding the level at which to map, consider the level at which the data in the local information system is set and the purpose of the local mapping. In general, medication terminologies are used for clinical activities such as prescribing and dispensing. They are also used in the documentation of history of allergy or adverse drug reactions and provide vaccine names in the documentation of immunisation records.

10.7.4 HKMTT is developed with reference to the Registered Pharmaceutical Products (RPP) of the Drug Office, Department of Health, HKSAR Government, and that each of the actual medicinal concept is assigned with a single HK Registration Number in the RPP. The eHRISO maintains a mapping between the RPP and the HKMTT. Mapping is only recommended when the HK Registration Numbers of products are maintained as part of local drug database via which the mapping could be facilitated using the HK Registration Numbers as a common key for local drug mapping. In addition, the eHRSS recognises HK Registration Numbers and the product names as recognised terminologies.

10.7.5 If neither native adoption of MTT, nor HK Registration Number is applicable at local drug database, mapping to MTT is not recommended in view of the risk of inadvertent mapping error. It is recommended that local drug record be shared in eHR compliance level 2. Healthcare provider should consider adopting the HKCTT or RPP into local drug information system in order to enhance interoperability in the future.
10.7.6 Examples of Medication Terminology Mapping:

**Prescribing and Dispensing:** Use HK Registration Number as a common key to identify the matching HKCTT drug record. If the local system used generic information for prescribing and dispensing, then the most suitable target concepts for mapping would be the Virtual Therapeutic Moiety Routed Dose Form (VTM+R+F) and Virtual Medicinal Product (VMP). For example:

<table>
<thead>
<tr>
<th>HK Reg. No.</th>
<th>Local code</th>
<th>Local description</th>
<th>HK Reg. No.</th>
<th>HKCTT TermID</th>
<th>HKCTT Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>62663</td>
<td>DOCE01</td>
<td>DOCETAXEL INJECTION 20MG/0.5ML</td>
<td>62663</td>
<td>6013231</td>
<td>docetaxel intravenous concentrate and solvent for solution for infusion 20 mg / 0.5 mL</td>
</tr>
<tr>
<td>46231</td>
<td>RITU02</td>
<td>RITUXIMAB INJECTION 10MG/ML 50ML</td>
<td>46231</td>
<td>6016415</td>
<td>rituximab intravenous concentrate for solution for infusion 500 mg / 50 mL</td>
</tr>
</tbody>
</table>

**Allergens or Causative Agents of Adverse Drug Reaction:** Use HK Registration Number as a common key to identify the matching HKCTT drug record. If the purpose of the mapping is for representation of drug names for allergy and adverse drug reaction documentation, then the Virtual Therapeutic Moiety (VTM) and Trade Name (TN) are suitable candidates for mapping. For example:
The following table lists out the suggested use of each concept levels, and the likely target for local terminologies mapping:

<table>
<thead>
<tr>
<th>MTT concept</th>
<th>Prescribing</th>
<th>Dispensing</th>
<th>Administration</th>
<th>Alert (Allergy/ADR)</th>
<th>Immunisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Virtual Therapeutic Moiety (VTM)</td>
<td></td>
<td></td>
<td></td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Routed Virtual Therapeutic Moiety (VTM+R)</td>
<td></td>
<td></td>
<td></td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Virtual Therapeutic Moiety Routed Dose Form (VTM+R+F)</td>
<td>√</td>
<td></td>
<td></td>
<td></td>
<td>√</td>
</tr>
<tr>
<td>Virtual Medicinal Product (VMP)</td>
<td>√</td>
<td></td>
<td></td>
<td></td>
<td>√</td>
</tr>
<tr>
<td>Trade Name (TN)</td>
<td></td>
<td></td>
<td></td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Routed Trade Name (TN+R)</td>
<td></td>
<td></td>
<td></td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Trade Name Routed Dose Form (TN+R+F)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>√</td>
</tr>
<tr>
<td>Actual Medicinal Product (AMP)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>√</td>
</tr>
</tbody>
</table>

Use HK Registration Number as common key to facilitate mapping.

Local allergen information:

<table>
<thead>
<tr>
<th>HK Reg no.</th>
<th>Local code</th>
<th>Local description</th>
<th>HK Reg no.</th>
<th>HKCTT TermID</th>
<th>HKCTT Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>36031</td>
<td>DICL</td>
<td>DICLOFENAC SODIUM</td>
<td>36031</td>
<td>6000036</td>
<td>diclofenac sodium</td>
</tr>
<tr>
<td>42943</td>
<td>CEPH</td>
<td>CEPHALEXIN</td>
<td>42943</td>
<td>6005340</td>
<td>cefalexin</td>
</tr>
<tr>
<td>27421</td>
<td>AUGM</td>
<td>AUGMENTIN</td>
<td>27421</td>
<td>6007548</td>
<td>amoxicillin (as sodium) + clavulanate (as potassium)</td>
</tr>
</tbody>
</table>
It is essential for HCPs and developers to review and understand how MTT concepts are coded and their equivalencies to local terminologies in order to assist in choosing the correct MTT concept levels for local mapping. For more information about MTT, please refer to the Editorial Guide on Hong Kong Clinical Terminology Table – Drug.
11 IMPACT TO HEALTHCARE PROVIDER

For HCP who does not have any clinical information system and wishes to introduce technology to support clinical documentation, whether one will adopt the CMS On-ramp / Adaptation, or adopt a proprietary system, it is recommended that the HCP to adopt the HKCTT directly. This facilitates the HCP enjoys the benefits of standardisation, e.g. to be interoperable with the other HCPs and able to reuse the shared data, reduce implementation cost. For details, please refer back to ‘Section 4 Adoption of HKCTT.’

For HCP who already has a clinical information system and wishes to directly adopt the HKCTT, it is recommended that the HCP to discuss with eHRISO and the information technology colleagues on the implementation.

If the HCP is already capturing related data, e.g. diagnosis / procedure in the current system, then consideration should be made on whether migration of the existing patient data would be required. Data migration will facilitate there is a continuity in reviewing/retrieving the patient data. However, it must be well planned and resources must be assigned to support both business (such as workflow changes, preparation of mapping table) and technical (such as, system enhancement) migration. Strategy should be developed if data cannot be migrated fully. If mapping of local terminology to the HKCTT is required, then the HCP should ensure the quality of the mapped data. For details, please refer back to ‘Section 9 Guideline for mapping.’
Appendix A – Terms of use for the Hong Kong Clinical Terminology Table (HKCTT)

1. HKCTT is a standardised clinical terminology table which is developed with a view to supporting the share and access of information with the Electronic Health Record Sharing System (“eHRSS”) in the Hong Kong SAR.

2. HKCTT is a proprietary work. Besides works belonging to the Government and/or the Hospital Authority (“HA”)(“we” or “us”), HKCTT may also be mapped to and/or contain certain third party standards, classifications and terminologies (“Third Party Terminologies”) as described in the list below.

3. The list of Third Party Terminologies and the related notices or terms as may be applicable may change from time to time. Such changes will be posted on the website www.ehealth.gov.hk and/or included in a file contained within the relevant version of HKCTT, or made available in any other way as we may consider appropriate. You should check out for any such changes each time before you use HKCTT, and your continued use of HKCTT will mean you have consented to such changes.

4. Your use of Third Party Terminologies must comply with any applicable terms as may be imposed by such third parties such as subscribing or joining as their affiliates or members.

5. To the extent that HKCTT is embedded within or provided together with any computer programs or modules that are licensed to you by us, your use of HKCTT is subject to the terms applicable to such licenses in addition to these terms.

6. Unless you have obtained the prior written consent from us, you must use HKCTT only for your internal or personal purposes for the collection, compilation, analysis, research, mapping and/or reporting of clinical terminology data within the Hong Kong SAR, in relation to healthcare services (e.g. supporting clinical documentation, preparation for data for sharing with eHRSS, supporting interoperability of eHRSS), healthcare administration (e.g. data reporting, healthcare planning and evaluation, reimbursement) or healthcare development (e.g. teaching and research).

7. You must not, nor permit or procure any third party to, deal with any intellectual property in respect of HKCTT (including the names “Hong Kong Clinical Terminology Table” and “HKCTT”) in any form or manner, such as to reproduce, sell, distribute, make available, communicate, sub-license, adapt, modify, alter, reverse-engineer, create derivative work in relation to HKCTT or any part of it.
8. We do not warrant that HKCTT or any part of it:

(i) is up-to-date, error-free, accurate or complete or will achieve any results intended by you;

(ii) will be compatible with your IT systems, hardware and/or software;

(iii) will always be available or operate without interruption, error or virus infection.

9. You acknowledge and agree that any liability to you and/or your patients, partners, staff, agents or sub-contractors for any loss or damage suffered in relation to the use of HKCTT (other than death or personal injury resulting from negligence) is disclaimed by us to the fullest extent permissible by law. All conditions, warranties or other terms which might be implied by law, are excluded to the fullest extent permissible, including but not limited to, any implied warranties as to title, quality, fitness for purpose or the use of reasonable skill and care in respect of the design, creation, compilation or revision of HKCTT.

10. Any reference made to HKCTT shall, unless specified, include all its versions, updates and fixes (if any) that may be provided or made available to you from time to time. To enhance consistency with the standardised clinical terminologies, we encourage you to adopt the latest versions, updates and fixes of HKCTT available. Without prejudice to Clause 9, as from the date a new version, update or fix is provided or made available, whether or not you install or incorporate the same, we shall not be liable for any loss or damage howsoever caused from the continual use of any previous version or any version without our update or fix.

11. (a) Either party may terminate the use of HKCTT by giving to the other 30 days’ prior written notice.

(b) We may terminate your use of HKCTT immediately on written notice to you if:

(i) you are in breach of any of these terms (or any terms applicable to Third Party Terminologies or the computer programs or modules that are licensed to you by us) and fail to remedy the breach (if capable of remedy) within 14 days of the date of written notice from us informing you of the breach; or
(ii) you transfer your business or enter into partnership with others, or you suspend or cease, or threaten to cease, to carry on your business.

(c) When the use of HKCTT terminates:

(i) you must cease using HKCTT; and

(ii) you must follow the unwind procedures as instructed by us including removing all soft copies of HKCTT from your IT systems.

List of Third Party Terminologies

APPENDIX B – THE LICENSING ARRANGEMENT OF HKCTT – FOR DIFFERENT MODES OF ADOPTION

<table>
<thead>
<tr>
<th>Adoption mode of HKCTT</th>
<th>HKCTT (CMS Extension)</th>
<th>HKCTT (ELSA)</th>
<th>HKCTT (CORE)</th>
<th>HKCTT (Testing version)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Use</td>
<td>HCP using CMS Adaptation</td>
<td>HCP using CMS Onramp</td>
<td>HCP/vendor who is using her own clinical software but wish to use the HKCTT via own system</td>
<td>HCPs require access HKCTT Content only</td>
</tr>
<tr>
<td>Licences required</td>
<td>CMS Adaptation licence</td>
<td>CMS Onramp licence</td>
<td>ELSA and HKCTT licence</td>
<td>ELSA and HKCTT licence</td>
</tr>
<tr>
<td>Items included</td>
<td>• HKCTT content • Searching Service • Search Panel</td>
<td>• HKCTT content • Searching Service • Search Panel</td>
<td>• HKCTT content • Searching Service for diagnosis and procedure only</td>
<td>• HKCTT content</td>
</tr>
</tbody>
</table>
APPENDIX C – HKCTT SUBSCRIBER REGISTRATION FORM

To: eHR ISO Terminology Coordinator  Fax Number: 3919-2296

Hong Kong Clinical Terminology Table (HKCTT)  
Subscriber Registration Form 
(for non-eHR users)

1. Personal particulars

<table>
<thead>
<tr>
<th>Title</th>
<th>Surname in English</th>
<th>Given names in English</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Job Title / Position</th>
<th>Name of Institution</th>
<th>Contact Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Correspondence Address</th>
<th>Email Address</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Roles & responsibilities
The Contact Person has the following roles and responsibilities:
1. To act as the liaison between the institution and eHR ISO on HKCTT related matters;
2. To distribute materials/updates received from eHR ISO within HCP, and;
3. To submit HKCTT requests/recommendations to eHR ISO via email address enquiry@health.gov.hk.

Signature ___________ Date ___________

For Official Use Only

This registration application is ☐ Approved ☐ not approved, reason: ____________________________

Name of handling staff ___________

Signature of handling staff ___________

Date __________

(01/2016)
APPENDIX D – TIPS ON USING HKCTT

Target user: HKCTT users with adoption mode as HKCTT (CMS Extension) and HKCTT (ELSA)

HKCTT (CMS Extension) and HKCTT (ELSA) are designed to provide access to HKCTT content with terminology searching service and search panel. As such, the provided terminology service facilitates easy and efficient retrieval of HKCTT content to help users in finding the desired clinical term on the provided search panel.

This section provides guidelines and suggestions in performing searches of HKCTT terms with keywords on the use of both HKCTT Adoption modes mentioned.

1. To use the lead term of the search phrase for searching
   - i.e. ‘Chronic appendicitis’ → Search ‘appendicitis’ rather than ‘chronic’
   - i.e. ‘Excision of sebaceous cyst’ → Search ‘sebaceous cyst’ rather than ‘excision’

2. To use truncated words to expand scope of return set
   - i.e. Search ‘angio’ rather than ‘angiography’
   - i.e. Search ‘bac sprain’ rather than ‘back sprain injury’

3. To pause while typing to allow search function to retrieve HKCTT content simultaneously (This may minimise typing of the whole search term before finding a match)

4. To avoid using uncommon abbreviations or terms
   - i.e. p.e.c, PE FU, jpm

5. To exclude the following words when searching:
   - Prepositions (i.e. in, of, per, with)
   - Adjectives (i.e. acute/chronic, mild/moderate/severe, wide, simple, open/close)
6. To search with synonyms when the desired term is not found
   • i.e. ‘Ear syringing’ could also be known as ‘Irrigation of ear’

HCP are encouraged to submit requests for addition of new terms or alias when existing HKCTT does not have the desired term for use. For details, please refer to Section 8 Request Submission to eHRISO.
APPENDIX E – RECOGNISED TERMINOLOGY SUBSCRIPTION UPDATE WORKFLOW
(SNOMED CT as example)
APPENDIX F – REQUESTING UPDATES TO HKCTT

As introduced in Section 8, request submission on HKCTT to eHRISO can be made via the HKCTT Request Submission in eHR Portal. Information required for different requests as listed would be provided in this appendix:-

i. New concept request for Diagnosis/Procedure
ii. New concept for Laboratory test
iii. New concept for Organism
iv. New concept for Specimen
v. Concept amendment request for Diagnosis/Procedure
vi. Concept amendment for Laboratory test
vii. Concept amendment for Organism
viii. Concept amendment for Specimen
i. Information required for request of new concept—Diagnosis/Procedure

<table>
<thead>
<tr>
<th>Fields (*indicate mandatory)</th>
<th>Definition</th>
</tr>
</thead>
</table>
| Request Summary*              | • A brief summary of the request to be submitted. This is designed to facilitate searching of the request once it has been submitted. Max. 255 characters  
  • For example, “New concept for addition – SARS with atypical pneumonia” |
| Description*                  | • The description of the term to be submitted.  
  • For example, “Severe acute respiratory syndrome with atypical pneumonia”  
  • Uses of acronyms and abbreviations are not allowed. |
| Alias                         | • Any other descriptions/preferred names that would facilitate searching of the submitted term  
  • For example, “SARS - atypical pneumonia” |
| Request details and reference information* | • Any free text information that provides more details on the term to facilitate processing of the request. In case of acronyms or abbreviations being used, full descriptions must be provided together to avoid ambiguity or misinterpretation. Some examples have been provided: |
|                               | **Diagnosis**  
  ▪ Nature of condition (inflammation, infarct, neoplasm, injury, …)  
  ▪ Body system or site (circulatory, respiratory, digestive, nervous, …)  
  ▪ Cause (genetic, congenital, organism, drug, trauma, post – surgery, …)  
  ▪ Onset & course (acute, chronic, intermittent, …)  
|                               | **Procedure**  
  ▪ Nature of procedure (opening, destruction, removal, fixation, imaging, …)  
  ▪ Route & Approach (open, close, percutaneous, …)  
  ▪ Devices & materials (endoscope, catheter, stent, laser, graft, prosthesis, …) |
ii. Information required for request of new concept—Laboratory test

<table>
<thead>
<tr>
<th>Fields (*indicate mandatory)</th>
<th>Definition</th>
</tr>
</thead>
</table>
| **Request Summary***         | • A brief summary of the request to be submitted, including the purpose of the test, reason or background information to support the submission. Max. 255 characters.  
• For example, “HBV DNA quantitation test for drug monitoring” |
| **Description***             | • The description of the test term to be submitted.  
• Abbreviation should be provided within bracket together with fully-spelled description.  
• For example, Hepatitis B virus (HBV) |
| **Alias**                    | • Any other preferred names/keywords/abbreviations that would facilitate searching of the submitted term  
• For example, “Hepatitis B virus surface antigen”, “HepB surface Ag”, “Hepatitis virus serology”, “HBsAg” |
| **Test Category***           | • The kind of laboratory in which this test will be performed in.  
• For example, “Clinical pathology laboratory”, “Haematology laboratory”, “General laboratory” |
| **Reported Result Example*** | • An example of how the test result being shown in the report. |
| **Reference Detail & Reference Information*** | • The design/methodology/procedure of the test, result interpretation or commercial kit information if any. |
| **Component***               | • Name of the substance measured.  
• For example, “Glucose”, “HBV antibody”, “HBV DNA” |
| **Property**                 | • The characteristic or attribute of the analyte that is measured, evaluated or observed.  
• For example,” mass concentration”, “enzyme activity”, “mass ratio”, “time”, “substance rate”, “titre” |
| **Time Aspect**              | • A measurement may be taken at a moment in time or measured over a specified time interval  
• For example: “spot”, “30 minutes”, “24 hour” |
| **Specimen**                 | • Type of specimen being tested  
• For example, “serum” for clotted blood, “plasma” for EDTA blood, “body fluid” |
| **Scale**                    | • Scale of measurement used for the test result.  
• For example, “quantitative”, “qualitative”, “text description”, “ranking (1+…3+, negative…. strong positive)” |
| **Method**                   | • Test method for producing result  
• For example, “ELISA”, “staining method”,” latex”, “immunofluorescence”, “PCR”, “electrophoresis”, “chromatography” |
iii. Information required for request of new concept—Organism

<table>
<thead>
<tr>
<th>Fields (*indicate mandatory)</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Request Summary*</td>
<td>• A brief summary of the request to be submitted. The reason or background information to support the submission. Max. 255 characters</td>
</tr>
<tr>
<td>Description*</td>
<td>• The description of the organism term to be submitted. Use of acronyms and abbreviations are not allowed.</td>
</tr>
</tbody>
</table>
| Alias                       | • Any other preferred names/descriptions that would facilitate searching of the submitted term  
  • For example, “Streptococcus, group D”, “Streptococcus Lancefield group D”, “group D streptococcus” |
| Request Details & Reference Information* | • Description of organism (structure, growth condition, biochemical activity…)  
  • Description of its genus (taxonomy…) |

iv. Information required for request of new concept—Specimen

<table>
<thead>
<tr>
<th>Fields (*indicate mandatory)</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Request Summary*</td>
<td>• A brief summary of the request to be submitted. The background information to support the submission. Max. 255 characters</td>
</tr>
<tr>
<td>Description*</td>
<td>• The description of the term to be submitted. Use of acronyms and abbreviations are not allowed</td>
</tr>
</tbody>
</table>
| Alias                       | • Any other names/keywords/abbreviations that would facilitate searching of the submitted term  
  • For example, “skeletal muscle specimen”, “specimen from striated muscle” |
| Request Details & Reference Information* | • Any free text information that provides more details on the term to facilitate processing of the request.  
  ▪ Specimen source (body structure, morphologically abnormal structure…)  
  ▪ Laterality (left, right)  
  ▪ Specimen type (biopsy, swab, fluid…)  
  ▪ Sampling procedure (taking from surgical site…)  
  ▪ Device & material (catheter, stent…) |
v. Information required for request of concept amendment– Diagnosis/Procedure

<table>
<thead>
<tr>
<th>Fields (*indicate mandatory)</th>
<th>Definition</th>
</tr>
</thead>
</table>
| Request Summary*             | • A brief summary of the request to be submitted. This is designed to facilitate searching of the request once it has been submitted. Max. 255 characters  
• For example, “Amend concept description – Screening for SARS” |
| Request details and reference information* | • Any free text information that provides more details on the concept amendment request to facilitate processing. In case of acronyms or abbreviations being used, full descriptions must be provided together to avoid ambiguity or misinterpretation. |

vi. Information required for request of concept amendment – Laboratory test

<table>
<thead>
<tr>
<th>Fields (*indicate mandatory)</th>
<th>Definition</th>
</tr>
</thead>
</table>
| Request Summary*             | • A brief summary of the request to be submitted. This is designed to facilitate searching of the request once it has been submitted. Max. 255 characters  
• For example, “Amend LOINC concept mapping: HBV DNA viral load test”, “Add alias: HBV DNA viral load test” |
| Reference Detail & Reference Information* | • Free text information to support and describe the amendment. The information provided can facilitate the request review processing. |
| LOINC                       | • LOINC concept search function for amendment related to LOINC concept mapping. It is designed to facilitate requester to provide concept information to eHRISO for reference. |
vii. Information required for request of concept amendment – Organism

<table>
<thead>
<tr>
<th>Fields (*indicate mandatory)</th>
<th>Definition</th>
</tr>
</thead>
</table>
| **Request Summary**                                  | • A brief summary of the request to be submitted. This is designed to facilitate searching of the request once it has been submitted. Max. 255 characters  
|                                                       | • For example, “Add alias: Pseudomonas putida”                              |
| **Request Details & Reference Information**           | • Free text information to support and describe the amendment. The information provided can facilitate the request review processing.  
|                                                       | • For example, “Add alias: Arthrobacter siderocapsulatus”                   |
| **SNOMED CT**                                        | • SNOMED CT concept search function for amendment related to SNOMED CT concept mapping. It is designed to facilitate requester to provide concept information to eHRISO for reference. |

viii. Information required for request of concept amendment – Specimen

<table>
<thead>
<tr>
<th>Fields (*indicate mandatory)</th>
<th>Definition</th>
</tr>
</thead>
</table>
| **Request Summary**                                  | • A brief summary of the request to be submitted. This is designed to facilitate searching of the request once it has been submitted. Max. 255 characters  
|                                                       | • For example, “Add alias: Peritoneal dialysate sample”                     |
| **Request Details & Reference Information**           | • Free text information to support and describe the amendment. The information provided can facilitate the request review processing.  
|                                                       | • For example, “Add alias: returned peritoneal lavage fluid”               |
| **SNOMED CT**                                        | • SNOMED CT concept search function for amendment related to SNOMED CT concept mapping. It is designed to facilitate requester to provide concept information to eHRISO for reference. |
APPENDIX G – REQUEST SUBMISSION WORKFLOW

As introduced in section 8, request submission on HKCTT to eHRISO can be made via the HKCTT Request Submission in eHR Portal. Workflow of the request handling is shown below.
APPENDIX H – DISCLAIMER FOR MAPPING ADVICE

“The information provided to you in this document by the Hospital Authority ("HA") as technical agency of the Hong Kong SAR Government’s ("Government") electronic health record sharing system is for general reference and information purposes only, and is not intended to provide advice, opinion or services of any kind to you or to any other individual. HA/the Government make no representation or warranty concerning the information and disclaim, to the fullest extent permitted by law, any warranties, express or implied, of any kind or nature whatsoever including without limitation, that the information is accurate, complete, reliable, timely or suitable for any particular purpose. In no event shall HA/the Government, their officers, directors and employees be liable for any damages, claims, demands or causes of action, direct or indirect, incidental or consequential, as a result of your use or reliance of the information. Any reliance on the information is solely at your own risk.”
REFERENCES

