

# eHealth+ eMedication

醫健通電子藥物數據連接: 系統保安預備和  
啓動藥物下載進階操作分享

24 Apr 2025

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# 醫健通電子藥物數據連接：交流會系列

## 醫健通 e+藥物 計劃簡介會

日期：二〇二四年三月廿五日

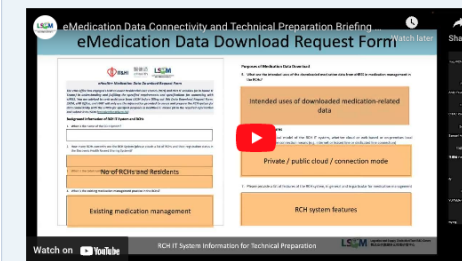
地點：香港科學園

主辦：醫務衛生局、醫院管理局、物流及供應鏈多元技術研發中心



15-Aug-2024

### eMedication Data Connectivity and Technical Briefing Session



On the 15th August 2024, we have successfully organised a **Data Connectivity and Technical Briefing Session** aims to empower participants with the knowledge and skills necessary to implement the eHealth Medication Data Standards, and obtain medication data through a system interface connected with eHealth. The session has attracted over 90 attendees, covering most RCH IT partners.

Objectives for the session is to facilitate RCH IT vendor/team understanding of the data and technical preparation and pre-requisites for obtaining data from eHealth. Also to facilitate RCH IT and clinical team to interpret the data obtained from eHealth correctly and to identify system changes that may be required in the RCH system to present correctly and use the data obtained from eHealth.

[Download the presentation materials](#)

16-Aug-2024

### eMedication Administrative Preparation Briefing Session



On the 16th August 2024, we have organised an **Administrative Preparation Briefing Session** which aims to share with Residential Care Homes the steps-by-steps processes of registering eHealth for their residents and other administrative processes essential for obtaining medication data from eHealth. The session has successfully attracted over 280 RCH representatives and IT partners, yielding a fruitful result.

[Download the presentation materials](#)

## Previous Briefing Sessions

1. Kick-off Meeting for eMedication 25 Mar 2024
2. Technical and Data Preparation 15 Aug 2024
3. Administrative Preparation 16 Aug 2024
4. IT Security Preparation 30 Sep 2024
5. Data and Technical Preparation (Advanced) and iAm Smart Authentication 4 Oct 2024
6. eMedication Security Penetration Test Preparation 14 Nov 2024
7. 配合醫健通藥物下載：院舍電腦系統資料和版面設計建議和分享 20 Dec 2024
8. 醫健通電子藥物數據連接：系統保安預備和啟動藥物下載進階操作分享 24 Apr 2024

Steps-by-Steps Procedures

<https://emedication.lscm.hk/en/index.html>



Logistics and Supply Chain MultiTech R&D Centre  
物流及供應鏈多元技術研發中心

# 「醫健通電子藥物數據連接」：系統保安預備 和啓動藥物下載進階操作分享

1. 系統安全測試 (Penetration Test) 流程, 常見問題及解決方案
2. 下載資料最佳使用方法 (Mapping rules and Presentation)
3. 藥物資訊下載環境設定準備 (Production Set Up)
4. 藥物資訊下載規則與流程 (Downloading Rules and Logistics)
5. 常見下載問題與問題排障 (Issues on Downloading)

# 系統安全測試 Penetration Test

範圍和流程 (Scope and Logistics)

# 系統安全測試目的

- Identify threats of the information assets;
- Identify vulnerabilities such as the logic of the firewall security policy setting, time bomb and backdoor coded in programs that may be difficult or impossible to detect with automated network or application vulnerability scanning software;
- Test and validate the efficiency of security protection and controls;
- Test the defensive ability to detect and respond to attacks;
- Evaluate the effectiveness of network security devices such as firewalls and routers; and
- Demonstrate the ability of the system in guarding against real-world cyberattack.

# 系統安全測試範圍

## 1. Network e.g.

- Is network access control configured properly through the firewall?
- Are unnecessary network services exposed to Internet users?

## 2. Server e.g.

- Is appropriate access configured? Or server can be trivially accessed?
- Is the server effectively patched against vulnerabilities?

## 3. Application e.g.

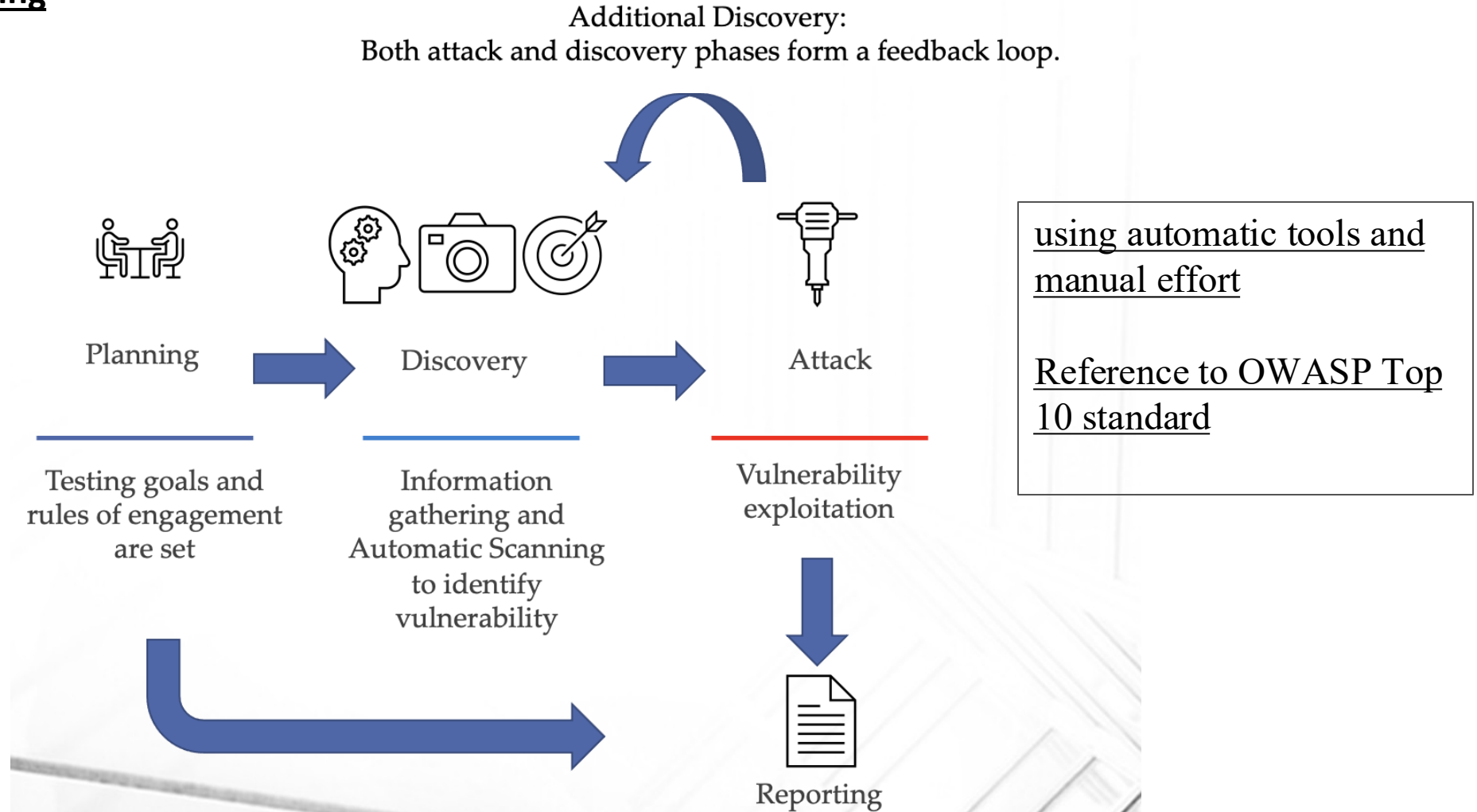
- Is role-based access available and based on the minimal access needed by that role?
- Is password protection sufficiently effective?
- Has application been coded to prevent malicious code injection e.g. SQL injection, Cross Site scripting attacked?
- Is the application using vulnerable third-party software?

# 系統安全測試前預備

1. Please describe the major functions of the web application.
2. What web technologies are used for the frontend and backend?
3. Will the test be conducted on the production or testing site? [Recommend testing site]
4. What is the URL of the web application to be tested?
5. How many user roles are there? [Recommend 1 admin and 1 regular user]
6. Where is the web application hosted? [Cloud, which vendor? Local, What OS?]
7. Is the web application protected by a WAF (Web Application Firewall)? [Recommend whitelisting the tester's IP during the assessment]
8. Are there any concerns regarding scanning or testing hours?
9. Are there any other special arrangement needs regarding the PT?

# 系統安全測試流程

## Phases of Penetration Testing



# 專業系統安全測試

## Penetration Tester's certifications



Offensive Security Certified Professional



Offensive Security Wireless Professional



eLearnSecurity Certified Penetration Tester eXtreme



CWL Red Team Analyst



Altered Security Certified Red Team Professional



Certified Information System Security Professional



Certified Information Systems Auditor



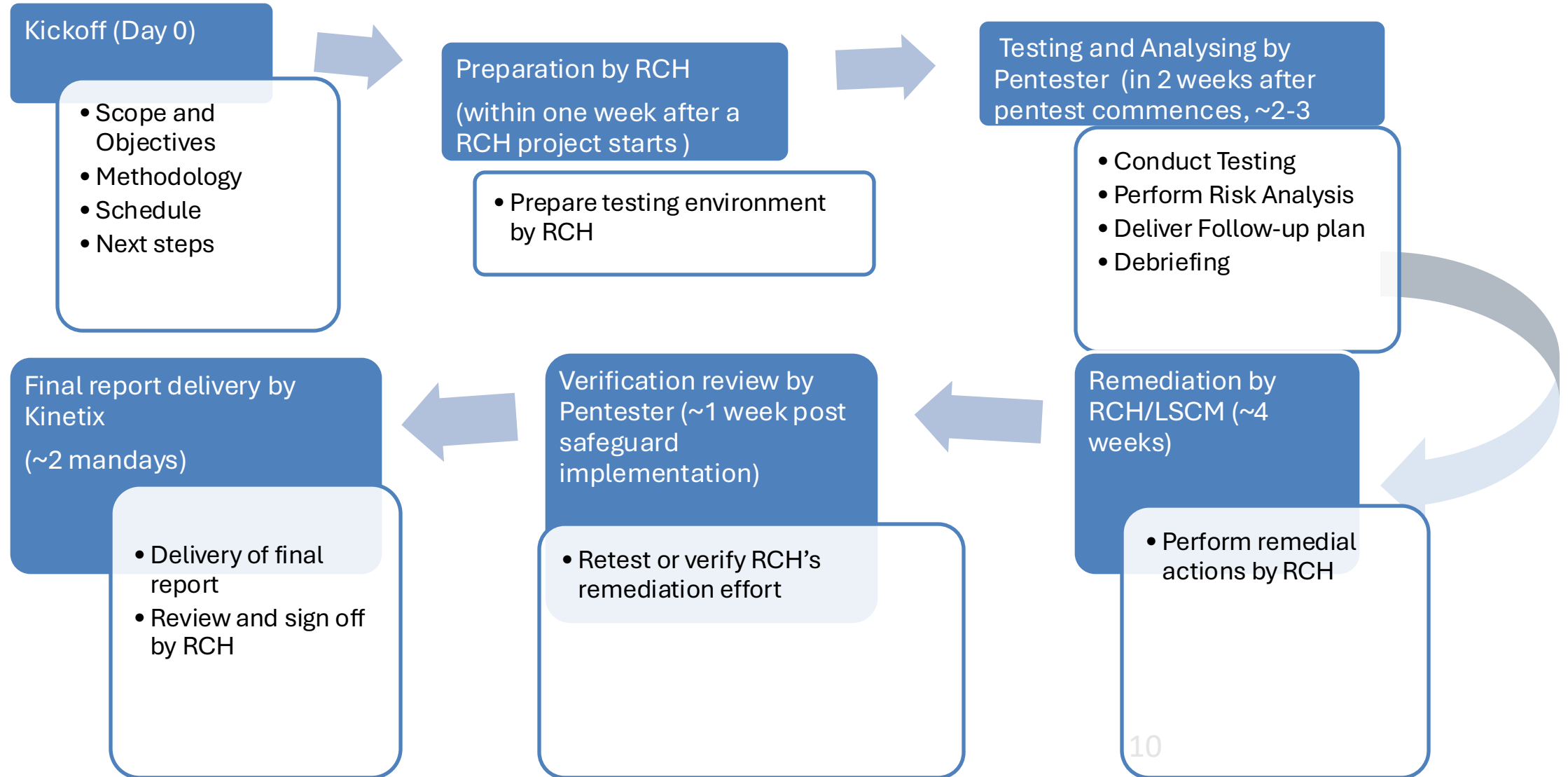
AWS Certified Security Specialty



Certificate of Cloud Security Knowledge v.4

# 系統安全測試流程

## A Typical Project Plan



# 系統安全測試流程

## Project Deliverables

1. A project plan
2. A follow up plan (with issue descriptions and recommendations)
3. A Presentation of the findings
4. A Penetration Testing Report

# 系統安全測試

## Penetration Test

常見問題及解決方案

Common Issues and Resolutions

# 系統安全測試 (Penetration Test) 流程，常見問題及解決方案

- Potential Security Risks of Web Application
  - Broken Access Control
  - Cryptographic Failures
  - Injection
  - Insecure Design
  - Security Misconfiguration
  - Vulnerable and Outdated Components
  - Identification and Authentication Failures
  - Software and Data Integrity Failures
  - Security Logging and Monitoring Failures
  - Server-Side Request Forgery

# Broken Access Control

**Issue:** Access control on user and public

**Risk:** High

**Identify method:**

1. Check if the system has proper role-based access control
2. Check if the access control can be bypassed by modifying the URL (i.e., `http://your-domain.com/images/patient1.jpg`)

**Prevention recommendations:**

1. Apply a role-based access control to enforce the restriction on data access and feature access
2. Avoid exposing URL access to the public, applying path redirects, and/or using encoding like base64 while transferring file previews.
3. Disable web server directory listing and ensure file metadata (e.g., `.git`) and backup files are not present within web roots.
4. Rate limit API and controller access to minimize the harm from automated attack tooling.

# Cryptographic Failures

**Issue:** Enable and limit to HTTPS security network connection

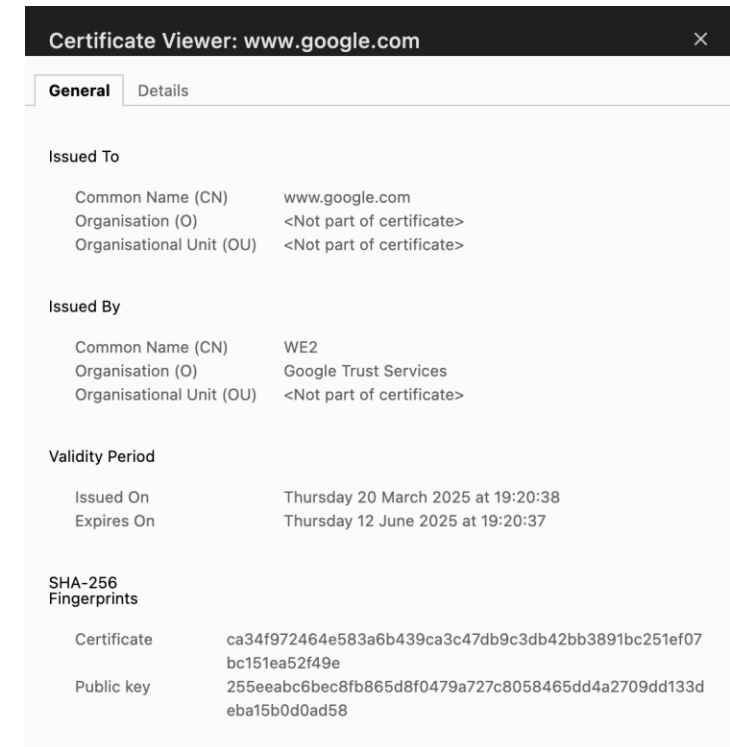
**Risk:** High

## Identify method:

1. Check if the systems are accessible by using HTTP protocol
  1. Using browser *http://your-domain.com*
  2. Using *curl* command (e.g. *curl -I http://your-domain.com*)
  3. Using *telnet* command (e.g. *telnet your-domain.com 80*)
2. Check the availability of SSL certificate using the certificate viewer in web browser

## Prevention recommendations:

1. In server setup, redirect port 80 inbound connection to HTTPS
2. Apply a valid SSL certificate from a trusted Certificate Authority (CA)



Certificate Viewer: www.google.com

General Details

**Issued To**

Common Name (CN)	www.google.com
Organisation (O)	<Not part of certificate>
Organisational Unit (OU)	<Not part of certificate>

**Issued By**

Common Name (CN)	WE2
Organisation (O)	Google Trust Services
Organisational Unit (OU)	<Not part of certificate>

**Validity Period**

Issued On	Thursday 20 March 2025 at 19:20:38
Expires On	Thursday 12 June 2025 at 19:20:37

**SHA-256 Fingerprints**

Certificate	ca34f972464e583a6b439ca3c47db9c3db42bb3891bc251ef07bc151ea52f49e
Public key	255eeabc6bec8fb865d8f0479a727c8058465dd4a2709dd133deba15b0d0ad58

# Injection

**Issue:** SQL / programming language injection

**Risk:** High

**Identify method:**

1. Check if the system has proper validation on user-supplied data
2. Check if the system has been implemented context-aware escaping to avoid dynamic queries or non-parameterized calls

**Prevention recommendations:**

1. Use LIMIT and other SQL controls within queries to prevent mass disclosure of records in case of SQL injection.
2. Apply server-side input validation to prevent unexpected input from client-side or user input
3. Implement context-aware escaping logic such as replacing "<", ">" to "&lt;", "&gt;"
4. Apply additional logical checking to reject specific input that contains any conceivable code metacharacters (i.e. `ls -la`, `sleep(200)`)

# Security Misconfiguration

**Issue:** Lack of access control to the file system

**Risk:** Critical

**Identify method:**

1. Check the access and permission

Linux	Window
Using list( <i>ls</i> ) command	Using directory( <i>dir</i> ) command
Check if assign minimized permission to the system directory	

2. Check if the directory listing is disabled in the server config

i. For Apache

```
<Directory /var/www/mysite>
    Options -Indexes FollowSymLinks
</Directory>
```

ii. For Nginx

```
location /somedirectory/ {
    autoindex off;
}
```

# Security Misconfiguration (cont.)

## Prevention recommendations:

1. Assign minimized permission to the system directory
  - i. For example:

Owner	Group	Other
Read & Write	Read Only	Read Only

2. Check if the directory listing is disabled by using browser access

## Index of /assets/css/bootstrap

<u>Name</u>	<u>Last modified</u>	<u>Size</u>	<u>Description</u>
 <a href="#">Parent Directory</a>		-	
 <a href="#">bootstrap-cerulean.min.css</a>	08-Nov-2012 17:45	111K	
 <a href="#">bootstrap.css</a>	07-Nov-2012 06:03	131K	

# Vulnerable And Outdated Components

**Risk:** High

## Identify method:

1. Check the installed package version
  - i. For Ubuntu, use *apt show package-name*
  - ii. For Windows, use *Get-Package*
2. Check the coding library version
3. Verify if the installed package is end of service or has Common Vulnerabilities and Exposures(CVE)
  - i. For the package's end-of-life period, refer to the package's official website or `endoflife.date`
  - ii. For CVE, refer to `www.cvedetails.com`

## Prevention recommendations:

1. Identify the outdated package and update to the latest version if possible
2. Disable features that may trigger CVE

# Identification and Authentication Failures

**Issue:** Permits brute force or other automated attacks

**Risk:** High

**Identify method:**

1. Check if the system has a rate-limiting setup
2. Check if the system has captcha functionality

**Prevention recommendations:**

1. Implement rate limiting
2. Limit or increasingly delay failed login attempts
3. Implement captcha functionality such as Google re-captcha

# Identification and Authentication Failures

**Issue:** Exposes session identifier in the URL

**Risk:** High

**Identify method:**

1. Check if the system has an exposure on the session identifier such as the session token

**Prevention recommendations:**

1. Use a server-side, secure, built-in session manager that generates a new random session ID.
2. Session identifier should not be in the URL, be securely stored, and be invalidated after logout.

# Identification and Authentication Failures

**Issue:** Weak Password Policy

**Risk:** High

**Identify method:**

1. Check if the system has a strong password policy

Controls	Settings
Complexity and Length	<ul style="list-style-type: none"><li>• At least eight characters with mixed-case alphabetic characters, numerals and special characters, or</li><li>• At least ten characters with combinations of mixed-case alphabetic characters and either numerals or special characters.</li></ul>
Password history	Eight passwords remembered
Account lockout	After five invalid logon attempts
Regular password change	Every three months to six months

**Prevention recommendations:**

1. Restricting the password pattern, such as avoiding the username the same as the password
2. Implement multi-factor authentication to reduce the risk of account takeovers

# Security Logging and Monitoring Failures

**Risk:** High

## **Identify method:**

1. Verify if system has sufficient logging, detection, monitoring, and active response occurs any time with the following:
2. Auditable events, such as logins, failed logins, and high-value transactions, are logged.
3. Warnings and errors generate no, adequate, and clear log messages.
4. Logs of applications and APIs are monitored for suspicious activity.

## **Prevention recommendations:**

1. Ensure all login, access control, and server-side input validation failures can be logged with sufficient user context to identify suspicious or malicious accounts and held for enough time to allow delayed forensic analysis.
2. Ensure that logs are generated in a format that log management solutions can easily consume.
3. Ensure log data is encoded correctly to prevent injections or attacks on the logging or monitoring systems.

預備下載

# Preparation for Data Downloading

最後準備和安排

Final Wrap Up and Moving Ahead

## Step-by-Step Preparation for eMedication Data Connectivity

4 Steps for requesting and preparing for eHR medication data connectivity from eHealth

Step

# 1



### Submit Request

Download and fill in the [eHealth+ Medication Data Download Request Form](#) and submit it to LSCM ([emedication@lscm.hk](mailto:emedication@lscm.hk)).

[Learn more >](#)

Step

# 2



### Administrative Preparation

Follow the guidance to register eHealth and devise relevant internal guidelines and policies for using data obtained from eHealth.

[Learn more >](#)

Step

# 3



### Technical Preparation

Undergo technical and data preparation for Electronic Medical Record System (eMRs) for system interfacing and data connectivity with eHealth.

[Learn more >](#)

Step

# 4



### Testing and Approval

Test and certify eMRs as capable of connecting with eHealth.

[Learn more >](#)

# 院舍登記醫健通

## 如何登記






概覽 如何登記 技術要求 eHealth Pro 資源 支援

分享 列印

透過簡單步驟，醫護機構即可完成醫健通登記，費用全免。

### 填寫表格及準備文件

#### 閱讀下列文件

- 登記醫健通的注意事項 (只有英文版)
- 醫護機構指南 
- 電子健康紀錄通訊組件及香港臨床醫療術語表特許協議 
- 使用電子健康紀錄安全連接電子證書的條款 (只有英文版)
- 醫護機構登記醫健通的條件
- 私家醫院  (只有英文版) / 非私家醫院 
- 使用電子健康紀錄作醫護用途的實務守則
- 收集個人資料聲明 (PDF版本 ) (只有英文版)



#### 按醫護機構類別，準備有效的證明文件

[網上遞交申請 \(只有英文版\)](#)



#### 查詢申請狀況、遞交補充文件或下載電子健康紀錄安全連接電子證書

[登入](#)



### 只需5個簡單步驟完成申請



步驟1  
提供醫護機構資料



步驟2  
提供醫護機構用戶資料



步驟3  
提供醫護服務地點資料



步驟4  
上傳證明文件



步驟5  
查看並遞交申請

[登記參加醫健通](#)

# 電子健康紀錄申請及諮詢中心



院舍熱線

3919 2455



醫護接受者查詢熱線

3467 6300



醫護人員查詢熱線

3467 6230



傳真

3467 6099



電郵

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



網頁

[www.ehealth.gov.hk](http://www.ehealth.gov.hk)



地址

九龍灣臨澤街8號啟匯11樓1102室  
電子健康紀錄申請及諮詢中心

# 院舍行政準備資源

## 醫健通電子藥物數據連接計劃

物流及供應鏈多元技術研發中心 (LSCM) 和政府醫管局醫健通辦公室合作協助院舍參加「醫健通電子藥物數據連接計劃」。詳情可以查閱 LSCM 網站 (<https://emedication.lscm.hk/te/index.html>)

我們誠邀 貴院舍參加此計劃，讓 貴院舍使用醫健通時及準確的藥物數據來提升院舍為院友提供和藥物相關的醫療服務安全、效率和質素。

參加方法非常簡單、且費用全免。惟 貴院舍必須先登記醫健通及獲得院友的互通同意使用院友的醫健通健康紀錄包括藥物資料，詳情如下：

### 一、登記醫健通

1. 如 貴院舍尚未登記醫健通，歡迎 貴院舍登記參加。貴院舍可以查閱登記手續及填寫網上申請表格遞交申請 (<https://www.ehealth.gov.hk/te/healthcare-provider-and-professional/how-to-register/index.html>) 登記方法可參閱附件一。
2. 貴院舍亦可以電郵 ([shr@sehealth.gov.hk](mailto:shr@sehealth.gov.hk)) 或致電(3467.6230) 電子健康紀錄申請及諮詢中心查詢登記事宜。
3. 電子健康紀錄申請及諮詢中心會聯絡 貴院舍完成申請批核及安排技術安裝事宜。

### 二、核對院友是否已登記醫健通及給予 貴院舍互通同意

1. 如 貴院舍已經參加醫健通，在系統內 貴院舍的帳戶管理人員戶口 (User Administrator) 可以透過醫健通系統下載已經參加醫健通並已經給予 貴院舍互通同意的院友名單。下載方法可參閱附件二。
2. 如欲查詢哪位職員為 貴院舍的帳戶管理人員(User Administrator) 或開設額外戶口可致電電子健康紀錄申請及諮詢中心。

### 三、為每位院友登記醫健通及取得互通同意

貴院舍可以透過醫健通「All in One 功能」為已經核實未登記醫健通或未給予互通同意 貴院舍之院友完成登記及給予互通同意。使用方法及常見問題可參閱附件三和附件四。

### 四、鼓勵院友參加醫健通

為鼓勵院友或家人參加醫健通或支持 貴院舍使用醫健通治療為院友提供更全面的照顧，LSCM 製作了一份醫健通和電子藥物計劃的海報及宣傳單張，可供院舍張貼和派發，如有興趣可聯絡 LSCM 安排：電郵 ([emedication@lscm.hk](mailto:emedication@lscm.hk))，貴院舍亦可使用電子版本 (見附件五) 自行印製或加印。

## 醫健通電子藥物計劃-行政準備指南

附件一：登記醫健通方法

附件二：核對院友是否已登記醫健通及給予互通同意方法

附件三：為每位院友登記參加醫健通及給予互通同意方法

附件四：院舍常見問題

附件五：電子藥物計劃海報

附件六：電子藥物計劃宣傳單張

附件七：由醫護提供者擔任代決人聲明

附件八：登記同意書

附件九：互通同意書

附件十：院舍資訊系統保安與私隱參考指引

附件十一：醫健通使用者帳戶管理

[下載行政準備指南](#)

## 院舍資訊系統保安與私隱參考指引

二零二四年十二月三十一日



院舍資訊系統用戶保安與私隱指引

1

[下載保安與私隱參考指引](#)

醫健通 eHealth LSCM Logistics and Supply Chain Health & R&D Centre 物流及供應鏈多元技術研發中心

## 提升院舍藥物安全 + 參與電子藥物計劃

Enhance Medication Safety at Residential Care Homes Participate eMedication Programme

加入醫健通+實現卓越健康管理 Join the eHealth+ for Quality Health Management

### 計劃好處 Benefits

參與醫健通 e+ 藥物可以讓院舍取閱院友的完整健康紀錄，並獲取處方和配藥數據，這有助於提升：

Participating in eHealth eMedication enables Residential Care Home access to residents' comprehensive health records and obtain medication prescribing and dispensing data, fostering improvements in:

- 護理質量 Quality of Care
- 與醫護人員的溝通 Communication with healthcare professionals
- 服務效率 Care efficiency
- 藥物安全 Medical safety

### 如何參加? How to participate?

本院舍正在籌備參加醫健通+電子藥物計劃，讓我們能夠為您提供更加個人化和有效的護理。請聯絡本院職員檢查你是否已參加醫健通 並已給予本院 互通同意 並安排有關手續。

Our Residential Care Home is enrolling in the eMedication programme, enabling us to provide you with more personalised and effective care. Please contact our staff to check if you have registered eHealth and given sharing consent to our Residential Care Home.

### 對計劃有任何疑問? Any Enquiry?

如果您對此計劃有任何疑問或疑慮或不願意參加，請隨時與我們的工作人員聯繫。

If you have any questions or concerns or are unwilling to participate in this programme, please don't hesitate to contact our staff.

有關醫健通的詳情，請瀏覽 [www.ehealth.gov.hk](http://www.ehealth.gov.hk)  
For more information about eHealth, please visit [www.ehealth.gov.hk](http://www.ehealth.gov.hk)

有關電子藥物數據連接的詳情，請瀏覽 <https://emedication.lscm.hk/te/index.html>  
For more information about eMedication Data Connectivity, please visit <https://emedication.lscm.hk/te/index.html>

[下載海報](#)

[下載宣傳單張](#)



# 保安與私隱參考指引

## [下載保安與私隱參考指引](#)

### 院舍資訊系統保安與私隱參考指引

二零二四年十二月三十一日



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## 目的與範圍

### 1. 目的

物流及供應鏈多元技術研發中心(LSCM)受醫務衛生局委託，並與醫院管理局醫療訊息和資訊科技部門合作，促進院舍系統數據連接醫健通。為提升院舍系統使用者對系統保安和保障私隱的認識並符合連接醫健通要求 LSCM 製作了本參考指引。本指引乃根據數字政策辦公室<sup>1</sup>及個人資料私隱專員公署<sup>2</sup>的指引而編制，目的供院舍機構參考，制定院舍內部使用系統時有關保安及保障個人資料的安全措施。本指引提供可參考的基本原則和行事方法，院舍機構可以根據實質需要及運作情況利用本指引的內容來制定適合的相關內部指引，協助員工更容易了解及執行相關要求確保安全使用院舍資訊系統和保障院友<sup>3</sup>的個人資料私隱。這樣亦配合社會福利處向安老院舍<sup>4</sup>和殘疾人仕院舍<sup>5</sup>發出的實務守則中的建議 – 院舍應制定內部指引規範員工查閱院友個人資料和推行保障保障私隱應採取的措施。

本指引目的提供清晰及實用的指引，以：

- 1.1. 保護院友的敏感資料。
- 1.2. 符合法律及監管要求。
- 1.3. 防止未經授權的存取或濫用系統資料。

## Step-by-Step Preparation for eMedication Data Connectivity

4 Steps for requesting and preparing for eHR medication data connectivity from eHealth

Step

# 1



### Submit Request

Download and fill in the **eHealth+ Medication Data Download Request Form** and submit it to LSCM ([emedication@lscm.hk](mailto:emedication@lscm.hk)).

[Learn more >](#)

Step

# 2



### Administrative Preparation

Follow the guidance to register eHealth and devise relevant internal guidelines and policies for using data obtained from eHealth.

[Learn more >](#)

Step

# 3



### Technical Preparation

Undergo technical and data preparation for Electronic Medical Record System (eMRs) for system interfacing and data connectivity with eHealth.

[Learn more >](#)

Step

# 4



### Testing and Approval

Test and certify eMRs as capable of connecting with eHealth.

[Learn more >](#)



## Step-by-Step Preparation for eMedication Data Connectivity

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Step

# 1



### Submit Request

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### Administrative Preparation

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[Learn more >](#)

Step

# 3



### Technical Preparation

Undergo technical and data preparation for Electronic Medical Record System (eMRs) for system interfacing and data connectivity with eHealth.

[Learn more >](#)

Step

# 4



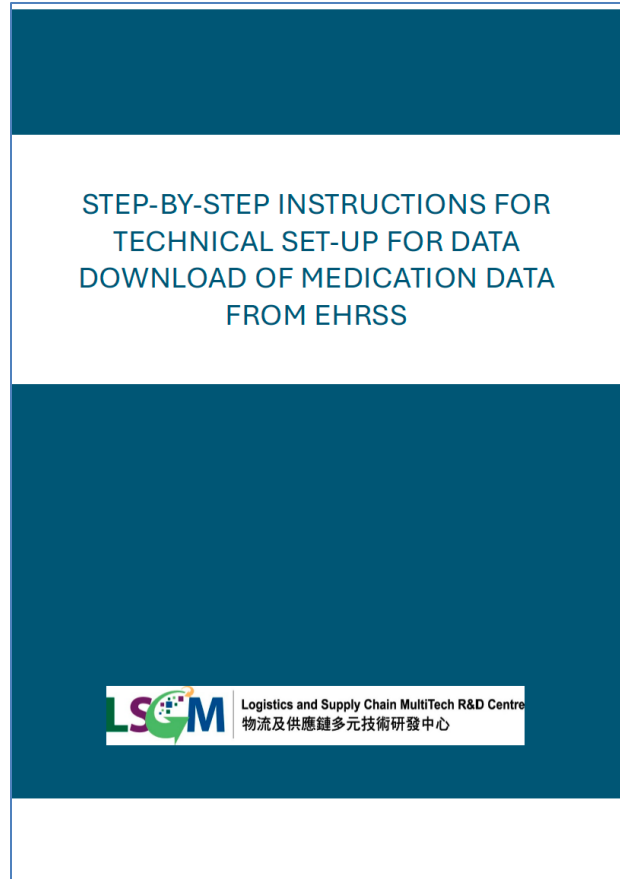
### Testing and Approval

Test and certify eMRs as capable of connecting with eHealth.

[Learn more >](#)

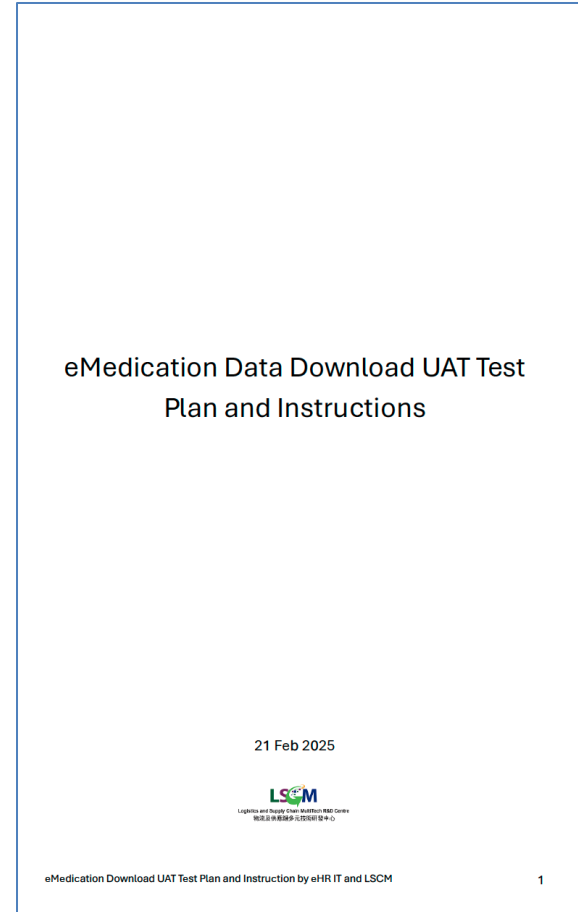
# User Acceptance Test Preparation 測試準備

## Testing Step-up



[https://emedication.lscm.hk/assets/eMedication\\_Step-by-Step-Instructions-for-Technical-Set-up-for-Data-Download-of-Medication-Data-from-eHRSS\\_v10dec.pdf](https://emedication.lscm.hk/assets/eMedication_Step-by-Step-Instructions-for-Technical-Set-up-for-Data-Download-of-Medication-Data-from-eHRSS_v10dec.pdf)

## UAT Test Plan



[https://emedication.lscm.hk/assets/User\\_Acceptance\\_Test\\_Plan\\_21\\_Feb\\_2025.pdf](https://emedication.lscm.hk/assets/User_Acceptance_Test_Plan_21_Feb_2025.pdf)

### UAT Testing Instructions:

Please initiate medication downloading requests from your system to eHRSS testing environment for the following patients' records from the UAT period scheduled to your system **DDMMYYYY 09:00 to 27 DDMMYYYY 23:59**

#### Test Case 1 (Patient A)

Surname of patient	PATIENT
Given name of patient	ORANGE
HKID Number	P541537(7)
eHR HCR ID Number	100757156653
Date of Birth	01 Jan 1935
Gender	M
Date of Follow up	4 Feb 2025
Types of records	Dispensing Records

#### Test Case 2 (Patient B)

Name of patient	PATIENT
Given name of patient	BLUE
HKID Number	D325442(A)
eHR HCR ID Number	259043931207
Date of Birth	01 Jan 1935
Gender	M
Date of Follow up	3 Feb 2025
Types of records	Dispensing Records

Name of patient	PATIENT
Given name of patient	BLUE
HKID Number	D325442(A)
eHR HCR ID Number	259043931207
Date of Birth	01 Jan 1935
Gender	M
Date of Follow up	3 Feb 2025
Types of records	Prescribing Records

#### Test Case 3 (Patient C)

Name of patient	PATIENT
Given name of patient	YELLOW
HKID Number	L829864(8)
eHR HCR ID Number	310680133967
Date of Birth	01 Jan 1935
Gender	M
Date of Follow up	02 Feb 2025
Types of records	Dispensing Records

Name of patient	PATIENT
Given name of patient	YELLOW
HKID Number	L829864(8)
eHR HCR ID Number	310680133967
Date of Birth	01 Jan 1935
Gender	M
Date of Follow up	17 Feb 2025
Types of records	Dispensing Records

\*You may need to adjust the residents' personal particulars format to fulfil the eHR data standard for making requests to obtain the records

\*You may also need to specific appropriate date range to obtain the available data

After downloading the specified records, please prepare a UAT Testing Result Report and send it to [emedication@lscm.hk](mailto:emedication@lscm.hk)

# 下載資料最佳使用方法 (Data Mapping and Presentation)

General UI/UX Guidelines for Presenting Data  
Downloaded From eHealth on the RCH System

24 Apr 2025

Medication Data Downloaded		Recommendations
<b>Download specified data from eHealth testing environment</b>		
Maintain "active resident list" with updated personal profile and eHR ID	✓	Capture, update, import residents' <b>eHR ID number</b> and <b>other personal data</b> for constructing data request to eHealth
Construct correct download request from user interface	✓	Construct the <b>download request</b> according to specifications and standards
Send correct download request with successful connection established upon appropriate trigger	✓	Send <b>download request</b> via established secure channel <b>upon the users intending to update / input new drug records</b> (after confirming returned from follow up or discharge)
Succeed downloading HL7 FHIR files of specified testing patients' data	✓	Receive <b>downloaded messages</b>
Handle of possible variation of prescribing and dispensing date	✓	Set the <b>date range</b> with a <b>buffer</b> (e.g. 3 days before and after an event date) to handle cases which the dispensing and prescribing are not on the same date
<b>Handling of Downloaded Data</b>		
Store downloaded data at local system	✓	Store the downloaded data at " <b>staging</b> " and present an overview of the successfully downloaded data to users <b>at a glance view</b> and detailed individual medication view for verification of the content before writing in record database
Map and interpret data according to eHR data standards	✓	Decode the <b>HL7 FHIR</b> formatted data and interpret the downloaded data
Download both prescription and dispensing records	✓	Download both prescribing and dispensing data and match " <b>new</b> " vs " <b>existing</b> " ( <b>continue own stock</b> ) medication and show them to users to confirm

# 下載資料最佳使用方法 (Data Mapping and Presentation)

Present downloaded data on medication inputting module		
Overview of all downloaded drug items	✓	Present an <b>overview</b> of downloaded medication items for easy verification
Color coding or indicator for drug items mapped or auto-filled vs items/data fields requiring attention	✓	Present with <b>color-coded indication</b> to pay attention to medication and data field requiring attention
Prescribing Institution	✓	Show the <b>prescribing institution</b> and map to the prescribing HCP table locally maintained
Dispensing institution	✓	Show the <b>dispensing institution</b> and map to the dispensing HCP table locally maintained
Drug name and strength	✓	Present <b>local drug names</b> instead of HKMTT drug names for verification with the information on-hand
Dosing instruction text	✓	Present the <b>dosing instruction text</b> always on the screen for easy reference and manual input unmapped data fields or important remarks
Frequency	✓	Show <b>local frequency data</b> and map as far as possible and differential <b>frequency vs supplementary frequency</b> (not to put them in a single "frequency" data structure). Use the combination of both for constructing the dosing lines according to the prescription.
Supplementary Frequency	✓	

AND	✓	Map as far as possible and differentiate "AND 另" vs "THEN 之後" and to accommodate situation where both of them will be included in multiple dosing instruction e.g. A and B
THEN	✓	A and B and C, and so on, which have the <b>same start dates</b> and need to be taken " <b>together</b> " at the same time
		A then B
		A then B then C, and so on, when the <b>start dates are different</b> and should <b>NOT</b> be administered together
		A and B then C and D, so on, when certain drugs are taken <b>together</b> and then other drugs are taken <b>together</b>
Route	✓	Map and <b>alert special route</b> e.g. NG tube, PR (Per Rectal)
Site	✓	Map and <b>alert special site</b> e.g. left vs right and specific body parts
Duration and unit	✓	Map and <b>calculate</b>
Quantity and unit	✓	Map and <b>calculate</b>
Dose and unit		Map as far as possible. Anticipate cases (based route or local logic on drug items) in which the dose is not provided e.g. <b>topical</b> medication, and <b>default to 適量</b> may be appropriate and helpful.
		Anticipate " <b>as directed</b> " instruction e.g. TNG or <b>special instruction</b> . In these cases, remind the users to read the <b>Drug Dose Instruction (Combined Text)</b> and suggest

"Neglect" Institutions in the initial phase

# 下載資料最佳使用方法 (Data Mapping and Presentation)

Prescription date / Dispensing Date	manual input in the remark field may be helpful	PRN indicator	✓ Map and anticipate instruction "regular frequency PRN" e.g. Panadol 500 mg QID PRN or "no frequency PRN" e.g. TNG one tablet PRN. Make it clear to the users and drive different workflow e.g. group all PRN medications in separate worksheet or MAR screens and remind users to check before administering
"Start date (s)"	✓ Specified Start Date is uncommon in downloaded record.	Remark field	✓ This remark field could capture the "Special Instruction for Prescription Order" from prescribing record or "Pharmacy Remark" from dispensing order if there is any data in those fields in the downloaded data, which may contain important and "special" instruction on the dosing or precaution or remarks. However, the fields are optional and different HCP uploading the record may have different practice.
<p>藥物發出的日期 處方日期 配藥日期 開始使用藥物日期 停止使用藥物日期</p> <p><b>"Dispensing Date"</b></p> <p>SWD guideline<sup>1</sup>: 收取藥物 藥物發出日期=配藥日期 dispensing date</p> <p>個人藥物紀錄 開始使用藥物的日期 = ever since first date of this drug started 停止使用藥物的日期 = date this drug stopped</p> <p>Both dates cannot be deduced from downloaded records from eHealth</p> <p>個人備藥和吸藥紀錄 處方日期=配藥日期 如住客第一次使用該藥物，或藥物的處方有變，處方日期以藥物標籤顯示的日期為準。</p> <p>處方日期=開始使用藥物的日期 如該藥物的處方不變，處方日期為住客個人藥物記錄上所在的開始使用藥物的日期。(However, 開始使用藥物的日期 is not available and it is in fact not verifiable)</p> <p>Treated each episode of dispensing as new and so adopt the 處方日期=配藥日期, which could be downloaded and verifiable with the drug labels</p>		<p>Specify site: Nose Left hand Right ear</p> <p>Purpose: For Pain For Fever</p> <p>Stepping up or down Up/down from a date</p> <p>Conditional giving/not giving: Withhold if HR&lt;60 Withhold if SBP &lt;100 W/H if diarrhoea If no menses for 3 months and PT &gt;ve If heavy menses If seizure &gt;2 min If NBO &gt;3 days</p> <p>Special admin instruction: Give at 6pm, 7 pm and 8pm the day before procedure and 6 am on the day of procedure TNG PRN For 3 days regular if gouty attack, with penicilline Take with Lasix Do not split Patient is using without significant S/E</p> <p>Dispensing: Continue Own Stock SFI Purchased by Patient Single Use</p> <p>Extra functions</p> <p>Drug photo</p> <p>Single use indicator</p>	<p>Could consider reading and showing any information in these two fields in the Remark and allow and facilitate the users to manually input any relevant information from the Prescribed Drug Dose Instruction (Combined Text) field always displayed in another area on the screen in which may not be structured and mapped to be shown in other data fields but important for drug administration e.g. Beta Blocker: Drug Withhold if HR&lt;60 or SBP &lt;100; Colchicine: Stop if diarrhoea; Klean-Prep at 6 pm, 7pm and 8 pm the day before procedure and 6 am on the day of procedure...etc.</p> <p>Could use the downloaded HA drug code and/or HA Drug names to retrieve existing drug photos if matched.</p> <p>May further consider mapping with HK registration number</p>
Expected end date 完藥日期 停藥日期	✓ Prescribed end date is uncommon in downloaded data.  Calculate it from the dosing instruction and quantity dispensed. Compare it with the next follow up appointment date input by the uses and alert users if dispensed medications are insufficient		

Drug dosing instruction and precaution in Chinese	✓	Could facilitate user input from Drug Dose Instruction (Combined Text)
eMAR and eAdministration	✓	Need local translation at this moment
MAR		
Show complete and correct medication items	✓	Reorganise and regroup medication lines logically e.g. complex regimen A and B with same start dates or A then B in different start dates and Show important remarks
Separate logically regular, PRN and different routes medication items	✓	Differentiate, organise medication items
Logically regroup (combine or separate) dispensing items for easy review and drug administration	✓	Reorganise dispensing items for overall view of medication profile and actionable list for administration
Show important remarks in dosing instructions	✓	Show important remarks to facilitate administration according to the instructions and precautions e.g. measurement of vital signs before administration

圖2：解讀藥物標籤 (醫院管理局)

圖2展示了藥物標籤的解讀，包含以下信息：

- 藥物名稱、劑型和劑量**：INSULIN HUMAN (MIXTARD 30) PENFILL 100U/ML 3ML
- 藥物使用途徑、使用次數/時間、每次劑量和特別指示**：皮下注射用，早上一次，每次三十單位，下午一次，每次十五單位。
- 注意事項**：小心放置，以免兒童誤服；未開啟封蓋前應存放於雪櫃，開啟後存於攝氏30度以下，請勿冷藏；於開啟後六星期勿再使用，使用前搖勻。
- 藥物發出日期**：01/08/2018
- 病人姓名**：祝安康
- 醫院或診所名稱**：將軍澳醫院
- 內部用代號**：INSU27, 0016 01 3795, MED 5, \_ad\*\*\* 1/1
- 藥物數量**：5 NO

# 推行前系統準備錦囊



eMedication Data Connectivity Web Platform

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## Step-by-Step Preparation for eMedication Data Connectivity

4 Steps for requesting and preparing for eHR medication data connectivity from eHealth

Step

# 1



### Submit Request

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[Learn more >](#)

Step

# 2



### Administrative Preparation

Follow the guidance to register eHealth and devise relevant internal guidelines and policies for using data obtained from eHealth.

[Learn more >](#)

Step

# 3



### Technical Preparation

Undergo technical and data preparation for Electronic Medical Record System (eMRs) for system interfacing and data connectivity with eHealth.

[Learn more >](#)

Step

# 4



### Testing and Approval

Test and certify eMRs as capable of connecting with eHealth.

[Learn more >](#)

# 5

## Setup for Downloading

1. Configure for Data Download
2. Verify Residents' consent and PMI
3. Verify Downloaded Data
4. Download in Action
5. Monitor Download Success and Timeliness

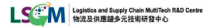


# 1. 系統設定 Configuration (HCP Based)

## Production Setup Guide

Preparation for Production Set up for Data Download  
Connectivity – HCP and HCR Numbers

18 Dec 2024



Preparation for Production Set up for Data Downloading

## Search HCP Information

The screenshot shows the 'eHealth 電子健康紀錄互通系統' search interface. The search criteria are set to '佛教實靜安老院' (Buddhist Po Ching Home for the Aged Women) in the 'New Territories' region. The search results show one record for 'BUDDHIST PO CHING HOME FOR THE AGED WOMEN' with the HCP number '4777612435'. A red arrow points from the text 'HCP Number (not HCI Number)' to this number.

醫護服務地點	電話	地址	電子健康紀錄登記站
北區 (1)			
BUDDHIST PO CHING HOME FOR THE AGED WOMEN 佛教實靜安老院	(852) 2669 7123	新界粉嶺置福圍8號佛教實靜安老院	
BUDDHIST HEUNG HOI CHING KOK LIN ASSOCIATION 佛教香海正覺蓮社			
醫護機構編號: 4777612435			

HCP Name  
HCP Number  
(not HCI Number)

RCHs operated under the same HCP (e.g NGO) will only need to be configured once

<https://emedication.lscm.hk/assets/Preparation%20for%20Production%20Set%20up%20for%20Data%20Download%20Connectivity%2031%20Dec%202024.pdf>

## 1. Security Checklist



eHR Security Assessment Checklist  
for Clinical Data Download  
[G72]  
Version 1.00

[https://emedication.lscm.hk/assets/Preparation%20Document/Security%20Assessment%20Checklist\\_Data\\_Download%20v1.0%2011%20Dec%202024.xlsx](https://emedication.lscm.hk/assets/Preparation%20Document/Security%20Assessment%20Checklist_Data_Download%20v1.0%2011%20Dec%202024.xlsx)

### Submission for each HCP

1. Security Checklist
2. Production Set Up Form
  - ✓ HCP name and ID
  - ✓ eMR system name and version
3. Generate an eCert per HCP

## 2. Production Setup Form

eHRSS Service Configuration		
Reference Number:	<input type="text"/>	
Requested By:	<input type="text"/>	Request Date: <input type="text"/>
Setup Environment: (Testing / Production)	<input type="text" value="Production"/>	
Section A: HCP basic information		
	English	Chinese
Official Name	<input type="text"/>	<input type="text"/>
Displayed Full Name	<input type="text"/>	<input type="text"/>
Displayed Short Name	<input type="text"/>	<input type="text"/>
HCP Identifier	<input type="text"/>	<input type="text"/>
HCI Identifier	<input type="text"/>	<input type="text"/>
HCP Setup Contact Person	<input type="text"/>	<input type="text"/>
HCP Setup Contact Phone	<input type="text"/>	<input type="text"/>
HCP Setup Contact Email	<input type="text"/>	<input type="text"/>
HCP Operation Contact Person	<input type="text"/>	<input type="text"/>
HCP Operation Contact Phone	<input type="text"/>	<input type="text"/>
HCP Operation Contact Email	<input type="text"/>	<input type="text"/>
Section C: System Connectivity Information		
eMR System Id	<input type="text"/>	
Client Id	<input type="text"/>	
eMR System Name	<input type="text"/>	
eMR System Version no.	<input type="text"/>	
eMR System Description	<input type="text"/>	
eMR IP Address (IPv4)	<input type="text"/>	
Certificate	<input type="text"/>	

[https://emedication.lscm.hk/assets/HCP\\_Setup\\_Form\\_Drug\\_Download\\_Production.xlsx](https://emedication.lscm.hk/assets/HCP_Setup_Form_Drug_Download_Production.xlsx)

## 3. Generate eCert

### Generate eCertificate for signing

To use Java Keytool for generating an eCertificate (digital certificate) for signing, you need to create a keystore that contains a private key and a corresponding public key certificate. The keystore holds your private key, and the public certificate can be shared with others to verify your signature.

Generating an eCertificate using Java Keytool involves creating a self-signed certificate or a Certificate Signing Request (CSR). Below is a step-by-step guide that includes installing the Java SDK and generating a CSR file with ample commands and Java code snippets.

### Install JAVA SDK

To install the Java SDK (Java Development Kit or JDK), which includes the keytool utility for generating a Certificate Signing Request (CSR), follow these steps:

#### Step 1: Download the Java SDK

1. **Visit the Official Java Website:**
  - o Go to the [Oracle JDK download page](#) or use an open-source alternative like [OpenJDK](#).
2. **Choose the Appropriate Version:**
  - o Select the version required for your project, such as Java 17 or Java 20.
  - o Ensure compatibility with your operating system (Windows, macOS, Linux).
3. **Download the Installer:**
  - o For Windows and macOS: Download the installer executable.
  - o For Linux: Download the .tar.gz archive or use package managers like apt, yum, or dnf for OpenJDK.

[Download Oracle Java SDK](#)

[Download OpenJDK](#)

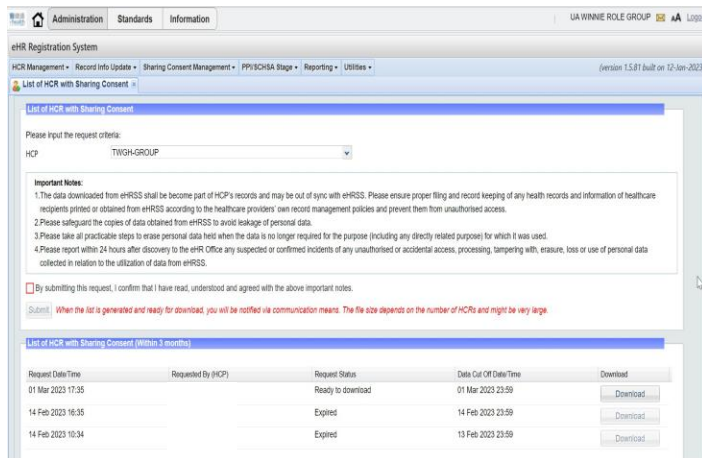


### After successful endorsement, configure with

1. eHR Production IP address
2. Signed eCertificate
3. Assigned eMR System and Client ID

## 2. 核對互通同意 Verify Residents' Sharing Consent (before implementation)

Existing User Administrator (RCH) download consent list from eHealth for checking and verification



已取得互通同意之醫護接受者名單/ List of HCR with Sharing Consent

eHR No. 醫健通號碼	HKID No. / Doc No. 身份證明文件 號碼	English Full Name 英文全名	Consent Type 互通同意類型 一年 (one- year) / 無限 期 (Indefinite)	Start Date 互通同意 開始日期	End Date 互通同意 結束日期
123456789123	ID:A123***7	CHAN TAI MAN	Indefinite	08-Jul-2022	Indefinite
234567891234	OP:B234***6	LEE, APPLE	One-year	11-Aug-2022	11-Aug-2023

院舍的院友名單

ABC RCH Client no.	HKID No. / Doc No.	English Full Name
ABC0001	ID:A123***7	CHAN TAI MAN
ABC0002	OP:B234***6	LEE, APPLE
ABC0003	ID: C333***7	WONG, KIN HONG

- RCH UA download sharing consent list (password protected) from eHR for RCH IT to cross-check with the resident list
- RCH IT to record eHR no in RCH system for each resident with sharing consent (and the consent status)
- RCH to follow up on residents without sharing consent

### 3. 核對下載資料 Verify Downloaded Data (upon implementation)



#### Download prescribing and dispensing records after production turn-on

- All RCH residents with sharing consent for 1 year records from the system date
- Verify successful production setup
- Identify residents with "successful" download
  1. Compare downloaded records with existing medication profiles in the RCH system
  2. Verify completeness of records
- Identify residents with "unsuccessful" download
  1. Verify and rectify error of PMI of resident in RCH system (name, ID, DOB, gender) – RCH check ID copy
  2. Verify HCR no and validity of sharing consent – RCH check eHR enrolment module
  3. Send ID copy and request for verification to eHR RO if PMI and HCR no. are "correct" and sharing consent is believed "still valid" – RCH send via LSCM to eHR RO to clarify

# 錯誤排解 “Error” while attempting to download and follow up

Error Code	Severity	Code	Error Description
1000	error	invalid	Missing input parameter: {%msg% is required}
1001	error	invalid	Invalid input parameter: {%msg%}
1002	error	invalid	Invalid input parameter format: {%msg%} e.g. Invalid input parameter format: {gender must male female unknown}
2000	error	invalid	Participant Cannot be Found
3000	error	invalid	Participant Consent Cannot be Found
4000	error	invalid	Medication Data Cannot be Found
5000	error	invalid	Access Denied: No professional has access right to medication data
9001	error	invalid	Possible values:  “EIF_DRUGDS_DISPENSE – searchMedicationDispense failed to execute”; or  “EIF_DRUGDS_REQUEST – searchMedicationRequest failed to execute”

Revise request parameter

Revise request parameter

Revise request parameter

PMI mismatch -> check PMI at RCH

Consent invalid/missing/expired -> Check consent

No medication records in specified period -> recheck request

No active professional account

eHR issues in executing requests

## 4. 啟動下載 Download in Action

DOB

Sex

Gender

HKID No.

HCR No.

Return from OPD  
Date/Time

Institution

Specialty

Dis from Hospital

Institution

Specialty

Next Follow Up  
Appointmnet

Institution

Specialty

Auto trigger requesting download of prescribing and dispensing records

- upon mark "return" from OPD/hospital and/or upon "medication inputting"
- request for download date -3 to +3 days (from system date)
- +/-continue to retry every 15min if not successful for 72 hours, then abort

Auto input institution and specialty of downloaded items  
Auto calculate the adequacy of medication from quantity and next follow up date

## 5. 跟進下載進度 Monitor Download Success and Timeliness

For each download ad hoc request, capture the following:

1. % of successful downloads (both prescribing and dispensing) upon inputting
2. % missing records and types (prescribing or dispensing or both)
3. % missing/mismatched data and types (which data field(s) miss or mismatch)
4. Aggregated summary for monitoring progress and details of problem cases (if any) to eHR IT via LSCM for investigation

eHR number	OPD/Dis	Prescribe Date/time	Download Date/time	Latency	Dispense Date/time	Download Date/Time	Latency	RCH Input Date/time	Success or failure
1	OPD	13:00	13:30	30 min	13:20	13:50	30 min	14:00	+10 min
2	OPD	13:00	14:00	60 min	13:20	14:00	40 min	14:00	0 min
3	OPD	-	-	-	12:30	14:00	90 min	14:00	0 min
4	OPD	12:00	14:00	120 min	-	-	-	14:00	0 min
5	Dis	12:00	15:00	-	12:30	15:30	-	14:00	-? min

# Next Steps

1. Schedule UAT and PT with LSCM
2. Identify RCHs for pilot and implementation, and prior eHealth preparation (RCHs and Residents)
3. Pilot early and further rollout, gaining experience for data downloading and enhancements for community dispensing
  - More accurate and complete medication records
  - Security upgrade in advance
  - eHealth eMedication connectivity, security compliant and capability of
    - Downloading consolidated dispensing records (via community pharmacy)
    - Enhancements of data content (e.g. allergy information, specialty, etc.)
    - Adoption of eAdministration and barcoded medication checking workflow
    - Sharing of drug administration records to eHealth (at a later phase)



[Feedback for Continuing Further Briefing Session](#)