MINISTRY OF HEALTH
SINGAPORE

CODE OF PRACTICE

CLINIC MANAGEMENT SYSTEM (CMS)

DATA PORTABILITY

Effective Apr 2023

Version 1.0

Issued by MOH Infocomm, Technology & Data Group

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Code of Practice for Clinic Management System Data Portability

INTRODUCTION

It is critical that vendors of a Clinic Management System ("**CMS**") ensure Data Portability in order for fidelity of Patient Records to be maintained and patient care and safety to be upheld when healthcare providers switch from one CMS to another.

This Code of Practice for CMS Data Portability ("**Code**") was developed by the Ministry of Health ("**MOH**"), in consultation with the relevant stakeholders, to set out MOH's minimum expectations with regards to Data Migration (hereinafter defined) in order to uphold Data Portability. Adherence to the Code is one of the requirements for a CMS to be listed under the CMS Tiering Framework for Primary Care that will take effect from April 2023.

1.   Objectives of this Code

1.1   This Code is intended to:

(a)   Set out the practices that CMS Vendors (hereinafter defined) shall comply with in the provision of support or services to ensure Data Portability;

(b)   Promote a Client-centric approach to the provision of Data Migration services to ensure Data Portability; and

(c)   Advocate best practices for Data Portability across the CMS industry.

2.   Application

2.1   This Code applies to CMS Vendors (hereinafter defined) who provide an integrated information system for managing aspects of operations by Singapore's healthcare providers.

2.2   Unless otherwise stated, the provisions of this Code shall apply to each CMS that a CMS Vendor owns.

3.   Definitions and Interpretation

3.1   In this Code, unless the context otherwise requires, the following terms shall have the corresponding meaning:

"Client"	means a party purchasing CMS products and/or services from a CMS Vendor.
"Contractual Agreement"	means an agreement between a CMS Vendor and a Client for the provision of any CMS product and/or services by that CMS Vendor to that Client.
"Clinic Management System" or "CMS"	means an information technology solution or software which supports a Client's operations.
"CMS Vendor"	means a party providing CMS products and/or services.
"Data Migration"	means the process of selecting, preparing, extracting and transforming data, and permanently transferring such data from one computer storage system to another, to ensure Data Portability (hereinafter defined).
"Data Migration Schedule"	means a schedule detailing the expected timeframe for completion of tasks for Data Migration and Post-Data Migration Activities (hereinafter defined).
"Data Portability"	means the ability to move, copy or transfer data from one CMS to another CMS in accordance with this Code.
"Incoming CMS Vendor"	means the CMS Vendor that will be providing (i) CMS products and/or services to a Client in addition to an Outgoing CMS Vendor; or (ii) CMS products and/or services to a Client in replacement of an Outgoing CMS Vendor.
"Outgoing CMS Vendor"	means the incumbent CMS Vendor that is providing CMS products and/or services to a Client.
"Patient Records"	means the data of a patient (which may include personal data and any financial and medical information of the patient), that is obtained by, given to or retained by the Client for the purposes of facilitating the patient's care.

"Post-Data Migration Activities"	means any activity in relation to Data Migration as agreed upon between an Outgoing CMS Vendor and a Client which is to be performed after Data Migration is completed (such as validation of data post-Data Migration and data cleansing).
"Subscription"	means the access to and use of a CMS.
"Subscription Term"	means the period which starts on the earlier of the date that the CMS is successfully commissioned or the date that the Client is successfully onboarded onto the CMS, and ends upon the earlier of the expiration or the termination of the Contractual Agreement.

3.2 In this Code, unless a contrary intention appears:

(a) words importing the singular only shall also include the plural and vice versa where the context requires;

(b) references to a person include any individual, company, limited liability partnership, partnership, business trust, unincorporated association or government agency (whether or not having separate legal personality);

(c) all references to clauses in this Code, unless otherwise expressly stated, shall be construed as references to clauses numbered in this Code and shall include all sub-clauses within that clause;

(d) a reference in this Code to "including" shall not be construed restrictively but shall mean "including without prejudice to the generality of the foregoing" and "including but without limitation"; and

(e) any reference to any legislation shall be deemed a reference to such legislation as amended or revised from time to time and be deemed to include any subsidiary legislation made under such legislation.

IMPORTANT

This Code is provided with the understanding that MOH is not rendering legal or other professional advice or services. Accordingly, this Code should not be used as a substitute for consultation with the relevant professionals on the

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> requirements of Data Migration. In no event will MOH be liable to any CMS Vendor or any other person using this Code for any decision made or action taken, or for refraining from making any decision or taking any action in reliance of the information contained in this Code, or for any consequential, special or similar damages, even if advised or notified of the possibility of such damage.

4. Review of this Code

4.1 This Code may be reviewed and amended by MOH from time to time to ensure that this Code continues to promote high industry standards of service for Clients in the healthcare sector and build best practices across the CMS industry.

4.2 MOH may review and amend this Code from time to time, after consultation with:

(a) CMS Vendors;

(b) CMS consumer advocates; and

(c) such other organisations and persons it considers appropriate (for example, regulators and associations).

A. KEY COMMITMENTS

5. Transparent, Fair, Honest and Ethical

5.1 The CMS Vendors shall conduct negotiations with Clients in good faith, which shall include but is not limited to:

(a) providing sufficient and accurate information during negotiations to achieve pre-agreed outcomes (for example, ensuring that the Client is aware of the functionalities of the CMS products and has made an informed decision to onboard the CMS products or commence Data Migration); and

(b) acting honestly and fairly having regard to the legitimate interests of the Client and observing accepted or reasonable commercial standards of fair dealing. The Client's legitimate interests shall include, but are not limited to, the Client's interests in relation to the Client's clinic operations, patient

safety, Data Portability, accuracy of records (including Patient Records) and data security.

5.2 The CMS Vendor shall include Data Migration as part of the scope of CMS products and/or services that it provides to its Client. The CMS Vendor shall include clauses relating to Data Migration in each Contractual Agreement, including, but not limited to, clauses on the type of support rendered and fees related to Data Migration (which may be part of the contract price or separately priced).

5.3 The CMS Vendor shall ensure that practices and processes are in place to enable it to fulfil its obligations in relation to Data Migration stated in each Contractual Agreement and any other agreement between the CMS Vendor and a Client, on the terms and within the period agreed in each Contractual Agreement and such other agreement. This may include, but is not limited to, having a change management process to identify, authorise, implement and validate all changes made to the relevant CMS and ensuring that there is no conflict in practices and processes relating to the completion of Data Migration and Post-Data Migration Activities.

5.4 The CMS Vendor shall comply with the Personal Data Protection Act 2012, Computer Misuse Act 1993 and any other applicable legislation or laws. This Code does not exclude any obligation of the CMS Vendor that exists apart from this Code, including but without limitation to obligations arising from any contracts entered into by the CMS Vendor.

5.5 The Outgoing CMS Vendor and the Incoming CMS Vendor shall render such reasonable assistance and/or cooperation to each other as is required to ensure that Data Migration and Post-Data Migration Activities are completed. For the avoidance of doubt, Outgoing CMS Vendors and Incoming CMS Vendors shall render such reasonable assistance and/or cooperation regardless of whether their respective Contractual Agreements with the Clients have been breached in any way.

6. **Customer-focused**

6.1 The CMS Vendor shall provide products and/or services that meet the Client's needs.

6.2 The CMS Vendor shall use its best endeavours to monitor and review on an ongoing basis the outcomes of products and/or services provided or rendered to Clients in respect of Data Migration and consider whether changes are required to ensure that their Client's needs are met.

7. **Deal Fairly with Complaints**

7.1 The CMS Vendor shall use its best endeavours to respond to complaints relating to Data Migration in a manner that is:

(a) prompt, efficient and transparent;

(b) consistent with the law; and

(c) fair under all circumstances.

7.2 The CMS Vendor shall use its best endeavours to review its processes, products and services should multiple complaints in respect of a similar issue be received.

B. **DATA MIGRATION AND CORRESPONDING ROLES OF PARTIES**

8. There are four (4) key steps in Data Migration, which involve multiple parties. Table 1 provides an overview of the responsibilities of each party involved and examples of the tasks to be completed by each party. Table 2 details the key steps and the corresponding role of each party.

Table 1: Overview of responsibilities of parties involved in Data Migration

Parties involved	Responsibilities
Incoming CMS Vendor	• Propose, discuss and seek Client's agreement on a plan for Data Migration ("**Data Migration Plan**"); • Work with the Outgoing CMS Vendor to execute the approved Data Migration Plan; • Ensure that migrated data is accessible via the CMS; and • Support the Client in data validation.
Outgoing CMS Vendor	• Discuss, support and agree with the Client and Incoming CMS Vendor on the Data Migration Plan; • Support the Incoming CMS Vendor in executing the approved Data Migration Plan; and • Support the Client and/or Incoming CMS Vendor in data (export) clarification.
Client	• Review and approve the Data Migration Plan;

	• Instruct the Outgoing CMS Vendor to support the Incoming CMS Vendor. This includes making arrangements for financial compensation, if applicable; • Involve the relevant parties in the planning and execution of the Data Migration, if needed; • Work with the Incoming CMS Vendor to validate dataset post-Data Migration; and • Provide confirmation to the Incoming CMS Vendor and the Outgoing CMS Vendor through the agreed mode of communication stating that the Data Migration is complete.	

Table 2: Key steps in the Data Migration and the corresponding role of each party

	1. Request for Data Migration	2. Development of Data Migration plan	3. Execution of Data Migration	4. Follow-up post-Data Migration
Incoming CMS Vendor	C	R, A	R, A	R
Outgoing CMS Vendor	C, I	C	R	R
Client	R, A	C	I	R, A

Responsible (R)= Assigned to complete the task or deliverable

Accountable (A) = Has final decision-making authority and accountability for completion. Party also has ultimate control over the project and its resources.

Consulted (C) = A stakeholder or subject matter expert who is consulted before a decision or action. Not directly involved in carrying out the task.

Informed (I) = Party must be informed before/after a decision or action.

C.   KEY STEPS IN DATA MIGRATION

9.   Request for Data Migration

9.1   If (a) the Client engages the Incoming CMS Vendor to provide CMS products and/or services in replacement of the Outgoing CMS Vendor; and (b) such engagement of the Incoming CMS Vendor is the direct and sole cause of any breach by the Client of the terms of any Contractual Agreement between the Client and the Outgoing CMS Vendor, then the Outgoing CMS Vendor shall make reasonable efforts to minimise disruptions to the process of Data

Migration during any enforcement of its contractual rights as a result of any such breach.

9.2 The Outgoing CMS Vendor shall assist the Client in determining if the Subscription Term applicable to that Client is sufficient for Data Migration and Post-Data Migration Activities to be completed.

10. Development of Data Migration Plan

10.1 The responsibilities of the Outgoing CMS Vendor in relation to the development of a Data Migration Plan shall include, but are not limited to, the following:

(a) explaining to the Client the support required from the Client to achieve pre-agreed outcomes (such as clarifying the data items and data volume for Data Migration);

(b) availing itself for clarifications and discussions on the technical feasibility and details (such as data format and quality) in respect of the Data Migration with the Incoming CMS Vendor and the Incoming CMS Vendor's personnel (which shall include, but is not limited to, the Incoming CMS Vendor's subcontractors);

(c) achieving common understanding and agreement with the Client and the Incoming CMS Vendor on the Data Migration Plan. The Data Migration Plan may include items such as expected data output and its format, number of exported datasets required, the Data Migration Schedule, and any other technical matters; and

(d) providing assistance in relation to technical matters where necessary.

10.2 The responsibilities of the Incoming CMS Vendor in relation to the development of a Data Migration Plan shall include, but are not limited to, the following:

(a) availing itself for clarifications and discussions on the technical feasibility and details (such as data format and quality) in respect of the Data Migration with the Outgoing CMS Vendor and the Outgoing CMS Vendor's personnel (which shall include, but is not limited to, the Outgoing CMS Vendor's subcontractors);

(b) informing the Client of the related functional impacts, which may arise from differences in datasets or data code standards between the existing and new CMSes, that cannot be migrated into the new CMS;

(c) achieving common understanding and agreement with the Outgoing CMS Vendor and the Client on the Data Migration Plan. The Data Migration Plan may include items such as the expected data output and its format, number of exported datasets required and Data Migration Schedule, and any other technical matters; and

(d) explaining to the Client the support required from the Client to achieve pre-agreed outcomes; and

(e) establishing a reasonable Data Migration Schedule[1]. The Data Migration Schedule shall be mutually agreed upon in writing between the Incoming CMS Vendor, the Client and the Outgoing CMS Vendor.

11. Execution of Data Migration Plan

11.1 The responsibilities of the Outgoing CMS Vendor in relation to the execution of a Data Migration Plan shall include, but are not limited to, the following:

(a) ensuring that there is sufficient manpower to perform the Data Migration for the period needed by the Client;

(b) ensuring that the Outgoing CMS Vendor's responsibilities in the Data Migration Plan (for example, data export) are completed within the timeframe agreed upon in the Data Migration Schedule[2];

(c) fulfilling the Outgoing CMS Vendor's responsibilities set out in Table 1 above, in accordance with the approved Data Migration Plan;

(d) working with the parties involved in Data Migration to address and rectify issues in a timely manner; and

(e) taking reasonable steps to protect Patient Records from misuse or loss, and from unauthorised access, modification, or disclosure.

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[1] For reference, the duration for Data Migration and post-Data Migration Activities in the primary care sector range between two (2) weeks to two (2) months, depending on number of clinics and previous experience with migrating data from the Outgoing CMS Vendor.

[2] For reference, the median duration for data export for a single clinic in the primary care sector may take approximately two (2) weeks, depending on the data format and data volume.

11.2 The responsibilities of the Incoming CMS Vendor in relation to the execution of a Data Migration Plan shall include, but are not limited to, the following:

(a) ensuring that there is sufficient manpower to perform the Data Migration for the period required by the Client;

(b) ensuring that activities in the Data Migration Plan (for example, data import) is completed within the timeframe agreed upon in the Data Migration Schedule[3];

(c) fulfilling the Incoming CMS Vendor's responsibilities set out in Table 1 above, in accordance with the approved Data Migration Plan;

(d) keeping the Client updated on the progress of the Data Migration and escalate issues or challenges to the Client in a timely manner;

(e) working with the parties involved in the Data Migration to address and rectify issues in a timely manner; and

(f) taking reasonable steps to protect Patient Records from misuse or loss, and from unauthorised access, modification, or disclosure.

12. Follow-up post-Data Migration

12.1 Data Migration shall be deemed to be completed when:

(a) data has been exported from the Outgoing CMS Vendor's CMS. The data to be exported shall be mutually agreed upon between the Client, the Incoming CMS Vendor and the Outgoing CMS Vendor;

(b) all exported data has been (i) imported into the Incoming CMS Vendor's CMS; or (ii) provided to the Client in a format which is acceptable to the Client, if the exported data is unable to be imported into the Incoming CMS Vendor's CMS;

(c) the Incoming CMS Vendor's and Outgoing CMS Vendor's responsibilities set out in Table 1 above have been fulfilled in accordance with the Data Migration Plan;

(d) Post-Data Migration Activities are completed; and

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[3] For reference, the duration for data import for a single clinic in the primary care sector may take approximately two (2) to four (4) weeks, depending on the data format, data volume, and previous experience with migrating data from the Outgoing CMS Vendor.

(e) the Client has provided confirmation to the Incoming CMS Vendor and the Outgoing CMS Vendor through the agreed mode of communication stating that the Data Migration is complete. For example, the Client may provide written notice via electronic mail stating that the Data Migration is complete.

12.2   The Outgoing CMS Vendor shall not terminate CMS access:

(a) if data exported can be imported into the Incoming CMS Vendor's CMS, prior to the completion of the Data Migration and any Post-Data Migration Activities; or

(b) if data exported cannot be imported into the Incoming CMS Vendor's CMS, prior to the Client's agreement to so terminate access to the Outgoing CMS Vendor's CMS.

D.   DATA ITEMS AND FORMAT

13.   If the data exported is able to be imported into the new CMS, the Outgoing CMS Vendor shall ensure that:

(a) the data exported is agreed upon among the Client, the Incoming CMS Vendor and the Outgoing CMS Vendor;

(b) the data exported is in accordance with Clauses 14, 15 and 16;

(c) the exported data set provided by the Outgoing CMS Vendor to the Incoming CMS Vendor includes, without limitation, the information set out in Regulations 37(2) and 37(3) of the Healthcare Services (General) Regulations 2021; and

(d) the Incoming CMS Vendor is provided with a written guide (for example, a data dictionary), when requested, to assist the Incoming CMS Vendor with Data Migration. The written guide shall include information which would assist the Incoming CMS Vendor in the interpretation of the exported data.

14.   If the data exported is unable to be imported into the new CMS, the Outgoing CMS Vendor shall ensure that:

(a) the data exported is mutually agreed upon between the Client and the Outgoing CMS Vendor;

(b) the exported data is provided to the Client in a manner which is acceptable to the Client, and is in accordance with Clauses 15 and 16;

(c) the information set out in Regulations 37(2) and 37(3) of the Healthcare Services (General) Regulations 2021 is migrated into the new CMS, notwithstanding that the rest of the exported data cannot be migrated into the new CMS; and

(d) the Client is provided with a written guide (for example, a data dictionary), when requested. The written guide shall include information which would assist the Client and/or the Incoming CMS Vendor in the interpretation of the exported data.

15. Regardless of whether the data exported can be migrated into the new CMS, the Outgoing CMS Vendor shall use best efforts to ensure that the Client is able to download the exported data independently.

16. Regardless of whether the data exported can be migrated into the new CMS, the Outgoing CMS Vendor shall ensure that the exported data meets the following requirements:

(a) Industry-standard machine-readable format which is validated and well-formed, e.g. JSON, csv or XML;

(b) <u>Not</u> in any proprietary data standards, unless both the Incoming CMS Vendor and the Outgoing CMS Vendor use the same standards; and

(c) Data field names are appropriately labelled to reflect the nature of the data items. For example, data field names such as "001", "002" and "003" are <u>not</u> appropriate naming conventions.

<u>Figure 1.</u> Unusable data export due to lack of proper field labelling

<u>Figure 2.</u> Unusable data export due to lack of proper field labelling

CONCLUSION

17.	For further clarification or information on the Code, GP clinics can approach their AIC account managers and CMS Vendors can contact IHiS [ihis.hsg.vendorengagement@ihis.com.sg].

18.	This Code will be made available to all CMS Vendors and their Clients, with the latest version available at MOH website: go.gov.sg/cms-dataportability.