For discussion
on 9 March 2009

Legislative Council Panel on Health Services

Development of a Territory-Wide Electronic Health Record Sharing System

PURPOSE

This paper briefs Members on the Government's proposal to develop a territory-wide patient-oriented electronic health record sharing system as an essential infrastructure to support the healthcare reform, and seeks Members' support for the proposal to the Finance Committee (FC) and its Establishment Subcommittee (ESC) for funding and staffing resources to take forward the proposed programme.

BACKGROUND

What is eHR and eHR Sharing System?

2. **An electronic health record (eHR)** usually refers to a record in electronic format containing health-related data[1] of an individual (referred to as "patient" hereafter for simplicity though eHR is not confined to medical treatment for sickness), stored and retrieved by different healthcare providers including doctors and other healthcare professionals for healthcare-related purposes.

3. **An eHR sharing system[2]** provides an information infrastructure for healthcare providers in both the public and private healthcare sectors, with **informed consent of the patient** and **proper authorization for access** to the system, to share the eHR they keep on the patient with other healthcare providers and to retrieve the eHR of the patient shared by other healthcare providers. The sharing system brings the following benefits –

[1] Such data may encompass (i) personal particulars for identification and contact (e.g. name, identification, date of birth, contacts, etc.); (ii) health data (e.g. weight, height, blood type, vaccination records, drug allergies, etc.); and (iii) medical data (e.g. diagnosis, prescriptions, laboratory test results, radiological images and hospital discharge summaries, etc.).

[2] In technical terms, a eHR sharing system comprises standalone electronic medical/patient record (eMR/ePR) systems, which are information systems deployed by individual healthcare providers for storing their patients' medical records for their own healthcare purposes, and a central electronic platform as the sharing infrastructure for such eMR/ePR systems to interconnect for sharing of eHR amongst them.

(a) **For clinicians**, eHR will improve availability and transparency of information shared between healthcare providers in both the public and private sectors. Healthcare providers will be able to assess the right information at the right time. This will allow healthcare providers to improve the efficiency of their healthcare interventions and reduce the number of consultations that is necessary in order to achieve the desired outcome. Associated efficiency gains will be realised in avoiding the need to store, collage and transfer paper records. Record transportation costs will also be avoided.

(b) **For patients**, eHR will enhance the quality of care provided to patients by enabling better access by healthcare providers to acquire health information. The healthcare quality benefits will be delivered specifically by-

(i) Reducing the frequency and scale of medication errors;
(ii) Providing more efficient and a more effective use of diagnostic tests;
(iii) Increasing the speed of treatment, for example by eliminating repeated tests or information requests from a patient; and
(iv) Improving the accuracy of diagnosis and disease management through clinical decision support.

(c) **For the healthcare system** as a whole, the sharing system minimizes duplicate investigations and errors associated with paper records, achieves more efficient and better quality healthcare and enables disease surveillance and health statistics for public health and policy making. Upon its full implementation, it is estimated that the above benefits will bring about an efficiency gain of about $860 million per year to the total health expenditure in the following areas-

(i) Reduction or elimination of the need to administer of paper medical records;
(ii) Reduction in duplicated laboratory/ radiologist tests;
(iii) Reduction in length of stay of patients/ unplanned re-admissions;
(iv) Reduction in medication / prescription errors; and
(v) Reduction in documentation time

4. The present situation of eHR development in both the public and private healthcare sectors in Hong Kong and the various pilot initiatives on eHR sharing that have been undertaken so far are summarised at ***Annex A***.

eHR Sharing as Essential Infrastructure for Healthcare Reform

5. The proposal to develop a territory-wide patient-oriented eHR sharing system has been put forward as part of the proposals in the Healthcare Reform Consultation Document "Your Health, Your Life" published in March 2008, and received broad support from the community among other service reform proposals. The eHR sharing system provides an essential infrastructure for implementing the healthcare reform in the following ways –

(a) **Enable patient-centred healthcare**: eHR sharing system allows timely sharing of essential and comprehensive medical information of patients. It provides a vital infrastructure for facilitating a seamless healthcare process under which different healthcare providers provide collaborative care centred around the individuals and their health and well-being, which is a key objective of healthcare reform.

(b) **Enhance primary care**: eHR sharing system builds up lifelong records for individuals contributed to and accessible by different healthcare providers. It provides an essential tool for comprehensive, lifelong and holistic primary care for individuals, helps promote the family doctor concept and continuity of care, and enables patients to take greater ownership and control of their health record, and in turn their health.

(c) **Facilitate hospital-primary care interface and public-private partnership**: eHR sharing system connects hospitals and primary care practitioners, and the public and private healthcare sectors. It facilitates better collaboration and interface between different healthcare providers and between different levels of care, and enables patients to receive public and private services at different times without worrying about the transfer of their medical records.

DEVELOPMENT OF eHR SHARING

The eHR Programme

6. The eHR sharing system is a ground-breaking concept introducing a whole new infrastructure operated by the Government for holding and transferring individual patients' personal health data. It enables the entry, transfer and retrieval of such data by different healthcare providers in both the public and private sectors, with procedures for obtaining the necessary **consent and authorization** by individual patients, and with mechanisms for authenticating and controlling access to such data. It will also bring in new ways of

providing healthcare through collaboration between different healthcare providers, as well as new technical platforms and standards for information technology (IT) in healthcare. It also raises new challenges on data privacy and security protection.

7. The eHR sharing system is an infrastructure for healthcare services. It is much more than an IT project, and requires addressing not only technical issues concerning the implementation of IT systems, but more importantly legal, privacy and security issues including ownership, access and copyrights of patient records and the safeguarding of data privacy and security, and institutional issues including governance of the future eHR sharing infrastructure holding and transferring a vast amount of health data of the majority of the population. Above all, the programme must engage the public and private healthcare sectors as well as stakeholders in the community throughout the development process to ensure their ownership and support for the system and that they embrace the changes that the system will bring about to the way that healthcare services are being delivered.

8. Close collaboration with the private healthcare sector is required from the outset. Specifically, the eHR sharing system will require the deployment of electronic medical/patient record (i.e. eMR/ePR) systems by healthcare providers in both the public and private sectors with capabilities of sharing eHR of individual patients based on commonly adopted standards, as well as the development of a secure electronic platform whereby such healthcare providers can share eHR of individual patients stored in their systems in a secure, identifiable and intelligible manner.

9. It is in recognition of these challenges that the Secretary for Food and Health established in July 2007 the Steering Committee on eHR Sharing (the Steering Committee) comprising healthcare professionals from both the public and private sectors. The structure, membership and ambit of the Steering Committee and its various Working Groups are summarised at ***Annex B***. Through close collaboration between the public and private sectors and after a year of intensive work, the Steering Committee put forward in July 2008 its initial recommendations for an eHR programme, based on which FHB has formulated a roadmap for eHR development over a 10-year planning horizon. The eHR programme reflects consensus on key issues reached among healthcare professionals from both the public and private sectors in the Steering Committee as set out in paragraphs 10 to 19 below.

(a) eHR development should be government-led and should leverage HA's systems and know-how

10. Recognizing the successful experience and invaluable expertise accumulated within HA in developing its CMS, it is considered that the community would benefit from leveraging HA's systems and know-how when developing the eHR sharing on a territory-wide basis. HA is currently in the process of further upgrading the CMS through its Phase III development.

11. Given the complex issues involved in an eHR sharing system, the multitude of healthcare providers involved, and the potential sensitivity of such a system holding a vast amount of personal health data, it is considered that the Government should take a leading role at the formative stage, with the Food and Health Bureau (FHB) steering and co-ordinating the development of the eHR sharing system, involving all relevant stakeholders in both the public and private sectors as well as the community in the process and ensuring balance of interests amongst them. The Steering Committee is unanimously of the view that Government should fund the capital development of the eHR sharing system and recurrent operation and maintenance of the sharing platform as a healthcare infrastructure.

(b) Data privacy and system security of the eHR sharing system should be accorded paramount importance and given legal protection

12. Data privacy and system integrity and security of the eHR sharing system would be crucial to protect the interests of both patients and healthcare providers and to inspire confidence in the system within the community. To this end, we have invited the Office of the Privacy Commissioner for Personal Data (PCO) amongst others to advise on the eHR programme. Based on its advice, FHB will commission in consultation with PCO a Privacy Impact Assessment (PIA) that will proceed in tandem with the development of the eHR sharing system, and commission a Privacy Compliance Audit (PCA) upon individual components of the eHR sharing infrastructure commencing operation. The PIA and PCA will cover a wide range of issues affecting data privacy including data sources, collection, storage, deletion, access control, disclosure and use, authentication, consent issues, records sharing, security safeguards, privacy risk management, etc. We will also conduct the Security Risk Assessment and Audit in conjunction with the Office of the Government Chief Information Officer.

13. In addition, in reaching their initial recommendations, the Steering Committee has surveyed the current legislative provisions applicable to personal health data, and

recognised the need to address a number of legal issues including record ownership and copyright and to explore the long-term legal framework for safeguarding the privacy and security of such personal health data, having regard to the context of the eHR sharing system. The work to address these legal issues and develop the necessary legal framework will proceed in tandem with the development of the eHR sharing infrastructure, taking into account experience of similar legislative developments in overseas economies, to meet the needs of the future eHR sharing infrastructure and the aspirations of the community.

(c) Participation in eHR sharing should be compelling but not compulsory for both patients and healthcare providers

14. It should be noted that developing an eHR sharing system does not imply that all health data of every citizen would be automatically shared with every healthcare provider. The sharing must be based, first and foremost, on a patient's informed consent to participate in eHR sharing and authorization for individual healthcare providers to access their shared eHR. This will help build up confidence in and acceptance of eHR sharing. Healthcare providers, as originators of health records, may also choose to participate in the eHR sharing system or not to participate, all on a voluntary basis. A consensus reached in the Steering Committee is that the health data falling within the pre-defined scope of eHR should in principle "belong" to the patient, and healthcare providers who choose to participate will have to make available such data for sharing, under the aforementioned patient-oriented approach, with other healthcare providers participating in eHR sharing.

15. To make participation in eHR sharing attractive and compelling for healthcare providers, apart from facilitating the development and deployment of eHR systems in the private sector (see paragraphs 19, 23 to 25 below), we will consider creating incentives for private healthcare providers to participate in eHR sharing. So far we have asked the private sector providers who have participated in subsidized healthcare schemes and public-private-partnership (PPP) projects to use eHR, e.g. the Cataract Surgeries Programme and the Tin Shui Wai Primary Care Partnership Project, and these have proved to be effective and well received. We will also consider providing training to healthcare providers in the private sector who use the eHR system.

(d) eHR sharing system should be based on open, pre-defined and common technical standards and operational protocols

16. To ensure that there would be adequate capacity and competency to provide IT services to private healthcare providers for individual eMR/ePR systems with capabilities

of interconnecting with the eHR sharing system, the eHR sharing system should be developed on the basis of standards which are open to the community, pre-defined through collaboration amongst healthcare professionals in both the public and private sectors, and are commonly adopted by IT vendors and healthcare providers. The sharing of health data through the eHR sharing platform should also be based on pre-defined security standards and communication protocols to ensure integrity and security of the eHR sharing system and to safeguard the privacy and security of the data.

17. To this end, the eHR programme would require dedicated efforts to develop highly technical and knowledge-based standards and protocols for the many different aspects of eHR, from disease and diagnosis to drugs and treatment procedures, from patient and provider identification and authentication to access control and logging, from interface of individual eMR/ePR systems with the eHR sharing platform to communication protocols for sharing eHR. To make such standards open to the community and to promote the adoption of such standards, we will consider making the standards developed available to private healthcare providers and IT vendors to facilitate their development of eMR/ePR systems in compliance with such standards, and operate certification schemes for eMR/ePR systems and solutions offered by private IT vendors for compliance with such standards and inter-operability with the eHR sharing platform. These would provide business opportunities for the IT sector.

(e) Development of eHR sharing system should be based on a building block approach, involving partnership with the private sector

18. Experience from the development of CMS in HA as well as development of eHR sharing systems overseas suggests that successful development of the eHR sharing system should proceed on a building block approach, i.e. to break down the eHR sharing system into individual components, to develop modules under each component step-by-step with pilots as necessary, to involve user feedback in designing and developing modules, to gradually extend proven modules with add-on scope and functionalities, and to bring together modules to build the components that support the sharing system. Such a strategy has proven to work well for the development of CMS in HA, and would avoid the big-bang approach that has challenged eHR development in some overseas countries. Such an approach would call for a dedicated institution to manage and guide the programme, constantly providing inputs, monitoring feedback, determining priorities and adjusting the programme accordingly.

19. The engagement of private sector on eHR development and the identification of possible eHR partnerships with private healthcare and IT service providers will require a

dedicated setup to liaise with all relevant stakeholders, invite proposals for partnership projects, assess and prioritise the projects, direct resources to support the projects, and to monitor and evaluate the projects on how well they contribute to development of the eHR sharing system (see also paragraphs 23 to 25 below).

The eHR Development Roadmap and Target

20. Based on the programme outlined above, the Government has devised the eHR development roadmap to develop the sharing system in stages. Stakeholders including private hospitals, private clinics, other healthcare providers (e.g. laboratory and radiology services) and IT vendors will be involved in the development of various components of the eHR system on the sector by sector development roadmap with different planned milestones. For instance, one of the first major milestones in 2009 will be the sharing of radiological images from private hospitals to HA. A pilot for easier patient registration with the use of Smart ID Card in hospitals and clinics, aiming at shortening the time from registration to the actual access of clinical records, will be ready by 2010. Other technical work including standardization and interfacing will continue to proceed in parallel and policy, systemic and legal issues will be addressed in tandem with the eHR development roadmap.

21. Under the eHR development roadmap, the development of the eHR sharing system will be divided into the following three major eHR components -

(a) ***The eHR sharing infrastructure core component***: to design and build the core eHR sharing platform for interconnecting between individual eMR/ePR systems adopted by individual healthcare providers, and providing functions relating to eHR sharing, including storage and exchange of data between individual systems, and access to and retrieval of eHR data of individual patients in different individual systems, including systems for patient and provider identification as well as consent for access. The system will be based on common standards to be developed by the public and private sectors in collaboration.

(b) ***The CMS adaptation and extension component***: to facilitate the adoption and deployment of HA's CMS by private healthcare providers, especially private hospitals/clinics which would like to adopt HA's CMS components for their own use with minimal investment and maintenance. This component will facilitate the deployment of eHR systems by IT vendors in private hospitals, private practitioners and healthcare providers which intend to adopt and use the HA systems.

(c) ***The standardization and interfacing component***: to develop technical standards for

different healthcare IT systems to interoperate and interconnect through the eHR sharing infrastructure, to advance a validation platform for testing interoperability that could support a future certification scheme for individual eMR/ePR systems of healthcare or IT service providers, to provide technical support for private healthcare providers which already have their own eMR/ePR systems and would like to connect to eHR, and to provide the necessary interface to facilitate such interconnection. This component will facilitate the deployment of eHR systems by private hospitals, private practitioners and other healthcare providers which intend to use their own systems while ensuring compatibility with the sharing infrastructure and interoperability with other eHR systems.

22. More specific details of the development roadmap including the plan for individual sectors are summarised at ***Annex C***. **Under the roadmap, we have set an initial target to have the eHR sharing platform ready by 2013-14 for connection with all public and private hospitals, and to have eMR/ePR and other health information systems available in the market for private doctors, clinics and other health service providers to connect to the eHR sharing platform.** The proposed implementation plan of the First Stage of the eHR Development Programme (from 2009/10 to 2013/14) is as follows-

Project	Start Date	End Date
eHR patient master index development	July 2009	Dec 2011
eHR architecture and design	July 2009	Mar 2011
Pilot programs for eHR	July 2009	Dec 2013
eHR system implementation and rollout	Mar 2011	Dec 2013
CMS on ramp pilot development	July 2010	June 2011
CMS on ramp development and implementation	July 2011	Oct 2013
CMS adaptation basic modules	Jan 2010	Oct 2013

The eHR Engagement Initiative

23. Given the importance of participation in eHR development by private healthcare providers, IT service providers and other stakeholders in the community, and in order to support the eHR components in the development roadmap involving private sector

interface, we intend to launch an eHR Engagement Initiative (EEI) with all relevant stakeholders. An outline of the EEI is set out at ***Annex D***.

24. Specifically, we will conduct an open exercise to invite interested private healthcare providers, IT service providers and relevant stakeholders to submit proposals. The purpose of the exercise is to help us identify potential partners and partnership projects under different possible partnership models that could further the objective of eHR development.

25. As part of the EEI, we will also be promoting the concept of eHR sharing among the general public including patients and healthcare providers, through both pilot projects involving eHR sharing and other patient-centred healthcare programmes using eHR as a vehicle. Our ultimate aim is to drive the development of a patient-oriented eHR sharing system where the patient will have greater control of and access to their own health records and in turn their own health.

RESOURCES AND STAFFING REQUIREMENTS

The Government's Commitment to eHR Development

26. The development of the eHR sharing system requires substantial investment in the public sector. Apart from planning to fund the development of eHR systems in the public sector including those within HA and Department of Health (DH), the Government is planning to fund the capital cost necessary for the development of the overall eHR sharing infrastructure, as well as its operation, maintenance and continued development. Since the eHR sharing system is an essential infrastructure for healthcare services and implementation of the healthcare reform, Government's investment in the development of this infrastructure and commitment to its recurrent operation and maintenance is necessary. In practical terms, the Government is planning to provide capital investment for the three eHR components in the development roadmap as set out in paragraph 21 above.

27. Apart from development projects that the Government will directly commission on its own, we envisage that many development efforts will also take place through partnership with private healthcare providers, private IT service providers and relevant stakeholders (see paragraphs 23 to 25 above on private stakeholders engagement). As a general principle, under such partnerships, the Government will provide capital investment **only** in respect of the components that fall within the eHR sharing infrastructure set out in the eHR roadmap as described above. The private sector partners will remain responsible

for their own hardware and recurrent costs, and there should be no question of subsidizing their operations (whether non-profit-making or otherwise).

28. Apart from capital funding, the capital investment by the Government may also take the form of (i) making available the public sector systems including any standards, modules, components and technology through licensing for local use; (ii) development assistance and other technical advice provided by the public sector for interfacing including any necessary modifications or upgrading of existing systems; (iii) standardization and any associated work necessary to make the standards available for use by private stakeholders for their own eMR/ePR systems; and (iv) financial support to eHR projects by non-profit-making professional bodies which would make it available through open source to the local sectors.

Capital Costs for eHR Development

29. Based on HA's experience in developing the CMS and having regard to the scale of the project in comparison with other similar projects with a major IT component, we have made an estimate of the rough order of capital costs for the development of the eHR sharing system for the 10-year planning horizon from 2009-10 to 2018-19 to be about $1,124 million. Breakdown of the cost estimate by the eHR components as set out in paragraph 21 above is set out in the table below. It is estimated that about $702 million will be required for the First Stage of the eHR Development Programme (from 2009-10 to 2013-14), and the breakdown with cashflow is set out at ***Annex E***. As explained in paragraph 18 above, the building block approach for eHR development based on HA's CMS experience would require that the programme be refined and adjusted throughout the course of development.

eHR Components	**Rough Estimate of Funding Requirements ($ million)**
(a) eHR Sharing Infrastructure Core Component	724
(b) CMS Adaptation and Extension Component	284
(c) Standardization and Interfacing Component	116
Total	**1,124**

30. In this connection, we have commissioned a consultancy to assist in devising a more detailed programme management plan for planning and managing eHR development projects, and to validate the cost estimate for individual project components of the programme. It is our plan to seek capital funding approval from the FC of the Legislative Council for the development of the eHR sharing system in stages, having regard to clear milestones in the overall development roadmap. Specifically, we will proceed to seek capital funding approval of $702 million within the current legislative year for the First Stage of the eHR Development Programme that is designed to deliver the initial target and milestones of the roadmap as indicated in paragraph 22 by 2013-14. Further capital funding approval will be sought after the First Stage has progressed up to a more mature stage.

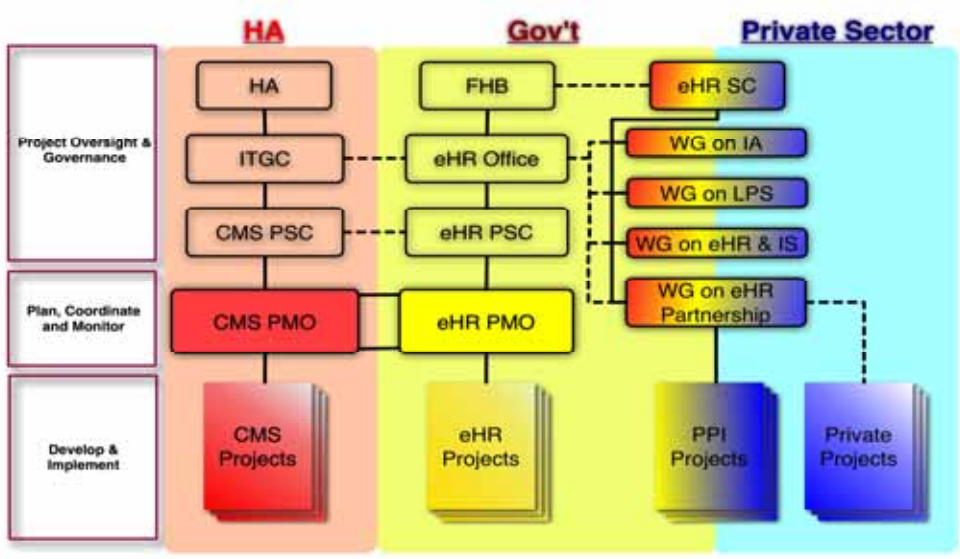
31. As a measure of the rough order of the cost estimate, it should be noted that the estimate is at a comparable order of magnitude, taking into account the implementation horizon, with the funding that has already been invested in the development of HA's CMS ($1.5 billion for 14 year development since 1995) and the estimate that is estimated for upgrading of the CMS to Phase III ($0.9 billion for an 8-year upgrading programme). It should also be noted that while the CMS involved a similar scale of patient records, it involved a relatively simpler architecture given that the system is deployed entirely for internal users within HA as a more homogeneous environment with harmonized interface and procedures. On the other hand, the eHR sharing system will have to handle multitude of healthcare providers, and thus the system called for a much more robust security including authentication and access control, and much more flexible architecture that can interconnect with multiple systems.

32. We have also drawn comparison with known or pledged investments in overseas eHR initiatives, and noted that the total investment by the Government in the eHR sharing system, including the Government's funding for both the eHR sharing infrastructure and HA's CMS (both existing and future upgrading), should be at a lower but comparable order of cost on a per capita level. For instance, similar initiatives overseas carry a per capita cost in the range of $2,300 to $2,800 in UK, Canada and US. Meanwhile, counting only investment by the public sectors in developing the eHR sharing system, it is estimated that the eHR sharing system will cost around some $900 per capita in Hong Kong. With the Government taking the lead in developing the sharing infrastructure and making systems and know-how in the public sector available, we expect investment by the private sector in their own eMR/ePR systems to be of a much smaller scale, making the total investment well below those overseas.

The Dedicated eHR Office to Co-ordinate Development

33. To co-ordinate the complex and multi-faceted development programme of the eHR sharing system and to accomplish the various tasks required of the eHR programme as set out above, it is our plan to set up a dedicated eHealth Record Office (eHR Office) with a civil service setup under the Health Branch of FHB and with support from a dedicated teams in HA's IT Services (HAITS). This is to allow the eHR Office to remain part of FHB to provide the necessary policy steer and co-ordination for the eHR programme, and at the same time tap the expertise and experience of developing clinical IT systems in HAITS in implementing the eHR sharing infrastructure and facilitating eHR development in the private sector. DH will also set up its eHR team for developing eHR systems within DH under the co-ordination of the eHR Office. For establishing these setups and starting the eHR programme, we have estimated a total recurrent spending of $327 million for the years 2009-10 to 2011-12. The Steering Committee and its Working Groups will remain the advisory body to FHB including the eHR Office on eHR development.

Figure 1: Outline of eHR Governance, Advisory and Coordination Structure



KEY

ITGC: Information Technology Governing Committee;

CMS: Clinical Management System;

PSC: Project Steering Committee;

PMO: Project Management Office;

WG on IA: Working Group on Institutional Arrangements;

WG on LPS: Working Group on Legal, Privacy and Security Issues;

WG on eHR & IS: Working Group on eHealth Record and Information Standards;

WG on eHR Partnership: Working Group on eHR Partnership

PPI: Public-Private Interface

Staffing for eHR Office

35. The civil service setup in the eHR Office is planned to start off with 20 civil servants, while the dedicated support teams within HAITS is planned to have a scale of staffing of some 200 technical staff on average up to a maximum of some 300 technical staff depending on the stages of development.

36. To provide the necessary steer and guidance for this development team comprising more than 300 staff, and to ensure the appropriate level of management input and overview of this long-term project involving a substantial scale of infrastructure development and complex and multi-faceted issues including policy and legal issues, we propose to create in the eHR Office four directorate posts including one supernumerary post of Administrative Officer Staff Grade B (AOSGB) (D3) for four years as Head of the eHR Office, one supernumerary post of Administrative Officer Staff Grade C (AOSGC) (D2) for four years as Head of the Policy and Planning Unit, one permanent post of Principal Executive Officer (PEO) (D1) as Head of the Finance and Project Management Unit, and one permanent post of Chief Systems Manager (CSM) (D1) as Head of the Infrastructure and Development Unit. Details of the staffing proposal are set out at ***Annex F***.

ADVICE SOUGHT

37. Members are invited to comment on the eHR programme. Subject to Members' views, we will seek the necessary approval from ESC/FC on the directorate staffing proposal, and capital funding approval from FC for the First Stage Development Programme in May/June 2009. Subject to FC's approval, we plan to establish the eHR Office in the third quarter of 2009.

Food and Health Bureau
March 2009

Annex A

Present Situation of eHR Development in Hong Kong

Introduction

Presently in Hong Kong, health-related and medical data are usually created and kept by different healthcare providers (or sometimes by individual patients) at different locations in different formats, e.g. at doctors' clinics and separately at hospitals. With the major exception of the Hospital Authority (HA), such data are usually kept in paper form by most healthcare providers, and while some healthcare providers may deploy electronic patient/medical record systems to store and retrieve such data, such systems are generally not capable of data sharing at any large scale if at all.

Hospital Authority

2. Since 1995, HA has progressively developed its Clinical Management System (CMS) for storing and retrieving patients' medical records. The CMS has already gone through its Phases I and II development with an accumulative investment of $1,420 million over 14 years. Up to now, the CMS is the largest scale integrated electronic medical/patient record (eMR/ePR) system in Hong Kong, and probably one of the most advanced and successful systems of its kind in hospitals, in terms of coverage, functionalities and complexity. It has accumulated the medical records of over eight million patients, 800 million laboratory results, 340 million prescriptions and 34 million radiological images, covers virtually all clinical services provided by HA hospitals and clinics (with the main exception of medication order in in-patient wards).

3. The current CMS is a well-developed IT infrastructure, it provides shared access to patient records to any authorized personnel within HA, and is an indispensable tool tightly integrated into the day-to-day delivery of healthcare service by clinicians and other healthcare professionals in HA with over three million transactions per day. However, sharing beyond HA with other healthcare providers is limited by both system design and capacity. The CMS is thus currently being upgraded to CMS III to enable its extension and adaptation for application in the private sector and to facilitate sharing of patient records with other healthcare providers in future. The CMS will be one of the main pillars to the eHR sharing infrastructure. The HA's expertise and know-how in the development of CMS is also a crucial asset to be leveraged to facilitate the development and extension of the eHR sharing infrastructure and system to the private sector.

4. HA's experience with CMS also bears witness to the benefits of eHR sharing, albeit

confined to within HA institutions: clinicians can access to most updated patient information for best clinical decision making; clinical processes from patient registration, appointment booking, and clinical documentation, ordering to discharge and follow up are all computerised, supporting better clinical efficiency. Comprehensive and standardized patient data can enable better and safer clinical care.

Department of Health

5 At present, the Department of Health (DH) serves various public health functions and hosts a vast amount of essential health data such as vaccination records in paper form, and has started in recent years to introduce IT systems to computerize such records. DH is currently planning to develop a centralized information repository with eHR-sharing capabilities, as well as a common interfacing gateway for interfacing with HA and eventually the private sector. This includes the enhancement of various systems including the Maternal and Child Health Centre (MCHC) information system with immunization records, the development of Social Hygiene Service information system and Family Clinics (providing medical services for civil servants) with electronic patient records; and Clinical Genetics Service information system.

6. DH is also exploring the possibility of using DH's drug compendium as the basis to develop a standardized electronic drug list to support for eHR standardization and sharing, as the compendium would provide the list of all registered drugs in Hong Kong.

7. In addition, DH will be implementing the Communicable Disease Information System (CDIS), which is an information system primarily designed for disease surveillance and public health response purposes. DH's CDIS project will align its data standardization and interoperability with eHR development.

Private Healthcare Sector

8. Deployment of eHR systems in the private healthcare sector is much more staggered. While many private hospitals have deployed IT systems, most focus on appointment and accounting purposes rather than clinical data and ward functionalities, and there may be limited sharing capabilities between institutions. Private doctors and clinics, which provide over 70% of the out-patient consultations for the whole population use mainly paper-based patient records. For the few who use eMR/ePR systems, most do not have the capabilities of sharing clinical data. Some private laboratories and radiological services have deployed IT system for various in-house purposes, but such systems are often stand-alone systems not designed for electronic sharing.

Private Hospitals

9. The extent of adoption of eHR system varies among the current 13 private hospitals. Their existing IT systems and the capturing of patients' records in these hospitals are mostly for billing, drug dispensing and inventory purposes. Clinical data are usually kept as hardcopies in private hospitals, and those that are kept electronically often do not have sharing capability. The private hospitals have expressed willingness to participate in eHR sharing and to invest in setting up the eHR systems with sharing capabilities, if there is necessary support (such as developing IT infrastructure, standard, etc.) from the Government.

eHR Sharing Pilots

One-way Sharing

10. To test the feasibility and acceptability of eHR sharing, we have through HA launched the "Public-Private-Interface Electronic Patient Record Sharing" (PPI-ePR) pilot project since April 2006, which allows participating private healthcare providers and other registered institutions to view their patients' medical records kept at the HA , subject to the patients' consent. The PPI-ePR pilot has thus far enrolled over 54,000 patients, 1,300 private healthcare professionals, 12 private hospitals and 10 other private or non-governmental organizations (NGOs) providing services related to healthcare, and received very positive feedback from both participating patients and healthcare providers.

11. The Government will continue to expand this one-way eHR sharing pilot to all 13 private hospitals, and allow more patients, more private healthcare providers and more NGOs to participate with a view to further promoting sharing of patients' records among the public and healthcare providers. The security and private protection measures deployed in these pilots have been found to be satisfactory following both external and internal audits. We will expand PPI-ePR and integrate it into the eHealth System in late 2009/early 2010, to minimize duplicate data entry for both systems.

Two-way Sharing

12. Meanwhile, two-way eHR sharing (i.e. allowing both private and public healthcare providers to enter data) is also being tested on a trial basis to allow specified private healthcare providers participating in two pilot public-private-partnership (PPP) projects launched since 2008 (namely the Cataract Surgeries Programme and the Tin Shui Wai Primary Care Partnership Project) to enter clinical information of their patients through the electronic patient record system. Such two-way eHR sharing will be further expanded to cover private healthcare providers participating in the primary care and PPP pilots projects in the pipeline

that will be launched in 2009/10 to test models for enhancing primary care and strengthening support for chronic disease patients.

13. In addition, one-way sharing in the other direction (i.e. from the private to the public sector) is also being tested through the radiological image sharing pilot that allows participating private healthcare providers to send the radiological images of enrolled patients to HA via electronic means. This pilot has just been launched in January 2009 with one private hospital and will continue to be expanded to other interested private healthcare providers.

14. These various eHR sharing pilots, albeit on a limited scale, have provided a proof-of-concept on the feasibility and acceptability of eHR sharing amongst healthcare providers and patients in general. These pilots have also provided valuable experience and insights into the potential challenges of implementing eHR sharing system on a territory-wide and population-wide basis. These pilots and their future evolution will form essential building blocks for the future eHR sharing infrastructure.

Food and Health Bureau
March 2009

Annex B

The FHB Steering Committee on eHR Sharing

To take forward the development of a territory-wide electronic health record (eHR) sharing infrastructure, the Secretary for Food and Health established the Steering Committee on eHR Sharing (Steering Committee) in July 2007. The Steering Committee is responsible for formulating strategies to facilitate the development of eHR infrastructure and sharing of patients' records in both the public and private sectors.

2. Four Working Groups have been set up under the Steering Committee to handle specific tasks, namely -

(a) *Working Group on Institutional Arrangements*: to formulate feasible recommendations on the future institutional framework and structure for the governance, management, operation and maintenance of the eHR sharing infrastructure.

(b) *Working Group on Legal, Privacy and Security Issues*: to examine legal and related issues relating to the eHR sharing infrastructure including ownership, copyright, privacy, confidentiality, security, liability, etc. and to formulate recommendations for the long-term legal framework as well as interim solutions to address these issues

(c) *Working Group on eHealth Record and Information Standards*: to address any technical issues relating to the development of eHR sharing infrastructure, to initiate and oversee work programmes for development of eHR sharing infrastructure, to identify general obstacles to eHR sharing, and to devise feasible solutions to promote adoption of eHR technology as well as acceptance of patient record sharing among healthcare providers as well as the among the public.

(d) *Working Group on eHR Partnership*: to formulate strategies to facilitate the development of eHR systems in the private sector contributing to the planned eHR infrastructure and to promote the participation of the private and non-government sectors in sharing patients' records amongst different healthcare providers.

3. The structure and membership of the Steering Committee and its four Working

Groups are as follows -

Structure:

Membership:

(1) Representatives of –

Food and Health Bureau
Hospital Authority
Department of Health
Office of the Government Chief Information Officer
Efficiency Unit
Hong Kong Academy of Medicine
Hong Kong College of Radiologists
Hong Kong College of Pathologists
Hong Kong Doctors Union
Hong Kong Medical Association
Hong Kong Private Hospitals Association
Office of the Privacy Commissioner for Personal Data
Consumer Council

(2) Individual members

Individuals in private healthcare practices with eHR experience
Individuals in various healthcare professions with eHR experience
Individuals with health informatics, healthcare IT or other relevant experience

Annex C

Summary of eHR Development Roadmap

eHR components	Private Hospitals	Private Clinics	Ancillary Services	IT companies/ consultancies	Citizens
(a) eHR infrastructure development	Will be able to connect to central eHR infrastructure, benefitting citizens on a complete medical records to avoid duplication of tests or error	Connect to eHR infrastructure for making referrals, ordering investigations and contributing to a complete patient records in eHR	Able to receive referrals from other healthcare providers via eHR infrastructure and provide image/ laboratory data into eHR for patient care	Potential for outsourcing and consultancy for component of eHR infrastructure and enhance health IT status of Hong Kong	Citizens will benefit from eHR records such that the medical records are accurate, timely and complete
(b) CMS adaptation/ on-ramp	Hospital systems in operation to allow healthcare professionals to access and contribute to patient records in the eHR	Clinic systems for practice management, able to connect to eHR for patient records and for voucher claim	Ancillary services can use CMS on ramp for their practice management	Business opportunities for CMS adaptation, hosting and implementation	Similar system between different healthcare settings will minimize risk of mis-interpretation of medical data
(c) Standardization and Interfacing	Able to use the same standard terminology for communication with other healthcare providers	Able to use a common drug and diagnosis code for more efficient clinical and practice management	Benefit from using Hong Kong standards for laboratory, pharmacy and radiology services	Private IT systems can get certified for services complying with agreed standards	A common healthcare language will provide a platform for "records follow patients"

Annex D

Outline of eHR Engagement Initiative

Introduction

The engagement and participation of all stakeholders in the private and non-government sectors will be essential to building up a territory-wide patient-oriented eHR system. It will be vital to engage the many stakeholders in the healthcare sector at an early stage of eHR development to help ensure compatibility among the systems used in both the public and private sectors, and seamlessness in eHR sharing in the future. We also intend to engage the IT service sector to encourage their participation in the development of novel technical solutions to meet the challenges of inter-operability.

Launch of eHR Engagement Initiative

2. The objectives of the EEI will be to-

(a) gain feedback from all healthcare sector stakeholders in what ways – eHR can potentially assist their care of patients, ensure continuity of care and enhance safety and quality;
(b) provide an opportunity to promote and update on the development of eHR among all stakeholders;
(c) invite preliminary proposals for eHR partnership from potential partners in both healthcare and IT sectors;
(d) gain a more in-depth appreciation of current and future development plans for electronic medical/patient record (eMR/ePR) systems in the private and non-governmental (NGO) sectors; and
(e) share ideas that can promote inter-operability of eMR/ePR systems and seamlessness in eHR sharing.

Private Sector Stakeholders to be Engaged

3. We envisage that potential partners will range across many sectors, including:

(a) medical and other healthcare professional bodies;
(b) IT professional bodies;
(c) patient groups;
(d) private healthcare providers;
(e) private hospitals;
(f) private clinics (in group or solo practices);

(g) private laboratory and radiology services providers;
(h) other allied health providers;
(i) other healthcare providers (dentists, Chinese medicine practitioners, pharmacists/ pharmacies, etc.);
(j) non-governmental organizations (NGO) (elderly care homes, elderly centres, other social welfare NGOs, etc.);
(k) private IT vendors including those currently engaged in providing healthcare IT solutions.

Proposals for eHR Partnership

4. All stakeholders will be invited to submit proposals on possible partnerships for eHR development. Such partnerships may include projects in the following models –

(a) sponsoring specific non-profit-making projects contributing to the development of eHR sharing;

(b) providing development support to private healthcare providers in upgrading their information systems with sharing capabilities up to eHR standards;

(c) making available existing systems and know-how in the public sector through licensing to private healthcare providers for developing and deploying their own eMR/ePR systems;

(d) developing generic eMR/ePR systems and related services for use by private healthcare providers by leveraging existing systems and know-how available in the public sectors; and

(e) licensing necessary technology to IT vendors for developing eMR/ePR systems with sharing capabilities in accordance with eHR standards and operating certification scheme for compliance and inter-operability.

5. The proposals received from the EEI exercise will be assessed in accordance with the guiding principles, objectives and programme development plan for eHR development. The basic principle is that the partnerships must contribute towards building a territory-wide eHR infrastructure, promote interoperability of various systems and encourage eHR sharing. Existing pilot projects that have already been initiated and funded by the Government will be subsumed under this framework.

6. We seek the inputs of the Working Group on eHR Partnership (WG-eHRP) under the

Steering Committee on eHR Sharing on the criteria for assessing and prioritizing such partnership proposals. With the received proposals, the WG-eHRP could further advise on the appropriate strategy to further promote eHR development and sharing in the private sector. WG-eHRP may also formulate other recommendations to promote eHR sharing among the general public and private stakeholders.

Further Steps

7. The EEI will not end there. Rather we see engagement of the private sector an integral part of eHR development, which will be an interactive process that will continue between all stakeholders throughout the life of the project, guiding the planning, facilitating the roll-out of individual programmes and enhancing systems as they mature.

8. In short, the EEI will recognize and mobilize the major role that all private partners will play in this major challenging initiative.

Food and Health Bureau
March 2009

Annex E

Breakdown and Cashflow of Estimated Capital Costs for First Stage eHR Development from 2009-10 to 2013-14 (in $ '000)

	2009-10	2010-11	2011-12	2012-13	2013-14	Total
eHR Sharing Infrastructure Core Component	33,986	101,538	112,327	113,146	103,617	464,614
CMS Adaptation and Extension Component	11,358	35,080	41,612	39,613	40,697	168,360
Standardization and Interfacing Component	4,657	14,383	17,061	16,241	16,686	69,028
Capital Costs	**50,000**	**151,000**	**171,000**	**169,000**	**161,000**	**702,000**

Food and Health Bureau
Hospital Authority IT Services
March 2009

Annex F

Staffing Proposal on Setting up of a Dedicated Electronic Health Record Office under the Food and Health Bureau

Problem

The Health Branch of the Food and Health Bureau (FHB) needs dedicated support at the directorate level in planning, developing and implementing the territory-wide population-wide electronic health record (eHR) sharing system and handling the various policy and legal issues including data privacy and security arising from the system.

Proposal

2. We propose to create two supernumerary directorate posts, namely, one Administrative Officer Staff Grade B (AOSGB) (D3) and one Administrative Officer Staff Grade C (AOSGC) (D2) for four years and two permanent directorate posts, namely, one Chief Systems Manager (CSM) (D1) and one Principal Executive Officer (PEO)(D1) in the Health Branch of FHB with effect from 1 July 2009 to staff a new eHealth Record Office (eHR Office) to be established to plan and implement the eHR sharing system which provides an essential infrastructure to support the Healthcare Reform.

Justification

Dedicated eHR Office

Roles and Functions

3. To spearhead and co-ordinate the aforementioned complex and multi-faceted development programme of the eHR sharing infrastructure and to facilitate the on-going development of eHR systems in the private sector, the Steering Committee recommended that a dedicated eHR office in the Health Branch of the FHB should be set up to lead and implement the initiative in both the public and private sectors. The eHR Office will perform the following major roles and functions -

(a) to spearhead and co-ordinate the overall eHR programme, including the building blocks for the eHR sharing system in both the public and private sectors;

(b) to oversee policy matters and legal issues related to eHR, including measures to address data privacy and system security, as well as development of the long-term legal framework;

(c) to drive and sustain the development of eMR/ePR systems with sharing capabilities through engaging the private sector to identify and administer potential partnerships that contribute towards eHR sharing;

(d) to develop technical standards and operational protocols related to eHR sharing through collaboration between the public and private sector, and to promote their adoption by healthcare and IT service providers;

(e) to operate and manage the eHR sharing platform as a healthcare infrastructure for sharing individuals' health data and to foster interconnection with individual eMR/ePR systems; and

(f) to administer the participation and registration of patients and healthcare providers in the eHR sharing system, and to ensure proper authentication and access control accordingly.

4. The proposed eHR Office will comprise three units, namely (a) Policy and Planning Unit, (b) Infrastructure and Development Unit, and (c) Finance and Project Management Unit under the steer of a supernumerary AOSG B (D3), supported by three directorate officers including one AOSGC (D2), one CSM (D1), one PEO (D1) and 16 non-directorate civil servants. The distribution of duties of the three teams to be set up under the eHR Office are listed below-

(a) ***Policy and Planning Unit***: headed by an AOSGC (D2) to-

- Assist in formulating the overall eHR policy and development strategy;
- Examine the relevant legal issues and devise both short-term interim solutions as well as long-term legal framework;
- Develop and oversee the long-term institutional arrangements for the governance and maintenance of the eHR sharing infrastructure;
- Devise action plans for the eHR development programme; and
- Promote the development of eHR in private sector and the community.

(b) ***Infrastructure and Development Unit***: headed by a CSM (D1) to-

- Develop, operate and maintain the eHR sharing infrastructure, architecture and standards with the support of dedicated eHR teams from the HA's IT Services Unit (HAITS) and Department of Health (DH);
- Oversee and monitor the development of the major system

components and target projects for eHR development to ensure smooth completion of target initiatives in accordance with the eHR development roadmap;
- Formulate security policies to safeguard the security and integrity of sensitive personal data stored in the eHR system; and
- Monitor the implementation of the relevant standards, specifications and protocols in eHR sharing by private healthcare providers.

(c) ***Finance and Project Management Unit***: headed by a PEO (D1) to-

- Manage the resources for development of eHR systems including allocation of financial subsidies to public-private partnership projects to incentivise the development and deployment of eHR systems in the private sector;
- Administer, oversee and monitor partnership projects with private healthcare providers and IT service providers; and
- Provide administration support for eHR Office.

Organizational Setup

5. The proposed eHR Office comprising a small civil service set up with mainly management-level staff will be responsible for providing policy steer, management and co-ordination of the overall programme. It will be technically supported by dedicated teams in HAITS which, with its expertise and experience in developing the CMS, will enable leveraging to the maximum extent the existing systems and know-how available in the public sector, including making them available for development of eMR or ePR systems in the private sector. DH will also set up its eHR team for developing eHR systems within DH under the co-ordination of the eHR Office. The Steering Committee and its Working Groups will remain the advisory body to FHB including the eHR Office on eHR development.

Directorate Support for the eHR Office

Need for the Supernumerary AOSGB (D3) Post

6. In view of the immense scale of the development, sensitivity and importance of the project towards healthcare reform and the heavy involvement of the private sector and the community, it is necessary to have a senior directorate officer to head the eHR Office to assume leadership, provide policy steer, and to fully discharge the co-ordination role of the eHR Office. In this connection, we consider that it would be appropriate for the eHR Office to be headed by a dedicated directorate officer to be pitched at Deputy Secretary level and thus propose the creation of a post of AOSGB designated as Head/eHealth Record Office (H/eHRO). The incumbent will oversee all aspects of the work of the eHR Office, provide strategic direction to members of the eHR Office, HAITS and DH's eHR Team, act as the focal point for pursuing and

co-ordinating all public-private partnership projects, gauge the concerns and interests of various stakeholders and formulate development strategies to promote buy-in and adoption of eHR by the community. The development of the eHR sharing infrastructure is a large scale on-going initiative demanding continuous strong leadership and we envisage that there is a permanent need for a senior directorate officer to lead the eHR Office. Nevertheless, as the development of the eHR is still at the embryonic stage, the level of staffing support may need to be adjusted having regard to the pace of development, problems emerged and overall community acceptance. We therefore propose that the AOSGB post be created on a supernumerary basis for four years and be reviewed in a few years' time when we have more concrete development of the eHR. The job description of the proposed H/eHRO post is at ***Enclosure I***.

Need for the Supernumerary AOSGC (D2) Post

7. We propose to create a supernumerary post of AOSGC designated as Deputy Head/eHealth Record Office (DH/eHRO) to provide directorate support to the H/eHRO in heading the Policy and Planning Unit. The DH/eHRO will be responsible for assisting in the formulation of the overall eHR policy and development strategy; examining the relevant legal issues relating to eHR sharing and devising both short-term interim solutions as well as the long-term legal framework necessary for safeguarding privacy and security under the eHR infrastructure; developing and overseeing the long-term institutional arrangements for the governance and maintenance of the eHR sharing infrastructure; promoting the development of eHR in the private sector through engaging healthcare providers (including dentists, Chinese medicine practitioners and other allied health professionals) to examine possible ways by which they could contribute to the eHR system; cultivating community support for adoption of eHR sharing systems by private healthcare providers; and providing secretariat support to the Steering Committee. All the duties and responsibilities require the dedicated input of a directorate post at AOSGC level. Similar to the AOSGB post, we shall review the staffing complement having regard to the overall development of the eHR in a few years' time. The job description of the proposed DH/eHRO post is at ***Enclosure II***.

Need for the Permanent CSM Post (D1)

8. We propose to create a permanent post of CSM (D1) designated as Chief Systems Manager/eHealth Record Office (CSM/eHRO) to assist H/eHRO to lead the Infrastructure and Development Unit. The CSM/eHRO will be responsible for providing professional advice and steer to the overall development of the eHR infrastructure, architecture and standards; working closely with HAITS and DH eHR Team on the design, operation and maintenance of the eHR sharing infrastructure; overseeing and monitoring the development of the major system components and target projects for eHR development to ensure smooth completion of target initiatives according to the roadmap; formulating IT security policies to safeguard the security and integrity of sensitive personal data stored in the eHR system; monitoring the

implementation and observance of the relevant standards, specifications and protocols in eHR sharing by private healthcare providers; and promoting public awareness on the importance of eHR security. The broad range of duties and responsibilities demand the dedicated input of a senior IT professional with sufficient breadth of experience and professional knowledge. We consider that an officer at the CSM level is appropriate to oversee the overall technical development of the eHR. The post will be needed on a permanent basis as we would need to sustain the development of the eHR with continued expansion of coverage, enrichment of functionalities, and upgrading of technology. The job description of the proposed CSM/eHRO post is at ***Enclosure III***.

Need for the Permanent PEO Post (D1)

9. We propose to create a permanent post of PEO (D1) designated as Principal Executive Officer/eHealth Record Office (PEO/eHRO) to assist H/eHRO to lead the Finance and Project Management Unit. The Government plans to invest a total of $1,124 million in the next ten years to develop and implement the eHR sharing infrastructure. The PEO(HR) will be responsible for managing the huge financial resources for eHR development including allocation of funding for the HAITS, DH's eHR Team and various partnership projects to facilitate eHR development and sharing in the public and private sectors; administering all partnership with private healthcare providers and IT service providers; overseeing and monitoring performance audit of the partnership projects and providing feedback to enhance efficiency and encourage the development of sharing-capable eMR/ePR systems in the private sector; providing administration support for the eHR Office including logistic support for various activities relating to promotion of eHR sharing and adoption in the private sectors and community. Having regard to the vast amount of resources to be managed and the importance of the success of partnerships on the implementation of eHR sharing, we consider that it would be appropriate for the Unit to be led by a PEO who has sufficient breadth of experience and knowledge on resource and project management. The post will be required on a permanent basis in view of the on-going nature of the activities in the eHR Office. The job description of the proposed PEO/eHRO post is at ***Enclosure IV***.

10. The proposed organisation chart of the proposed eHR Office and the proposed organisation chart of FHB incorporating the proposed eHR Office are at ***Enclosures V and VI respectively***.

Comparison of Staffing Complement

11. Apart from heavily involved in policy formulation of the implementation of eHR sharing, the eHR Office will also be engaged in executive and operational functions relating to development and funding of public-private eHR initiatives, performance audit of government subsidized eMR/ePR projects, compliance of IT

privacy and security policies and procedures by users of eHR, promotion of adoption of eHR sharing in the community etc. Having regard to the vast amount of resources to be invested in eHR and the extensive and complex nature of the duties involved, the proposed staffing establishment of four directorate officers for the eHR Office is the minimum required in order that the Office could effectively develop and implement the eHR sharing infrastructure.

12. We have drawn comparison of the staffing proposals with other similar projects with a major IT component and consider the proposed level and scale of staffing for the eHR Office reasonable having regard to the magnitude and complexity of the whole eHR programme. For example, the development of the initial phase of the Smart Identity Card project straddled slightly over 2 years (March 2001 to June 2003) involving design and development of the computer system and conversion of some 40,000 rolls of microfilmed records to digital images (95 million images). This project involved a capital commitment of some $750 million and a team of 42 staff led by one Deputy Director of Immigration (GDS(C)3) and one CSM created in the Immigration Department specifically for the exercise. Another example is the implementation of Information Systems Strategy in the then Education Department (ED). The exercise involved nine inter-related IT projects straddled over five years (1993-94 to 1997-98) to develop and set up IT facilities in ED and in schools, including establishing core database on students, teachers, schools to facilitate school administration and management, student attendance and assessment, staff deployment, school place allocation, teachers registration and administration, financial monitoring and planning, etc. Over 1.5 million students were then covered and upon completion in 1998, a basic IT network linking up ED, the then Hong Kong Examinations Authority and some 1200 primary and secondary schools was established. The exercise involved a capital commitment of over $570 million and a team of 39 staff led by one Assistant Director of Education (D2), two Principal Education Officers (D1) and one CSM. For the eHR programme, there are over 10 000 private medical practitioners, nurses and allied health providers, 13 private hospitals and more than 4 000 private clinics/practices which may require access to the eHR sharing system in future, on top of the CMS within HA's 41 public hospitals and 48 specialist outpatient clinics and 74 general out patient clinics which currently holds more than eight million patient records and processes an average of three million transactions daily for access to patient records. The eHR programme also involves more complex issues and handling of sensitive personal health data, as well as much larger scale of record system development and much wider private sector involvement.

Non-directorate Support for the eHR Office

13. The eHR Office will be supported by a total of 16 permanent non-directorate posts. The composition of the Office cuts across different disciplines in order to provide the necessary support for implementing and sustaining the development of the eHR. The posts comprise one Chief Executive Officer, one Senior Executive

Officer, one Senior Management Services Officer, two Administrative Officers, two Systems Manager, three Executive Officers II, two Personal Secretaries I, one Clerical Officer and three Assistant Clerical Officers. The FHB will create the non-directorate posts in accordance with the established mechanism.

Alternatives Considered

14. The Health Branch of FHB oversees the health portfolio and is responsible for the formulation of medical and health policies and related monitoring and legislative work. It is headed by an Administrative Officer Staff Grade A1 (D8) officer, designated as the Permanent Secretary for Food and Health (Health) (PSH(H)), who is supported by one Deputy Secretary (DS) ranked at AOSG B1 (D4) level; one DS ranked at AOSGB (D3) level; four Principal Assistant Secretaries (PASs) ranked at AOSGC (D2) level, viz. PAS(Health)1, PAS(Health)2, PAS(Health)3 and PAS(Health)Special Duties; and one PEO designated as PEO(Health). We have critically examined the possible redeployment of the other existing directorate officers under PSH(H) to take on the work of the proposed directorate posts. The conclusion is that it is not operationally feasible without affecting the quality of their work as all of them are fully engaged in their respective duties. Details of the work schedule of these posts are set out at ***Enclosure VII***.

Job Creation

15. As aforementioned, HAITS will provide technical support for the eHR Office and DH will also set up an eHR Team to develop and implement the eHR. We envisage that the two teams will need to engage about a maximum of 300 staff comprising mainly IT professionals and support staff.

16. As for the private sector, the eHR will create demand for skills, expertise and resources such as software development tools and hardware to establish and operate the eHR and its related services which in turn will create a lot of job opportunities in the local market. Successful implementation of the eHR will enable the local IT expertise and vendors equip with the necessary systems and valuable experiences which will help them tap into other health systems in the region. All the expertise development may be conducive to the future development of Hong Kong into a service and training centre for e-Health in the Asia-Pacific region, including security, technical infrastructure and development, standards development, health informatics, data mining, clinical research, legal and privacy.

Financial Implications

17. The proposed creation of four directorate posts will bring about an additional notional annual salary cost at mid-point of $ 5,835,000. The additional full annual

average staff cost, including salaries and staff on-cost is $ 8,054,000.

18. Based on the proposed set-up of the dedicated team in paragraph 4 above, the additional notional annual salary cost at mid-point for the proposed 16 non-directorate posts is $7,998,060 and the full annual average staff cost, including salaries and staff on-cost, is $10,470,000 .

Way Forward

19. Subject to Members' comments, we plan to submit the directorate staffing proposal to the Establishment Subcommittee on 27 May 2009 for recommendation to the Finance Committee on 12 June 2009.

Food and Health Bureau
March 2009

Enclosure I

Proposed Job Description for the Post of
Head/eHealth Record Office

Rank : Administrative Officer Staff Grade B (D3)

Responsible to : Permanent Secretary for Food and Health (Health)

Main Duties and Responsibilities –

1. To lead a dedicated team in the Health Branch of the Food and Health Bureau to oversee and co-ordinate efforts to develop and implement the eHR sharing infrastructure.

2. To formulate policies, development plans and work targets for the eHR development having regard to expertise advice from healthcare and IT professionals in the public and private sectors.

3. To provide strategic steer and advice to the overall implementation of the eHR and to oversee the services provided by the Hospital Authority IT Service which serves as an agent to the eHR Office to implement the eHR infrastructure.

4. To review the legal framework for eHR sharing to ensure sufficient protection for data privacy and security.

5. To promote and engage private sector participation in the development and adoption of eHR in the community.

6. To oversee the financial management for the eHR and formulate policy on the funding of public-private eHR partnership projects.

Enclosure II

Proposed Job Description for the Post of Deputy Head/eHealth Record Office

Rank : Administrative Officer Staff Grade C (D2)

Responsible to : Head/eHealth Record Office

Main Duties and Responsibilities –

1. To assist in formulating the policy and strategy in developing eHR sharing infrastructure.

2. To commission a Privacy Impact Assessment and Privacy Compliance Audit to examine the legal framework required for eHR sharing and to devise solutions to address privacy and security issues in the interim where necessary.

3. To assist in developing the institutional arrangements and governance structure for the effective development and implementation of eHR sharing.

4. To liaise closely with the Hospital Authority's IT Service, the agent for Government to develop the eHR, on policy aspects of the eHR and to devise detailed implementation programme.

5. To liaise with healthcare providers in the private sector to identify public-private partnership to facilitate the implementation of eHR in the private sector and to devise publicity strategy to promote adoption by the community.

6. To provide secretariat service to the Steering Committee on Electronic Health Record Sharing and its Working Groups.

Enclosure III

Proposed Job Description for the Post of Chief Systems Manager/eHealth Record Office

Rank : Chief Systems Manager (D1)

Responsible to : Head/eHealth Record Office

Main Duties and Responsibilities –

1. To formulate and review IT policies and strategies in relation to the development and implementation of the eHR sharing infrastructure, with particular reference to relevant legal, privacy and security concerns.

2. To work closely with the Hospital Authority IT Service, the agent for Government, to develop the design of the infrastructure, architecture and standards of the eHR and to devise the detailed implementation programme for the eHR.

3. To oversee and advise on the technical aspects of eHR projects and monitor the development of the major system Components and target projects of the eHR.

4. To devise policies and procedures to ensure users' compliance and observance of relevant standards, specifications and protocols in eHR sharing.

5. To provide support for the Working Group on eHealth Record and Information Standards.

6. To formulate plans to promote the importance and public awareness of eHR security.

Enclosure IV

Proposed Job Description for the Post of Principal Executive Officer/eHealth Record Office

Rank : Principal Executive Officer (D1)

Responsible to : Head/eHealth Record Office

Main Duties and Responsibilities –

1. To assist in managing the financial resources provided for the development of eHR.

2. To examine the budgets of the Hospital Authority IT Service and the eHR Team under the Department of Health and manage the allocation and utilisation of resources for the development of the eHR sharing infrastructure.

3. To assist in examining public-private partnership proposals and provide input on financial aspects.

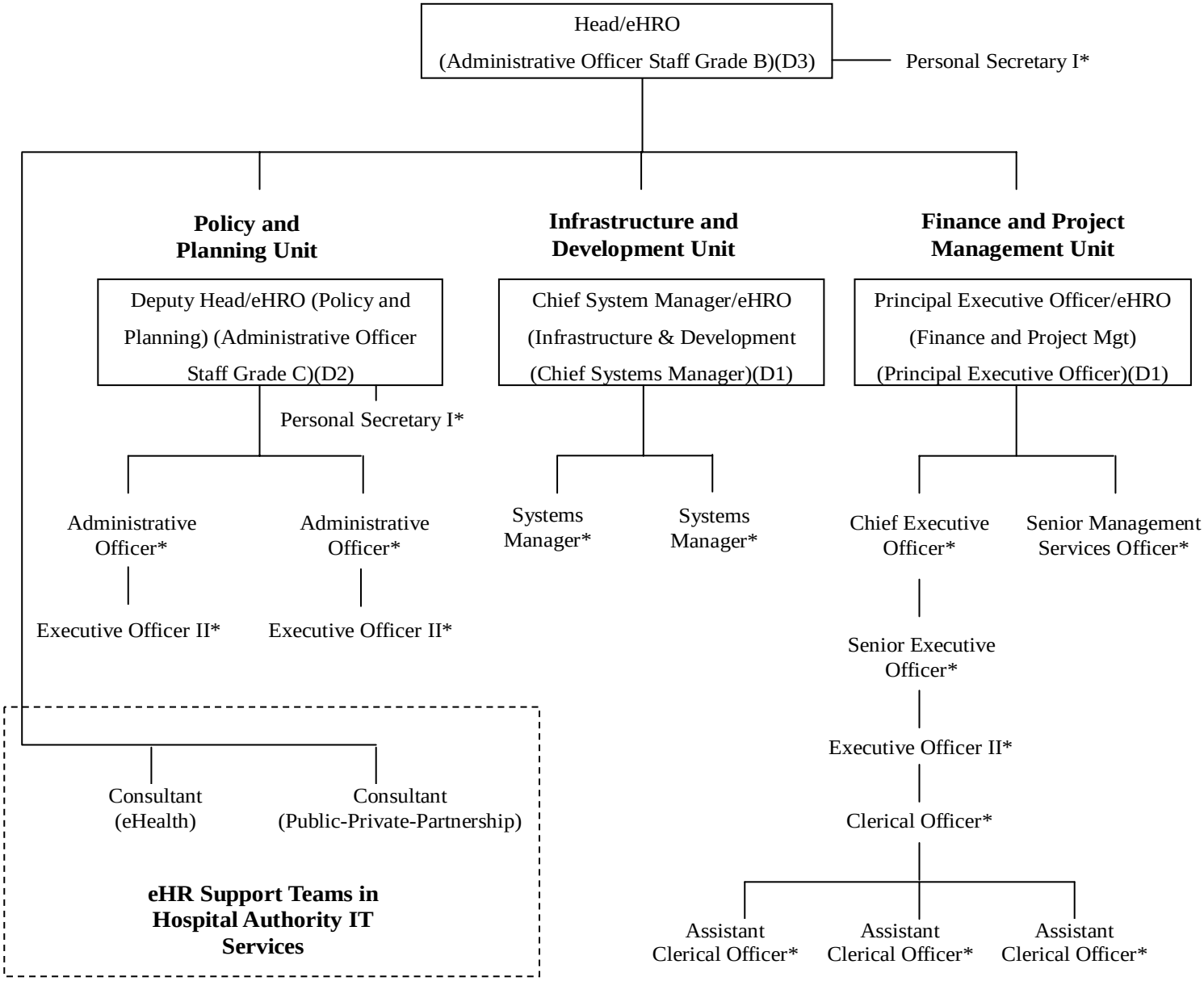
4. To develop funding procedures for allocation of resources to support development of public-private partnerships.

5. To devise mechanism for conducting performance audit of eHR projects and to oversee the performance of audits.

6. To provide administration support to the eHR Office and logistic support for promotion activities relating to the eHR.

Enclosure V

Proposed Organisation Chart of Electronic Health Record Office



Legend:

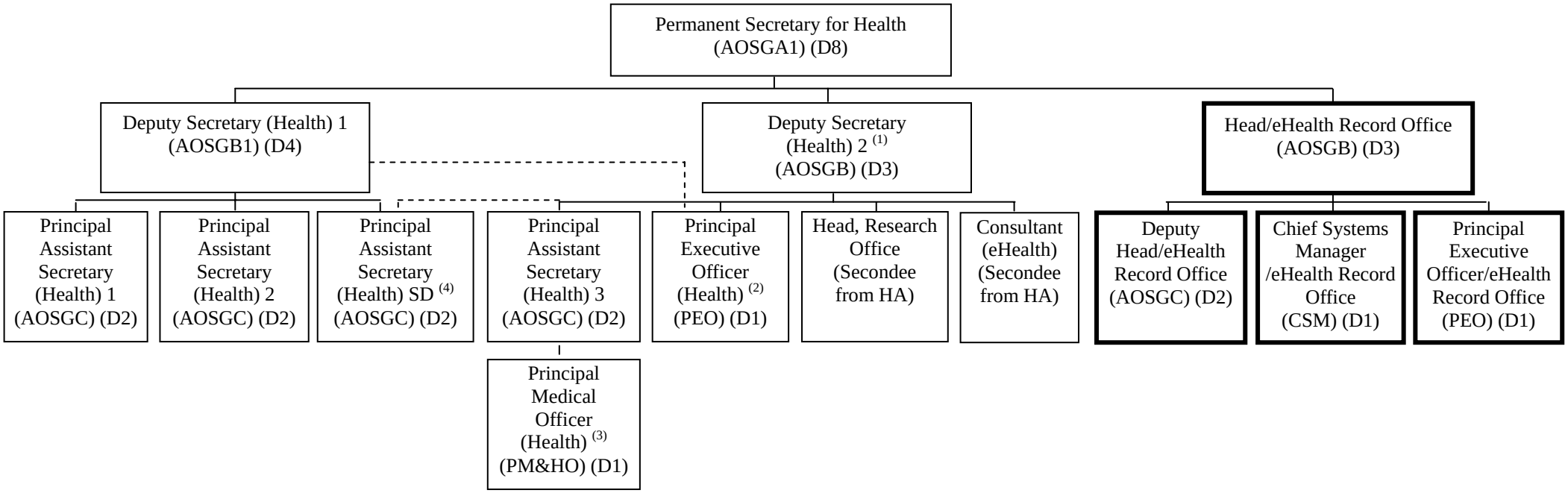
[ ] Directorate posts proposed for creation

* Non-directorate posts proposed for creation

eHRO eHealth Record Office

Enclosure VI

Proposed Organisation Chart of Electronic Health Record Office under the Health Branch of Food and Health Bureau



Legend :

▭	New directorate posts to be created for eHR Office
AOSGA1	Administrative Officer Staff Grade A1
AOSGB1	Administrative Officer Staff Grade B1
AOSGB	Administrative Officer Staff Grade B
AOSGC	Administrative Officer Staff Grade C
PM&HO	Principal Medical and Health Officer
PEO	Principal Executive Officer
CSM	Chief Systems Manager
HA	Hospital Authority
SD	Special Duties

Notes :

(1) Supernumerary post holding against 1 AOSGB post
(2) Supernumerary post holding against 1 PEO post
(3) 6 months supernumerary post
(4) On loan from Department of Health

Enclosure VII

Duty Schedules of Directorate Officers under the Permanent Secretary for Food and Health (Health)

Deputy Secretary for Food and Health (Health)1 (DS(H)1) (D4)

DS(H)1 is responsible for policy matters relating to medical and health services including hospital development and provision of hospital services, fees and charges of public medical and health services, development of public Chinese medicine clinics, health promotion and prevention of communicable and non-communicable diseases, regulation, self-regulation and development of medical, nursing, dentistry and allied health professional and regulation of drugs. With the wide range of responsibilities and the frequent need to tackle many medical-related incidents that are of concern to the public, he does not have any spare capacity to take up any substantial new policy work areas.

Deputy Secretary for Food and Health (Health)2 (DS(H)2) (D3)

DS(H)2 is currently responsible for policy matters relating to the development of primary health care services, service delivery models, healthcare financing, anti-smoking, tobacco control, human organ donation and transplant, human reproductive technology, advance directives, euthanasia, development of health information systems, and health policy research. He also provides strategic support for the Health and Medical Development Advisory Committee and the Healthcare Reform. The DS(H)2 post is a temporarily redeployment of a permanent AOSGB post previously engaged in women policy so as to relieve the work pressure of DS(H)1. Its main responsibility is to spearhead different new health initiatives, particularly in connection with the healthcare reform. DS(H)2 is currently taking charge of the initial preparatory work for the formation of the eHR Office and the drawing up of preliminary development roadmap for the eHR. As DS(H)2 has to focus on the overall healthcare reform including healthcare financing and as the eHR Office requires a full time head to steer and co-ordinate the many eHR initiatives, it would not be possible for DS(H)2 to continue to be involved in the detailed planning and implementation of the eHR sharing infrastructure. The responsibilities of DS(H)2 have been evolving in the last few years to cope with different health initiatives, rendering it unsuitable to rationalize the permanent redeployment of the post. We will regularly review the portfolio of the post and will make recommendation to redeploy the post on a permanent basis when the outcome of and work relating to the healthcare reform is more certain.

Principal Assistant Secretary for Food and Health (Health)1 (PAS(H)1) (D2)

PAS(H)1 is responsible for policy matters in respect of the prevention and control of communicable and non-communicable diseases; contingency planning regarding communicable disease outbreaks; regulation of medical and health professions; regulation of healthcare institutions, including private hospitals; regulation of pharmaceutical products, Chinese medicines, Chinese proprietary medicines, medical devices and radiation matters; pilot scheme on hospital accreditation; public health, clinical and other services provided by Department of Health (DH); and oral health. The officer is also responsible for medical and health manpower planning as well as liaison with the Ministry of Health. The portfolio covers a wide spectrum of subjects and the workload is heavy. In times of major communicable disease outbreaks, the officer will be heavily engaged in crisis management on top of the abovementioned policy work. There is hardly any extra capacity for absorbing new duties arising from the development of eHR.

Principal Assistant Secretary for Food and Health (Health)2 (PAS(H)2) (D2)

PAS(H)2 is responsible for policy matters relating to the provision of public hospital services (specifically on mental health services, public-private-partnership programme, drug formulary and the safety net through medical waiver and the Samaritan Fund for patients with financial hardship) and the development of public and private hospitals. The post-holder also assists in overseeing and monitoring the services and governance of the Hospital Authority (HA). This area of work widely covers resource allocation and budgetary control for HA and monitoring HA's financial performance; services development and programme planning; matters relating to fees and charges; and human resource management and manpower planning. The post also handles the complaints against HA and takes necessary follow-up actions on medical incidents. Furthermore, the incumbent is heavily engaged in the planning of hospital capital projects (including construction of new hospitals, redevelopment of existing hospital and other improvement works) and in monitoring the implementation of these projects. She also has to examine the proposals for development/redevelopment of private hospitals which involve application for planning permission under the law or land lease modification. She is fully occupied by the present work schedule and there is absolutely no scope for the officer to take up extra duties relating to the development of eHR.

Principal Assistant Secretary for Food and Health (Health)3 (PAS(H)3) (D2)

PAS(H)3 is responsible for the long-term health care service delivery models and financing arrangements; primary health care including the management and development of general out-patient clinics and community-based services; policies on new medical technologies and research, including human reproductive technology and human organ transplant and donation; policies on euthanasia and advance directives and providing secretariat support for the Health and Medical Development Advisory Committee. The officer currently assists DS(H)2 in the preparatory work for the development of the eHR infrastructure and the second stage Healthcare Reform Consultation. He is also heavily involved in the implementation of service reform initiatives (e.g. enhancing primary care, Elderly Healthcare Voucher Scheme and various pilot public-private partnership projects, etc). Given the need for dedicated input of a full time AOSGC for all these duties, PAS(H)3 would not be able to take up additional work in the eHR Office without affecting the efficient discharge of his other duties.

Principal Assistant Secretary for Food and Health (Health) Special Duties (PAS(H)SD) (D2)

PAS(H)SD is responsible for the development of medical centres of excellence in paediatrics and neuroscience; anti-smoking and tobacco control policies and legislation; policy matters on prevention and control of HIV/AIDS; health related matters of CEPA and health-related proposals arising from the Economic Summit on "China's 11th Five Year Plan and the Development of Hong Kong"; promotion of breastfeeding; and medical services for the East Asia Games 2009. It is noteworthy that this directorate post is on loan from DH due to a significant surge in the workload of FHB. The temporary arrangement was made with the understanding that the post would be returned to DH in due course. There is hardly any scope for the officer to take up the additional duties of developing the eHR initiative and in fact, the workload of the officer will have to be shared among other AOSGCs in the FHB upon return of the post to the DH. It is therefore neither practicable nor desirable to add the new and demanding duties of overseeing the eHR initiative to the already very full duty lists of existing AOSGCs in the Bureau.

Principal Executive Office (Health) (PEO(H)) (D1)

PEO(H) is responsible for the development of Chinese medicine clinics and Chinese medicine hospital and training for graduates of Chinese medicine degree programmes; development of the Communicable Disease Information System; fees and charges in DH; overseeing the financial and human resource management matters of the Prince Philip Dental Hospital and the DH; logistical support to the Health and Medical Development Advisory Committee and the healthcare reform public consultation activities; and appointment matters to health-related Councils and Boards. The

PEO(H) post is a temporary redeployment of a permanent PEO post previously handling administration matters in the Bureau. The redeployment has been arranged to strengthen the support of the Health Teams so that the concerned PASs could focus their attention on major policies issues and spare capacity for tackling urgent medical matters and crisis. The Health Teams are already very hard pressed to cope with the many pressing and complex health issues and it would not be feasible to redeploy the PEO post to the eHR Office without adversely affecting the work and performance of the other teams. We will seek approval for the permanent redeployment of the post when we have a more clear view of the work demands arising from the healthcare reform.