Annex

For information

Legislative Council
Establishment Subcommittee of Finance Committee

Development of a Territory-Wide
Electronic Health Record Sharing System

Supplementary Information

Purpose

At the meeting of the Establishment Subcommittee of Finance Committee on 17 June, Members recommended to Finance Committee the proposal submitted by the Food and Health Bureau (FHB) to provide dedicated directorate support for the Electronic Health Record Office in the Health Branch of FHB to plan, develop, implement and manage a territory-wide and population-wide electronic health record (eHR) sharing system, and to handle various policy and legal issues including data privacy and security arising from the system, and to engage various stakeholders in the private sector as well as the general public in its development (vide LC Paper No. EC(2009-10)9). Some Members expressed concerns about the manpower requirements and financial commitment for planning and implementing the eHR sharing system and requested the Administration to provide information on the establishment and structure of the eHR Office and its annual staff cost, in particular the breakdown on staff cost to be incurred in the First Stage of the eHR development programme. This paper aims to provide supplementary information for Members' reference.

Background of Development of Electronic Health Record Sharing System

2. In the discussion paper "Building a Healthy Tomorrow" on the future service delivery model for our healthcare system issued in 2005, the then Health, Welfare and Food Bureau (HWFB) proposed for the first time to establish a territory-wide patient record system, which aims to enable better access to patients' records with the patients' consent by doctors in both the public and private sectors so as to facilitate the future service model which emphasizes primary care and better use of the healthcare resources, and enable transfer of patients between different levels of care and between the public and private sectors.

3. To test the feasibility and acceptability of eHR sharing, the then HWFB has launched the "Electronic Patient Record Sharing" (ePR) pilot

project since April 2006 in collaboration with the Hospital Authority (HA) to allow participating private doctors and healthcare providers and other related institutions to view their patients' medical records kept at HA, subject to the patients' consent.

4. In view of the positive responses from the private sector to the pilot project, FHB established in July 2007 the Steering Committee on eHR Sharing (the Steering Committee) comprising healthcare professionals, groups and organisations from both the public and private sectors. The Steering Committee makes recommendations to the Government on the development of an eHR sharing system connecting different levels of care and the public and private healthcare systems. The idea is that participation of private healthcare providers and individuals in eHR sharing would be on voluntary basis.

5. Further to the discussion paper "Building a Healthy Tomorrow", FHB published the Healthcare Reform Consultation Document entitled "Your Health, Your Life" in March 2008 and conducted the First Stage public consultation on healthcare reform. One of the service reform proposals is to develop eHR sharing as an infrastructure for healthcare reform, so as to provide an information sharing platform for enhancing primary care and promoting public-private partnership (PPP) in healthcare.

6. As the Administration pointed out in the Report on First Stage Public Consultation on the Healthcare Reform, the proposal to develop eHR sharing received broad support from the public. Almost all respondents expressed support for the proposal, noting its benefits to patients brought about by enhancing efficiency and quality of care through avoiding duplicate investigation and facilitating collaboration among different healthcare professionals. The majority was of the view that that the eHR system would help implement patient-oriented healthcare services, and was essential for the promotion of comprehensive and holistic primary care, particularly the strengthening of connection and communication between family doctors and other healthcare providers. The eHR sharing system could also facilitate interface among primary care services, hospitals and specialist services and connect the public and private healthcare sectors so that patients could move between different levels of healthcare and between the public and private healthcare sectors without worrying about the transfer of their medical records.

7. Based on the results of the First Stage public consultation on healthcare reform, the Administration has pledged to make use of the increased healthcare funding in the next few years to implement various service reforms that have received broad public support, including enhancing primary care, promoting PPP in healthcare and developing eHR sharing system. Among them, the implementation of the eHR sharing system has the greatest urgency as it is the infrastructure platform for the other two reform proposals.

8. Based on the recommendations of the Steering Committee and its

Working Groups on the eHR development, and the management options proposed by the independent consultant for the overall development programme of the eHR sharing system, FHB briefed the Legislative Council Panel on Health Services in details on 9 March 2009 on the development of the proposed eHR sharing system in a 10-year planning horizon, as well as the manpower and capital costs required for the planning, development, implementation and management of the programme. In the supplementary information subsequently submitted to the Legislative Council Panel on Health Services in May 2009, FHB gave a further account of the estimated capital cost for the First Stage development of the eHR sharing system, the specific plans and measures on data privacy and security protection and how the private sector can participate in the eHR sharing system.

Development Strategy of the eHR Sharing System

9. One of the main development strategies of the territory-wide patient-oriented eHR sharing system is the optimal use of the existing Clinical Management System (CMS) and technology of HA and the successful experience and invaluable expertise it accumulated in developing the CMS to promote the development of an eHR system and sharing infrastructure between the public and private healthcare sectors. One possible approach is to "transplant" the CMS of HA to the eHR system for adaptation and extension before making it available for the private sector.

10. However, the CMS Adaptation and Extension Component is built upon the eHR Sharing Infrastructure Core Component. This is because the private healthcare sector is comprised of a large number of healthcare service providers including private hospitals, private doctors and clinics, private laboratories, etc. In this respect, it is different from HA, which is a single medical institution with all the healthcare practitioners there being its employees, and its patients have already granted authorization to HA to store and use their medical records upon their admission into HA hospitals.

11. Hence, an eHR sharing system to be shared by public and private sectors has to provide sufficient authentication for healthcare providers and patients and sufficient control over access right so as to achieve the aim to protect privacy of personal data and ensure system security and standardisation of data and interface. Even if we directly use HA's CMS after adaption, we still have to develop the core components of the eHR sharing system for the above purposes.

12. At the same time, we have to take account of the electronic information systems being used or planned by private hospitals, private practitioners, private laboratories and other private healthcare service providers. Some of these systems are provided by individual information technology service providers. Although the coverage of these systems is not wide, and

the practice of having individual patients' clinical data electrically stored is not common, individual healthcare service providers should have the right to select the electronic information system that suits their different business needs, be it the adapted CMS of HA or other system available in the private market. It is not feasible to oblige all healthcare service providers participating in eHR sharing to use totally HA's CMS, and neither is it a situation the healthcare professionals would like to see.

13. As the ultimate goal of the eHR sharing system is to connect the public and private sectors, it is necessary to allow private healthcare providers to choose their own systems. From the eHR sharing perspective, what is important is not that all service providers use the same system, but the capability of achieving certain common standards among different systems and interfacing with the eHR sharing infrastructure. This is also the reason that the development of core components, adaptation components and standardisation and interfacing components proceed at the same time in our overall planning. The proposed eHR Office would also be tasked to coordinate the development programme, handle the security of personal data and the system as well as other policy and legislative issues relating to the system.

Participation of the Private Healthcare and IT Sectors

14. As mentioned in the above background information, the main purpose for the development of eHR sharing is to provide an infrastructure for healthcare reform, particularly in support of the reform proposals to enhance primary care and promote PPP. Thus, the participation of the private sector is one of the essential parts of this project. We also attach great importance to the role of the IT sector to provide the relevant system services. In view of the fact that 70% of the primary care services for the whole population in the territory are provided by private medical practitioners and clinics, in order to take forward the reform proposals to enhance primary care and promote PPP, the eHR sharing system must be able to serve both the public and private sectors. Implementing eHR in the public sector alone will not only fail to achieve the desired goal but also delay the progress of other reform proposals.

15. As such, an important part of the development programme of the eHR sharing system is the participation of private healthcare and IT service providers, including facilitating the development and deployment of electronic medical record (eMR) systems with sharing capabilities in the private sector, and encouraging private IT service providers to develop such systems and provide relevant services so as to promote the use of these systems by private healthcare service providers for connection to the eHR sharing platform.

16. Specifically, the Administration's strategy is to invite representatives from the both the public and private healthcare sectors to join our Steering

Committee from the very beginning and participate in the formulation of a plan for the development of eHR sharing so as to ensure that that the development of the system has their support. They are also invited to put forward specific suggestions on how the private sector can be incentivised to participate in eHR sharing. The current overall development programme is devised based on the consensus reached after discussion in the Steering Committee for more than one year and it takes into account the actual situation of the private healthcare sector in Hong Kong. This enables us to devise a development programme that can best meet the needs of the private healthcare sector.

17. As a next step, subject to the approval of the proposals on the setting up of an eHR Office and funding application for developing the eHR sharing programme, we plan to launch an eHR Engagement Initiative (EEI) to invite private healthcare and IT service sectors to submit proposals on their engagement in the development of the eHR sharing system. Apart from providing capital investment for the development of eHR sharing system, the Government has also planned to fund individual eHR sharing partnership projects as part of its IT infrastructural development for healthcare. The principle of Government investment is that no subsidies will be provided to cover the day-to-day operation of private healthcare providers. Private sector partners shall be responsible for their own hardware and recurrent costs, as well as the costs incurred by the development of any additional or special components of their systems.

18. As the private healthcare providers can use different systems for their own purposes and to connect to the eHR sharing platform, we have not estimated the cost for the private healthcare sector to participate in eHR sharing. However, since the Government will bear the costs for research, development and infrastructure, we have reasons to believe that the cost to be borne by the private sectors participating in eHR sharing will not be too much. There are now private IT firms providing eHR system services. For a private practitioner, the cost for setting up such a system in a private clinic is around $20,000, and the monthly service fees including the network fee range from $800 to $1,500. We expect that in future the cost for individual practitioners using a sharable eHR system will be about the same. This is also one of the important incentives in the comprehensive development plan to attract the private sector to participate.

19. The ePR Pilot Project launched since 2006 is well received. The project has thus far enrolled over 64 000 patients, over 1 350 private healthcare professionals, 12 private hospitals and 10 other private or non-governmental organisations (NGOs) providing healthcare-related services. According to the survey and review on the project conducted by the Administration last year, participating doctors and patients are very positive to the project and satisfied with personal data privacy and system security. They also greatly support sharing of patient records and consider that it can help improve the quality of healthcare and enable private doctors to provide more suitable services for

patients. Most doctors are enthusiastic about the development of two-way record sharing in future, and many doctors even ask for further extension of the scope of medical records that can be shared. In view of the feedback and experience in the pilot project, we are optimistic about the support and participation of private healthcare providers.

20. Meanwhile, the Administration will also promote gradual implementation of eHR sharing system in the private healthcare sector through the introduction of PPP projects. For instance, private doctors participating in the Cataract Surgeries Programme (providing subsidy for patients to have cataract surgeries performed by private ophthalmologists) and the Tin Shui Wai Primary Care Partnership Project are already using the ePR system provided by the Administration. In addition, the Elderly Health Care Voucher Pilot Scheme (providing partial subsidy for the elderly to enable them to choose their own private primary care services in their local communities that best suit their needs) and the Influenza Vaccination Subsidy Scheme (providing subsidy to children for influenza vaccination) also help promote the use of computers and network by private healthcare service providers and the establishment of an electronic healthcare service platform.

21. Promotion of PPP projects through the eHR sharing system not only reduces the administrative costs and expenditure of the projects, but also helps the Administration monitor the services provided under PPP and their quality. Judging from the participants' favourable response to the existing projects, we expect that with the availability of more service choices under the PPP pilot projects, coupled with the further extension of the eHR sharing pilots, there will be wider participation by the private healthcare service providers, and more healthcare service providers and members of the public will benefit from eHR sharing.

Manpower Resources and Expenditure Required for Developing and Managing the eHR Sharing System

22. The financial resources required for developing and managing the eHR sharing system, including the non-recurrent expenditure for developing and implementing the system and the recurrent expenditure for managing and operating the system will be set out in detail in the paper to be submitted to the Finance Committee for application for funding for the development programme. The paper will also set out in detail each component and project item, and the related technical scope and specific targets. Information requested by Members of the Establishment Subcommittee on the manpower resources and expenditure required is given below.

Manpower Resources Required for the eHR Office

23. To plan, develop, implement and manage the territory-wide and population-wide eHR sharing system, to handle the various policy and legal issues including data privacy and security arising from the system, and to engage the various stakeholders in the private sector as well as the general public in its development, we plan to set up an eHR Office in the third quarter of 2009. The eHR Office will be comprised of a number of grades so as to provide the necessary support for the implementation and continuous development of eHR.

24. There will be 20 civil servants serving the First Stage of the eHR development, including 3 directorate posts (comprising 1 supernumerary post of Administrative Officer Staff Grade B as Head/eHR Office, 1 supernumerary post of Administrative Officer Staff Grade C as Deputy Head/eHR Office and 1 permanent post of Chief Systems Manger as Chief Systems Manager/eHR Office) and 16 permanent non-directorate posts to provide the necessary support (comprising 1 Chief Executive Officer, 1 Senior Executive Officer, 1 Senior Management Services Officer, 2 Administrative Officers, 2 Systems Managers, 3 Executive Officers II, 2 Personal Secretaries I, 1 Clerical Officer and 3 Assistant Clerical Officers). We will also create at a later stage one permanent Principal Executive Officer post subject to the development and the implementation progress of the overall eHR programme development. The proposed organization chart of the eHR Office is set out at ***Appendix*.**

25. The annual staff cost of the eHR Office during the First Stage of the development would be $13,833,000. A breakdown of the staff cost is as follows:

		$'000	
Posts	**2009-10**	**2010-11**	**2011-12**
Administrative/ Executive Officer	6,597	8,796	8,796
Analyst/ Programmer	2,098	2,797	2,797
Other Supporting Staff	1,680	2,240	2,240
Total	**10,375**	**13,833**	**13,833**

Dedicated Technical Support Team in HAITS

26. At the same time, HAITS will set up a technical team, comprising IT professionals and support staff, to support the eHR office in planning, developing and managing the eHR development. The manpower requirement and specifications of the technical team for the First Stage of the eHR development programme and also the involved framework structure and manpower distribution should be subject to the individual development programme and management work as required. The proposed overall staffing

requirement is as follows:

(i) Non-Recurrent Staffing Requirements for Developing and Implementing the eHR Sharing System-

	2009-10	2010-11	2011-12
(a) Medical and Health Officer/ Health Informatician	9	11.75	17
(b) Project/System Manager	10.75	15.5	16
(c) System Analyst	15.5	33	41
(d) Analyst/Programmer	23.5	61	67.75
(e) Computer Operator	11	15	19
(f) Other Supporting Staff	9	12	17
Total	**79**	**148**	**178**

(ii) Recurrent Staffing Requirements for Managing and Operating the eHR Sharing System-

	2009-10	2010-11	2011-12
(a) Medical and Health Officer/ Health Informatician	0.5	5.75	13
(b) Project/System Manager	1	3	6
(c) System Analyst	4	6	12
(d) Analyst/Programmer	2	10	24
(e) Computer Operator	0	11.5	23
(f) Other Supporting Staff	3	12	13
Total	**10.5**	**48.25**	**91**

27. The annual staff cost of the technical team of the HAITS during the First Stage of the development would be $156,253,000. A breakdown of the staff cost is as follows:

(i) Non-Recurrent Staffing Requirements for Developing and Implementing the eHR Sharing System-

	$'000		
	2009-10	**2010-11**	**2011-12**
(a) Medical and Health Officer/ Health Informatician	3,662	13,492	17,290
(b) Project/System Manager	7,591	20,439	20,554
(c) System Analyst	5,044	21,480	26,910
(d) Analyst/Programmer	4,760	24,289	27,498
(e) Computer Operator	806	2,052	2,472
(f) Other Supporting Staff	2,774	7,853	13,273
Total	**24,637**	**89,605**	**107,997**

(ii) Recurrent Staffing Requirements for Managing and Operating the eHR Sharing System-

	$'000		
	2009-10	**2010-11**	**2011-12**
(a) Medical and Health Officer/ Health Informatician	825	6,030	10,698
(b) Project/System Manager	1,131	3,912	8,725
(c) System Analyst	2,309	4,020	8,040
(d) Analyst/Programmer	328	4,052	9,204
(e) Computer Operator	0	1,743	3,194
(f) Other Supporting Staff	1,931	6,568	8,395
Total	**6,524**	**26,325**	**48,256**

Manpower Resources Required for Other Relevant eHR Systems in the Public Sector

28. Meanwhile, in order to develop and upgrade the relevant systems to connect with the eHR sharing platform in the public sector (including HA and DH), i.e. HA's CMS and DH's eMR system, professional expertise will have to be hired for the development and management work. DH will also set up an eHR Team comprising 1 Senior Medical and Health Officer, 1 Senior Executive Officer and 18 IT professional and supporting staff. The manpower required for the development and implementation of HA's CMS system should be around 120 staff, at whom involved technical professionals in majority.

Conclusion

29. A breakdown of the staffing arrangement by working teams for the First Stage of eHR development programme is as follows:

	2009-10	2010-11	2011-12
(a) Electronic Health Record Office	19	20	20
(b) HA's support for eHR			
(i) Developing and Implementing the eHR sharing system	79	148	178
(ii) Managing and Operating the eHR sharing system	10.5	48.25	91
(c) HA's support for CMS	125	125	122
(d) DH's eHR team	20	23	23
Total	**253.5**	**364.25**	**434**

30. The manpower requirement of the First Stage of the eHR development programme and the relevant systems in the public sector by types of post is listed below:

	2009-10	2010-11	2011-12
(a) Administrative/Executive Officer	9	10	10
(b) Medical and Health Officer/ Health Informatician	10.5	18.75	31
(c) Project/System Manager	26	34	37
(d) System Analyst	51	72	85
(e) Analyst/Programmer	107	152	169
(f) Computer Operator	30	45.5	64
(g) Other Supporting Staff	20	32	38
Total	**253.5**	**364.25**	**434**

31. The number and categories of manpower requirement after 2011-12 on the development of the eHR sharing system will depend on the implementation progress, the scale of operation of individual components, and the participation rates of individual citizens and healthcare service providers. However, with the design and development work (incurring non-recurrent expenditure) gradually completed, the work concerning daily operation and maintenance (incurring recurrent expenditure) will be gradually increased, and the number of staff required and the estimated expenditure are expected to be comparable with the level in 2011-12 and will not continue to increase substantially.

According to the latest estimate, when the territory-wide eHR is in full operation and covers all the doctors and patients, the required manpower is estimated to decrease back to about 200 people. Nevertheless, the actual number will depend on the progress of the system development. The Administration will also assess the manpower required based on the actual situation.

32. On the other hand, the development of eHR sharing system 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 help further develop local IT expertise and equip IT service providers with the necessary systems and valuable experiences which will help them tap into other health systems in the region. All the expertise developed may be conducive to the future development of Hong Kong into a service and training centre of e-Health in the Asia-Pacific region, including security, technical infrastructure and development, standards development, health informatics, data mining, clinical research, legal and privacy.

Consultation with the Public and Stakeholders

33. As mentioned above, the development of the eHR sharing system as an infrastructure to support the healthcare reform received broad support in the First Stage public consultation on healthcare reform in 2008. The current development programme of eHR sharing is based on the consensus reached among public and private healthcare professionals after deliberation and is supported by the healthcare sector. At the special meetings of the Legislative Council Panel on Health Services held on 10 May 2008 and 17 May 2008, there were discussions on the proposal of eHR development, and members of the public and bodies attending the meetings indicated support for the development programme.

34. FHB briefed the Legislative Council Panel on Health Services on 9 March 2009 on the proposal to develop a territory-wide patient-oriented eHR sharing system (vide LC Paper No. CB(2)1006/08-09(03)). Submissions from most of the groups at that time were in favour of the development programme. The Administration provided a written response on 12 May to the questions raised by the Panel(vide LC Paper No. CB(2)1724/08-09(01)) and submitted a supplementary paper to the Panel on Health Services on 19 June 2009 (vide LC Paper No. CB(2)1934/08-09(02)). Subsequently, at the special meeting of the Panel on 19 June, the deputations invited, including Hong Kong Academy of Medicine, College of Nursing, Hong Kong Medical Association, Hong Kong Doctors Union, Hong Kong Dental Association, Hong Kong Society of Medical Informatics, The Association of Licentiate of Medical Council of Hong Kong, Hong Kong Public Nurses Association, Hong Kong Public

Doctors Association, Hong Kong Private Hospitals Association, individual private hospitals and healthcare organisations, eHealth Consortium, the Hong Kong Council of Social Service, the Professional Commons, Tung Wah Group of Hospitals, United Christian Nethersole Community Health Service, Consumer Council, information technology professional bodies and patient groups, etc, all expressed support for the eHR development programme.

35. Meanwhile, as set out in the information we provided to the Legislative Council Panel on Health Services on 12 May this year, we are planning on a series of tasks to protect the personal data privacy and system security of the eHR sharing system–

(a) To conduct, in collaboration with the Office of the Privacy Commissioner for Personal Data and the Office of the Government Chief Information officer, Privacy Impact Assessment, Privacy Compliance Audit, Security Risk Assessment and Security Audit in respect of the whole eHR Programme and individual development designs and projects.

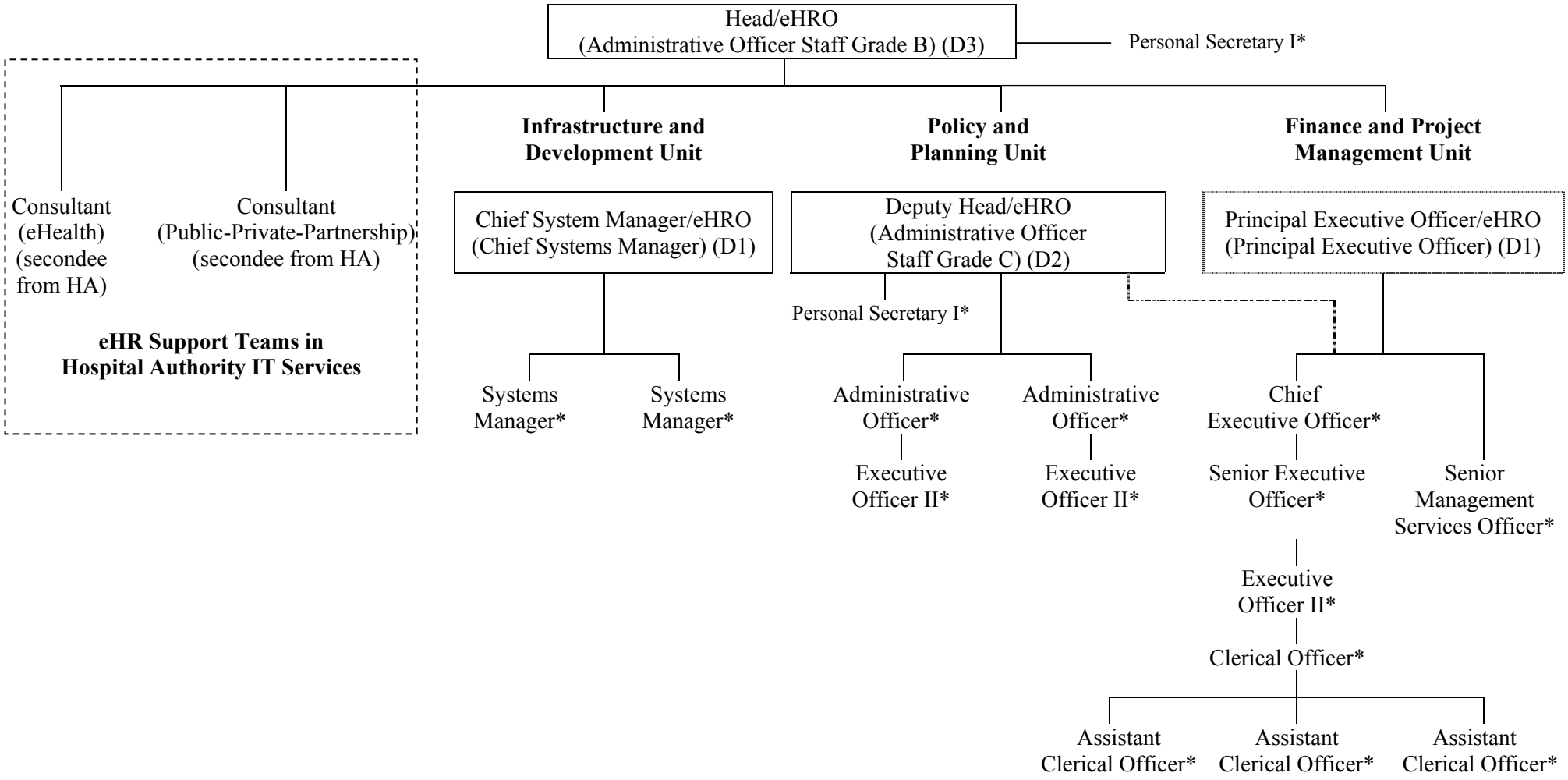
(b) To consult the relevant professions and stakeholders as well as the general public on issues concerning data privacy and security, including the voluntary participation by both patients and healthcare providers, the authorisation and consent required for records access, user authentication and access control of the system, logging and audit of access to system, and system security and privacy protection measures.

(c) To explore, based on the outcomes of the consultation with stakeholders and the public, the necessary long-term legal framework for safeguarding the privacy and security of personal health data with particular attention to the context of the eHR sharing system, and to prepare for the drafting of any necessary legislation having regard to existing applicable legislative provisions and the overseas legal experience.

Food and Health Bureau
June 2009

Appendix

Proposed Organisation Chart of Electronic Health Record Office



Legend:

▭	New directorate posts proposed for creation in the third quarter of 2009
▭	New directorate post proposed tentatively for creation at a later stage subject to the development and implementation progress of the eHR programme and separate approval by Establishment Subcommittee/Finance Committee
*	Non-directorate posts proposed for creation in the third quarter of 2009
- - -	Chain of command prior to the creation of the Principal Executive Officer post in the future
eHRO	eHealth Record Office