

ITEM FOR FINANCE COMMITTEE

HEAD 140 – GOVERNMENT SECRETARIAT :

HEALTH, WELFARE AND FOOD BUREAU

Subhead 869 Hospital Authority – Information technology system for Chinese medicine outpatient clinics

Item 166 Hospital Authority - Information technology system for Chinese medicine outpatient clinics

Members are invited to approve a \$5.5 million increase in the approved commitment for installing the Chinese Medicine Information System in five new Chinese medicine clinics.

PROBLEM

Subject to the Finance Committee (FC)'s approval for FCR(2007-08)21, five new Chinese medicine clinics (CMCs) will be set up by phases before the end of March 2009. To enable these clinics to keep patients' information and medical history systematically and efficiently and to facilitate collection and retrieval of clinical information for purposes of research and development of "evidence-based" Chinese medicine, we need to install the Chinese Medicine Information System (CMIS) in the five CMCs.

PROPOSAL

2. The Secretary for Health, Welfare and Food^{Note} proposes to increase the commitment from \$8.66 million by \$5.5 million to \$14.16 million for the Hospital Authority (HA) to install the CMIS in five new CMCs.

/JUSTIFICATION

^{Note} The Secretary for Health, Welfare and Food will be retitled as the Secretary for Food and Health upon the reorganisation of the Government Secretariat with effect from 1 July 2007.

JUSTIFICATION

Objectives of Establishing Chinese Medicine Clinics

3. Chinese medicine service is amply provided at reasonable and affordable prices in the private sector. However, the knowledge base of Chinese medicine has not been systematically built up in Hong Kong and there was little research to further the development of Chinese medicine practice. At the same time, graduates in Chinese medicine from local universities need training opportunities to prepare them for eventual independent practice. In 2003-04, the HA established three CMCs, as a first step, to provide general out-patient Chinese medicine services to achieve the following objectives –

- (a) to promote the development of “evidence-based” Chinese medicine practice through clinical research;
- (b) to systematise the knowledge base of Chinese medicine;
- (c) to develop a model for Chinese medicine training;
- (d) to develop standards in Chinese medicine practice; and
- (e) to develop models of interface between western and Chinese medicine.

Operation and Development of Chinese Medicine Clinics

4. The CMCs have adopted a tripartite model in which the HA collaborates with a non-governmental organisation (NGO) and a local university in each of the clinics. This model of collaboration tapped on the expertise of each collaborating party: HA to provide a modernised infrastructure for the management and service delivery by the clinics; the NGOs to operate the clinics based on their good local service network and experience in providing medical/community services; the universities to manage the training and research programmes of the clinics. With the successful experience in operating the first three CMCs, funding approval was given by the FC in December 2005 for setting up another six clinics. A list of these nine CMCs is at Enclosure 1.

Encl. 1

5. The establishment of these CMCs so far has facilitated the development of knowledge management of Chinese medicine, establishment of a research framework in Chinese medicine based on internationally accepted research standards and ethics, and promotion of service interface between Chinese medicine and western medicine. With the consolidation of HA’s experience in the collaboration arrangements with its various NGO and university partners, we propose to further set up another five CMCs at the following locations –

/District

District	Location of CMCs
North	Fanling Health Centre
Eastern	Pamela Youde Nethersole Eastern Hospital
Wong Tai Sin	Buddhist Hospital
Sham Shui Po	Cheung Sha Wan Government Offices (CSWGO)
Shatin	Shatin Clinic

6. The above proposal was supported by the Public Works Subcommittee (PWSC) at its meeting on 6 June 2007. PWSC's recommendation was submitted vide FCR(2007-08)21 for the FC's consideration at its meeting on 22 June 2007.

Chinese Medicine Information System

7. When the first batch of CMCs were set up in December 2003, HA has developed on a trial basis a CMIS to enable the clinics to keep patients' information and medical history systematically and efficiently. A commitment of \$2.66 million was then created under delegated authority of the Secretary for Financial Services and the Treasury (SFST) for developing and setting up the CMIS in the CMCs at Yan Chai Hospital and Alice Ho Miu Ling Nethersole Hospital. The initial feedback was that the CMIS had worked well to enable clinic operation to achieve the standard of public western medicine clinics in terms of efficiency. However, as the number of clinics involved was still small, the capacity of the system had yet to be further tested. In late 2005, the SFST approved under delegated authority to increase the commitment from \$2.66 million to \$8.66 million to further enhance and set up the CMIS in the six new CMCs mentioned in paragraph 4 above.

8. The CMIS has now been in operation in eight CMCs and had proved to be useful in enabling the efficient operation and management of the clinics as well as in the collection and retrieval of clinical information for purposes of research and development of "evidence-based" Chinese medicine. We propose that for future CMCs, including the five CMCs proposed in FCR(2007-08)21, the CMIS should be a standard installation.

9. The CMIS currently comprises the following features –
- (a) **Out-patient Service System**
This system caters for patient registration, appointment booking and fee charging.
 - (b) **Chinese Medicine Clinical Management System**
This system enables the keeping of patients' demographic data electronically and allows shared access of clinical information across the CMCs. It also provides functions to facilitate nurses to carry out patient assessments and Chinese medicine practitioners to prepare clinical consultation summary.
 - (c) **Pharmacy System**
This system includes the medication order entry, prescription vetting and dispensing, procurement and inventory control, pharmacy database and clinical intelligent supports. It facilitates the prescribing and dispensing process as well as the quality control of Chinese medicine products and enhances risk management of pharmacy service.
 - (d) **Infrastructure**
The system is built on a web-based platform with central server to store all patient data together with provision of a network to link up the clinics.

Anticipated Benefits of the Proposed System

10. The successful implementation of the CMIS in the five new clinics will enable HA and the NGOs/universities partnering with HA to operate the clinics and conduct research to achieve the following –
- (a) **Facilitate transcription and retrieval of patient data**
The system allows the clinics to maintain all patient information electronically and to operate under a paperless environment. It removes the tedious, time-consuming and error-prone process of entering patients' personal data through repetitive manual procedures in the course of scheduling of appointments, prescription of medicine, issuing receipts for payments, preparation of clinical reports etc. It facilitates retrieval of the medical history of individual patients and enable nurses to conduct preliminary health checks or triage of patients to ensure that suitable medical care is provided to them in a timely manner.
 - (b)

(b) Improve maintenance and retrieval of clinical information

With the patients data stored centrally and electronically via a common platform, it allows HA as well as the clinics to have shared access of clinical information so that a continuity of care can be provided for patients attending the CMCs. It provides a longitudinal history of patient clinical information including nursing assessment, consultation summary and dispensing history so that health care providers can have an integrated view of all previous clinical information for subsequent treatment and judgement. It also allows easy retrieval of clinical information and preparation of statistics for researches to develop evidence-based Chinese medicine.

(c) Enhance opportunities for development of interface between Chinese medicine and western medicine

The practices of Chinese medicine and western medicine are completely different. For example, disease coding system; language used in medical records; rationale underlying the clinical pathways; systems of storage and retrieval of information in/from the database. The system provides a fundamental framework to enable the gradual development of Chinese medicine practices vis-a-vis western medicine practices and pave the way for more collaboration opportunities in future.

(d) Facilitate procurement and monitoring of the standard of Chinese medicines

The system allows central procurement of herbal medicines under purchase arrangements made by HA and provides a mechanism to control and safeguard the quality of medicines. It also provides the facilities for NGOs to efficiently monitor their Chinese medicine inventory and to place order with the suppliers for replenishment in a timely manner.

(e) Consolidate the Chinese medicine pharmacy database and facilitate prescription of medicine for patients

Treatment of illnesses by drugs in the western medicine principle is usually disease-specific, whereas treatment of illnesses by herbal medicines in the Chinese medicine principle is usually patient-specific and is normally prescribed in the form of a formula comprising of an array of herbal medicines. The system enables the regular updating of the pharmacy database and clinical intelligent supports to provide useful reference for prescription of medicine and in particular, helps train the Chinese medicine graduates.

/Cost

Cost Avoidance

11. The CMIS has to be installed in each of the new CMC so that it could be linked up with the central system in HA. As the CMIS is one of the basic facilities in each new clinic, there is no cost savings arising.

12. Assuming that the five new clinics are to operate independently without linkage to HA's CMIS, it is estimated that each clinic would have to increase at least four supporting staff to handle duties including patient registration, scheduling of appointments, maintaining and retrieving of patient records, dispensing of medicine, maintaining the inventory of Chinese medicines, maintaining income and expenditure accounts, preparing financial statistics and reports, compiling patient attendance statistics for overall management of the clinic and collecting clinical statistics for research. The total cost for the additional staff per clinic would be in the region of \$0.6 million per annum which could be avoided by installation of the CMIS. Furthermore, the Chinese Medicine Council of Hong Kong requires the storage of patient records up to a period of seven years. Without the CMIS, additional storage space for each clinic at a notional cost of about \$0.1 million per annum would be required to store the manual patients records. An analysis of the benefits of CMIS on the operations of a CMC is at Enclosure 2.

Encl. 2

FINANCIAL IMPLICATIONS*Non-recurrent expenditure*

13. We estimate that the installation of the CMIS at the five CMCs will require a total non-recurrent expenditure of \$5.5 million, broken down as follows –

Expenditure Items	2007-08 \$'000	2008-09 \$'000	Subtotal \$'000
a) Computer hardware	1,050	1,050	2,100
b) Computer software	100	100	200
c) Network infrastructure	280	420	700
d) Project management	200	200	400
e) System enhancement	200	200	400
f) Pharmacy system	500	500	1,000
g) System implementation	300	300	600
h) Miscellaneous start-up cost and contingency	70	30	100
Total	2,700	2,800	5,500

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14. On paragraph 13(a), the estimate of \$2.1 million is for the acquisition of computer hardware. This equipment includes database servers, workstations, printers, barcode scanners and other peripherals.

15. On paragraph 13(b), the estimate of \$0.2 million is for the acquisition of system licensed software.

16. On paragraph 13(c), the estimate of \$0.7 million is for the acquisition and installation of network infrastructure equipment and other site preparation activities.

17. On paragraph 13(d), the estimate of \$0.4 million is for the acquisition of professional services to oversee the overall project coordination and planning of the CMIS and its implementation.

18. On paragraph 13(e), the estimate of \$0.4 million is for the acquisition of professional services to perform system enhancements and development of new system functions for the application programs within the CMIS.

19. On paragraph 13(f), the estimate of \$1.0 million is for the acquisition of pharmacy professional services in order to –

- (i) commission the clinic specific Chinese medicine drug database by consolidating the requirements of users of the five CMCs and establishing linkage to the central pharmacy system in accordance with corporate standard and requirement;
- (ii) implement and monitor the pharmacy system;
- (iii) provide training to the Chinese medicine pharmacy staff; and
- (iv) follow up and resolve problems arising from the implementation and use of the pharmacy module of the CMIS in the clinics.

20. On paragraph 13(g), the estimate of \$0.6 million is for the acquisition of professional services to perform system implementation services including system set up, workstation installation, database set up, user training, system tuning and other implementation related services in the clinics.

21. On paragraph 13(h), the estimate of \$0.1 million is for other miscellaneous start-up costs and contingency.

Recurrent expenditure

22. The annual recurrent expenditure of the system is about \$0.1 million per clinic. HA has sufficient provision to meet the expenditure.

IMPLEMENTATION PLAN

23. For the five proposed new CMCs, three will be established in situ at the existing vacant space in the premises. For the remaining two CMCs at CSWGO and Shatin Clinic, reprovisioning of existing facilities will have to be arranged first to make available sufficient space for setting up the clinics. Subject to approval of FCR(2007-08)21, we plan to start works in July 2007 for completion by phases before the end of March 2009. The implementation plan of the CMIS will tie in with the development plan of the CMCs.

PUBLIC CONSULTATION

24. We consulted the Legislative Council Panel on Health Services on the establishment of five new CMCs and the installation of CMIS at its meeting on 14 May 2007. Members were generally supportive of the proposal.

BACKGROUND

25. The Administration committed in the 2001 Policy Objective Booklet to set up 18 CMCs. In order to develop the mode of operation and collaboration arrangements of the clinics, we have adopted a phased development approach of the clinics. To facilitate the maintenance of patient information and the operations of the CMCs, the HA has developed the CMIS for installation in the clinics.

26. Of the nine CMCs now in operation, all except the CMC at Tung Wah Hospital (TWH CMC) are equipped with the CMIS. The TWH CMC was the first public CMC and its capital cost was funded by the Tung Wah group of Hospital (TWGH). At the time of the clinic's establishment, the TWGH had already in place a Chinese Medicine Clinical Information System (CMCIS). The system was developed by the TWGH and used in other TWGH's CMCs (outside the HA system) as well. To ensure smooth operation, the TWH CMC has since used the CMCIS.

/HA

HA and TWGH do recognise the importance of being able to collect data from the TWH CMC for the purposes of research and development of “evidenced-based” Chinese medicine in the public sector. To this end, HA is maintaining close liaison with TWGH to co-ordinate the operation of the CMIS and CMCIS to allow sharing of clinical data.

Health, Welfare and Food Bureau
June 2007

Chinese Medicine Clinics Established Since 2003-04

	District	Location of CMCs
(i)	Tsuen Wan	Yan Chai Hospital
(ii)	Tai Po	Alice Ho Miu Ling Nethersole Hospital
(iii)	Central & Western	Tung Wah Hospital
(iv)	Wan Chai	Tang Shiu Kin Hospital Community Ambulatory Care Centre
(v)	Sai Kung	Tseung Kwan O Hospital
(vi)	Yuen Long	Yuen Long Madam Yung Fung Shee Health Centre
(vii)	Kwai Tsing	Ha Kwai Chung Polyclinic and Special Education Services Centre
(viii)	Tuen Mun	Yan Oi Polyclinic
(ix)	Kwun Tong	Ngau Tau Kok Jockey Club Clinic

Benefits of the Chinese Medicine Information System (CMIS)

Major areas of work of clinic	Details	Manual Operation		Benefits of CMIS
		Disadvantages	Effect	
Appointment and Registration	1. Process patients' appointments and arrange consultation sessions by Chinese medicine practitioner	Slow processing speed, high error rate.	Requires a specialised pool of staff for the operation; high consumption of stationery.	Provides clarity, accuracy and efficiency; effectively reduces errors; enhances patient satisfaction.
	2. Record patients' demographic data and collect fees according to different patient categories			
	3. Prepare patient identification cards for patients' subsequent visits and better patient management			
	4. Calculate and collect fees from patients			
Assessment	1. Carry out initial assessment, document past medical history and allergy history	Need to maintain a substantial amount of assessment records, which does not facilitate retrieval.	High cost in the storage and maintenance of information.	Quick and easy way of recording, retrieving and maintaining information.
	2. Carry out the necessary basic assessment			
	3. Triage and transfer acute cases and infectious diseases to Western medicine practitioner			
Consultation	1. Document consultation details and keep the record for 7 years	Need to maintain a substantial amount of treatment records, which does not facilitate retrieval.	High cost in the storage and maintenance of information.	Quick and easy way of recording, retrieving and maintaining information; better protection of the rights and interests of Chinese medicine practitioners and patients.
	2. Prescribe proper drugs and arrange proper treatment			
	3. Provide proper Chinese medicine practitioner's advice			
Drug Dispensing	1. Dispense drugs based on the prescriptions issued by Chinese medicine practitioners	May easily give rise to wrong identification of characters and errors in drug dispensing.	Detrimental to patient's health and reputation of the clinic.	Effective monitoring of drug dispensing; accurate identification of drugs for patients with the same names, thus enhancing safety.
	2. Dispense drugs based on patients' names			
Drug Procurement	1. Ensure continuous supply of drugs	Difficult to keep track of the drug consumption and inventory, which may lead to shortage of drugs, drug backlog or expired drugs with changed qualities.	Affects Chinese medicine practitioner's normal prescription, detrimental to patient's health, increases the drug cost, wastes a great deal of time and manpower in stock-checking.	Efficient management of drug inventory, formulation of precise procurement plans, thereby greatly improving work effectiveness.
	2. Purchase adequate quantities of drugs			
	3. Monitor and control drug quality and safety			
Drug Inventory Management	1. Monitor and control the usage of toxic drugs	Slow processing speed, high error rate.	Enormous waste of working time and manpower.	Facilitates the retrieval of information at any time; high efficiency.
	2. Collate statistics on drug dispensing data regularly			
	3. Perform regular stock-taking			
Compilation of Financial Statistics	1. Collate statistics on patient fees	Heavy workload, difficulty in compiling and verifying information, and high error rate.	Requires a number of staff and financial officers for the operation; massive input of time and manpower resources, high cost of information storage.	Accurate, fast, easy and reliable.
	2. Verify daily income of the clinic			
	3. Prepare daily/monthly/quarterly/yearly reports for the clinic			
Compilation of Research Statistics	1. Provide statistics on the number of certain categories of patients and their age and sex distribution	Heavy workload, low accuracy.	Massive input of time and manpower resources	Accurate, fast, easy and reliable.
	2. Provide statistics on drug treatment of certain categories of patients and the curative effect			
	3. Provide statistics on morbidity			
	4. Provide information on Chinese medicine practitioner's prescribing practice			