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ehealth news
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Applying eHealth Technology

Editor's Note

Thank you for the support to the 1st Issue of eHealth News. The insightful feedback on the development of the eHealth Record (eHR) Sharing System in Hong Kong is most encouraging. We share the same belief that the System will benefit the provision of patient-centred healthcare services.

The Game Zone in the 1st Issue was well received. 120 readers joined the quiz and coffee coupons were posted to the winners. In this issue, we have a matching exercise and winners may have a chance of getting a hand-made paper notebook produced by a social enterprise. Do attempt the exercise after reading!

"Applying eHealth Technology" is the theme of this Issue. Three experts in different fields will share with us their first-hand experience and visions regarding the applications of eHR in their own specialties.

To test the feasibility and encourage adoption of eHR sharing in the private healthcare sector, we are putting eHR in pilot practice before full system commissioning. This issue will provide an overview of various Public-Private Partnership (PPP) Programmes riding on electronic platform to share clinical data. The Professional Corner will introduce the Clinical Management System (CMS) On-ramp, a turn-key system to support daily operation and facilitate eHR sharing for private clinics.

Enjoy reading the eHealth News and we look forward to your continuous participation in exploring eHR.

Your Views

We would be interested to receive your feedback on this subject or any matters related to the eHR Sharing System. Articles related to health record issues are most welcome for sharing in the upcoming eHealth News. Please send us your views by email to **eHR@fhb.gov.hk**.

Editor's Note

eHealth Solutions in Practice

> **To allow different healthcare IT systems to communicate via the eHR Sharing System, standards such as clinical terminologies and technical specification must be established.**

Mr Michael Fung:
Chief Systems Manager (eHR), Hospital Authority

When it comes to the eHealth Record Sharing System (eHRSS), perhaps you may find it novel and complicated. In fact, there is no rocket science, and you certainly do not need to be tech-savvy to comprehend the concept and development of the System. In a recent interview, Mr Michael Fung, Chief Systems Manager of Information Technology Services at Hospital Authority, unveiled the architecture and development of the eHRSS with a user-friendly approach.
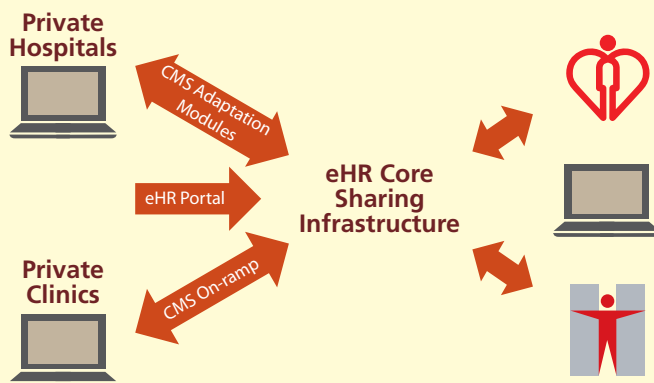
Do you know?

Benefits of eHR Sharing System

The eHR sharing platform is a standard-based, secure and centralised platform for interconnecting electronic medical/ patient record systems adopted by individual healthcare providers to upload and access health-related data. The platform follows a building-block approach to mitigate risks and adopts a service-oriented architecture to ensure reusability and extensibility. It has built-in security and sustainability to protect data security and patient privacy in order to ensure longitudinal access of patients' health records.

Core Components of eHRSS

With neat illustrative diagrams, Mr Fung systematically depicted three core components in Phase I of the eHRSS. "The first component, eHR Sharing Infrastructure, is a

core repository and sharing platform at the centre that consolidates all patient records from private and public healthcare service providers. Through this platform, participating healthcare providers with patients' consent could access and share electronic health records."

Mr Fung continued the introduction with animated slides. "The second core component is CMS Extension. Private clinics without an IT system for clinical operation can adopt the CMS On-ramp directly to facilitate their connection to the eHRSS with minimal investment and maintenance. We also developed the CMS Adaptation modules for private hospitals to flexibly deploy specific modules and integrate them into their own hospital information systems."

Highlighting the third core component, Mr Fung explained further, "To allow different healthcare IT systems to communicate via the eHRSS, standards such

as clinical terminologies and technical specification must be established. Standardisation and interfacing component are essential to achieve smooth interoperability and interconnection with the eHR sharing infrastructure."

> **Standardisation and interfacing component are essential to achieve smooth interoperability and interconnection with the eHR sharing infrastructure.**

Engaging the IT Sector

To ensure the success of this large-scale healthcare information technology project, undoubtedly a significant amount of IT resources is deployed. "In addition to in-house IT teams, external IT vendors were also invited to render IT services both on development and consultancy. Part of the system developments were also achieved in collaboration with external contractors," noted Mr Fung. There will be a rising demand for IT service support from the healthcare providers. "To get their electronic medical record systems ready for eHR sharing, private healthcare providers may require IT services for data conversion, system installation and ongoing maintenance, thus creating tremendous opportunities for the IT sector to participate in the eHR project," he added.

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Roadmap for eHR Development

When talking about the impacts brought by eHRSS, Mr Fung confidently affirmed the anticipated benefits of the System. "Once the patients' medical records are consolidated from different participating healthcare providers and made sharable in the System, doctors can obtain more comprehensive medical data of patients for better clinical judgment. The drug allergy alert functionality will definitely enhance medication safety when doctors make prescriptions. Furthermore, with comprehensive medical records in the eHRSS, patients can avoid duplicate medical examinations and tests." He also suggested, "The consolidated health statistics will be very useful for public health research and formulation of healthcare policies."

Approaching the end of the interview, Mr Fung shared with us the roadmap of the eHR project. "In Phase I, the System is developed with basic functionalities to help participating healthcare providers migrate from paper-based to electronic-based operations. In Phase II, we will study the possibility to facilitate patients to access their own health records."

Do you know?

Second Stage of the eHR Programme

Full development of the eHR Programme straddles over 10 years from 2009-10 to 2018-19, with first stage of the Programme being implemented from 2009-10 to 2013-14. Second stage of the eHR Programme will follow with the commencement of eHR Sharing System in 2014. Facilitations for patients to access their eHR more conveniently and the possibility of providing additional access control for sensitive data will be studied in the second stage of the eHR Programme. Research or pilot study for sharing of radiological images and additional enhancement features will also be considered in the second stage of the eHR Programme.

Bearing an aspiring vision, Mr Fung envisaged the patient portal to expand and offer patients with self-management functionalities such as medical appointment alert, input of self-measured blood pressure and heart rate, and disease-specific care guidelines. "From a long term perspective, patients can take on responsibilities and get more involved in managing their own health through the eHRSS," concluded Mr Fung.

eHR Supports
New Models of Healthcare

"
With the eHR Sharing System in place, the transparency of diagnosis will be enhanced, which unquestionably is in patients' favour.
"

Prof Fok Tai-fai:
Pro-Vice-Chancellor and Professor of Paediatrics
Chinese University of Hong Kong

Have you ever imagined when you are seeing a doctor, a robotic voice from the computer alerts the doctor about your abnormal laboratory results or adverse drug reactions? It sounds like a scene in a sci-fi movie, but it could be a real-life situation with the advancement of medical information technology. Prof Fok Tai-fai, Pro-Vice-Chancellor and Professor of Paediatrics of the Chinese University of Hong Kong, envisages the changes brought about by the development of eHR Sharing System (eHRSS).

Challenging Transformation

With the ever-evolving digital age, computerisation certainly has benefitted the healthcare sectors by streamlining their operations and improving their information exchange. However, healthcare professionals face scores of challenges in the clinical transformation process. "The biggest challenge to doctors of my age, who have been accustomed to paper-based workflows, is to familiarise ourselves with computer operations, for example, adopting the Clinical Management System (CMS)," Prof Fok modestly said. "My fellows are still struggling with using CMS and prefer to handwrite medical records. Actually I am one of them!" He shared sincerely with his own experience.

"With the eHRSS in place, the transparency of diagnosis will be enhanced, which unquestionably is in patients' favour as healthcare practitioners will have to perform their duties in a more prudent manner. However, some healthcare professionals will become anxious because their diagnosis and medication to certain extent will be open to scrutiny." Prof Fok anticipated mixed reaction towards the system implementation.

Despite the delicate issues involved, the progressive adoption of medical information technology in a society like Hong Kong is an inexorable trend. Meanwhile, the eHR development has been in full swing. "The eHRSS not only improves public-private collaboration, but also realises the concept of 'records follow patients', allowing patients to receive treatment procedures in different hospitals or clinics conveniently. Besides, the System could facilitate multi-disciplinary treatment for patients, which would enable timely treatment and effective use of resources," Prof Fok affirmed the advantages of the System.

Do you know? ?

Benefits of eHRSS

The eHR Sharing System can reduce medication errors and improve accuracy of diagnoses by providing a central database of patient's medical history. Clinicians can also benefit from avoiding the cost of storing and transferring medical records in paper form.

For the healthcare system and research, statistics from eHRSS enables disease surveillance for public health and compilation of health statistics for policy making.

> **The eHRSS not only improves public-private collaboration, but also realises the concept of 'records follow patients', allowing patients to receive treatments in different hospitals or clinics conveniently.**

Enhancement Features

Believing that there will be ample potential in developing the eHRSS, Prof Fok suggested, "In addition to data documentation for accurate and instant access to health records, there should have analytical functions such as intelligent alert system to draw doctor's attention to adverse drug reactions or abnormal laboratory results."

Furthermore, Prof Fok also provided insights on the future trend of eHR development in promoting health awareness among patients. "It is beneficial for patients to get access to their own health records. On one hand, it's their right to know their health conditions; on the other, patients should be responsible for their own well-being."

In the academic arena, there could be a role for the System too. Prof Fok explained, "In general, medical students merely meet patients in their practical sessions for a very short time, the treatment outcomes are therefore usually unknown to them. However, if medical students are granted 'read-only' access to the treatment outcomes of the episodes they encountered, the learning process could be considerably enhanced."

Vision on eHealth Delivery

Looking ahead, Prof Fok even envisaged the possibility of global sharing of electronic health records. "As the mobility of people is very high nowadays, it would be even better if the electronic health records could be shared globally so that people could visit other healthcare service providers across borders with sharable health records readily available on the network. Nevertheless, perhaps a kind of innovative conversion tool is required to convert the electronic health records to a compatible format for different medical systems to read."

Prof Fok is optimistic about the upcoming launch of the eHRSS in Hong Kong. "By providing doctors with clear and comprehensive health records and treatment progress of individual patients, the eHR Sharing System is absolutely beneficial to patients for receiving continuous and quality healthcare."

Do you know?

Technology Trend on Development of eHealth Record

The future trend for eHealth Record Sharing includes empowering citizens to better manage their health and actively participate in own healthcare plans. Mobile health applications can measure and record basic health data such as blood pressure, blood glucose levels, and much more.

In the future eHR development, more use of tools for clinical data analysis will be expected, which will be beneficial for clinicians to interpret medical records and for patients to gain more meaningful interpretation of their health data.

> **By providing doctors with clear and comprehensive health records and treatment progress of individual patients, the eHRSS is absolutely beneficial to patients for receiving continuous and quality healthcare.**

Interview: eHR Supports New Models of Healthcare

Getting Involved in eHealth

" **Electronic dental record systems not only broaden the means of dentist-patient communication, but also increase the mutual trust between them.** "

Dr Johnny Wong:
Chairman of IT Committee, Hong Kong Dental Association

In your previous visits to the dental clinics, have you ever experienced difficulties telling your dentists what treatment and procedures you have received? Have you ever worried about undergoing repetitive procedures due to a lack of past dental records? Well, such distresses will be alleviated following the computerisation of dental clinics nowadays. To better understand how the adoption of electronic dental record systems can enhance our oral health care, we are glad to have Dr Johnny Wong, Chairman of Information Technology Committee of the Hong Kong Dental Association, sharing his hands-on experience with the dental record systems at his clinic.

Modern Dental Clinic

After expressing his warmest welcome to us, Dr Wong initiated an introduction to the computerised systems in his modern clinic. "My clinic is now operating three different health record systems, which includes Dental Clinic Management System (DCMS), a well-established medical imaging system and the paper-based patient record system." Pointing at the computer screen, Dr Wong further explained, "DCMS is a dental clinic management system with functionalities covering patient records, treatment and billing plans, inventory management, as well as account and report management."

Do you know? ?

Dental Clinic Management System (DCMS)

To promote private dentists' participation in eHR sharing, the Hong Kong Dental Association has, with support from the Government, developed an open-source Dental Clinic Management System in a 'not-for-profit' manner for free use by the dental industry.

The DCMS provides user-friendly and comprehensive functionalities, covering standardised image-enabled patient records, configurable treatment and billing plans, integrated inventory, account and report management to meet the daily operations of dental clinics. It has also integrated with government subsidised healthcare schemes. To learn more about the DCMS, please visit the **DCMS website**.

In another room where a computer screen was mounted on the side of a dental chair, Dr Wong demonstrated the functions of the well-established medical imaging system. "Besides text records, this system could store corresponding photos and X-ray images of individual patients' oral conditions," he said contentedly as he moved the mouse pointer among dental images. "Dental management systems enable clear graphical illustrations of dental treatment with full history, which strengthen patients' understanding in dental treatment progress and help them increase the awareness of their oral conditions. The more the patients understand about their oral health condition, the better the chance for them to cooperate with the dental treatment. It is worthwhile for dentists to invest in the computerised dental system."

> **Dental management systems enable clear graphical illustrations of dental treatment with full history, which strengthen patients' understanding in dental treatment progress and help them increase the awareness of their oral conditions.**

"With images included in the electronic dental records, even when a patient revisits the clinic in a distant future, the records could serve as a comprehensive visual overview of the patient's previous oral health condition, helping both the dentist and patient identify the dental problems more accurately." Regarding the benefits of adopting electronic dental record systems, Dr Wong elaborated, "Electronic dental record systems not only broaden the means of dentist-patient communication, but also increase the mutual trust between them."

Involvement of Dental Sector in eHR

With the launch of eHealth Record Sharing System (eHRSS) in end of 2014, how can the Hong Kong dental sector prepare themselves for sharing of health records via the System? "In fact, when it comes to record sharing, many dentists still appear conservative as there are concerns about privacy, security and investment of necessary resources," Dr Wong frankly responded. "Nevertheless, there are more and more dental practitioners who are actively using the DCMS for supporting their clinic operation. With the enhancement of

sharing capacity, patient's dental data in the DCMS can be connected to the eHRSS for sharing when necessary."

When asked how to encourage private dentists to participate in the eHRSS, Dr Wong suggested that government-subsidised programmes, such as Health Care Voucher Scheme and dental outreach project, could be part of the driving forces. "For example, if the subsidised programmes are expanded to encourage the public to have dental prophylaxis every six months, dentists will be motivated to create and share the electronic health records of their patients via the eHRSS."

Do you know? ?

Government Subsidised Schemes for Dental Services

The Elderly Health Care Voucher Scheme (HCVS) aims to provide additional choice for elders on top of the existing public primary care services with a view to enhancing the provision of primary care services for the elderly. Dental service is one of the healthcare services for which vouchers can be used. Starting from 1 January 2013, the Government has increased the annual voucher amount to $1,000 per eligible elder aged 70 or above. Please visit **HCVS website** for more information.
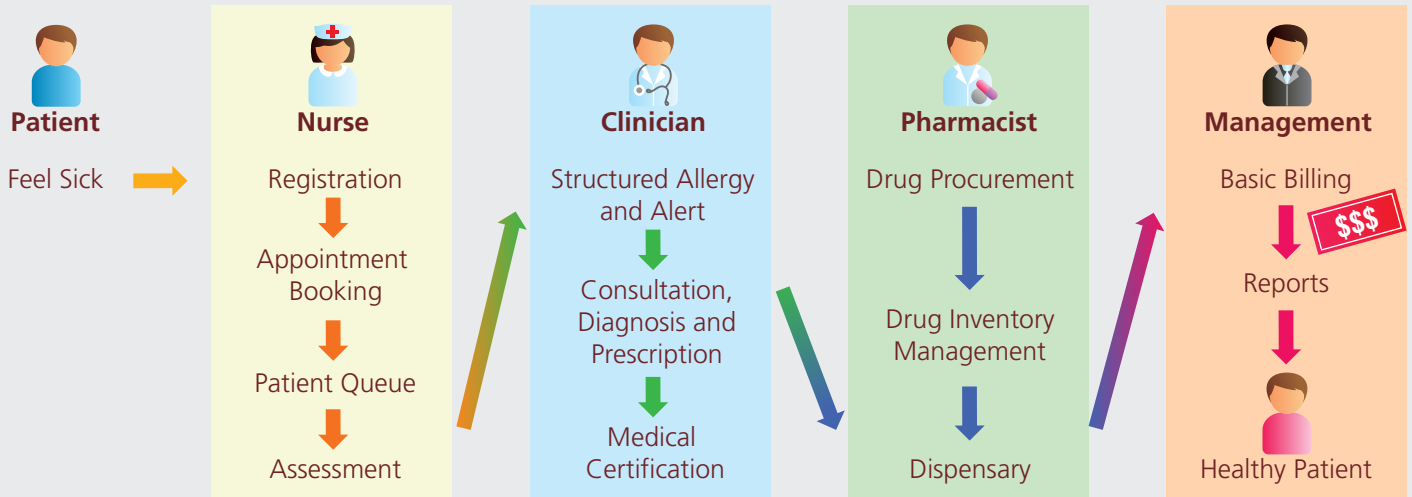
In April 2011, the Government launched the three-year "Pilot Project on Outreach Primary Dental Care Services for the Elderly in Residential Care Homes and Day Care Centres". The project collaborates with 13 non-government organisations to provide outreach primary dental care and oral health care services to these elders. Please visit **here** for more information.

With respect to data sharing, Dr Wong remarked, "The first step should be unidirectional access, which means access to electronic health records is granted based on the consent of individual patients. Open sharing without access control is undesirable." Towards the end of the interview, Dr Wong emphasised, "While it is important to respect dentistry's professionalism and autonomy, it is equally essential to protect the privacy of patients. With the security safeguard properly maintained, the on-going eHR development can bring about benefits to the patients, healthcare professionals, and community."

CMS On-ramp: Turn-key Clinic Management System for Private Practitioners

Patient

Feel Sick →

Nurse

Registration
↓
Appointment Booking
↓
Patient Queue
↓
Assessment

Clinician

Structured Allergy and Alert
↓
Consultation, Diagnosis and Prescription
↓
Medical Certification

Pharmacist

Drug Procurement
↓
Drug Inventory Management
↓
Dispensary

Management

Basic Billing $$$
↓
Reports
↓
Healthy Patient

What is CMS On-ramp?

CMS On-ramp is an open-source and open-standard clinic management system that is able to share patients' clinical data with the eHR Sharing System. Designed as a turn-key clinic management system for local private clinics environment, CMS On-ramp will be made available to provide low investment cost access for private solo or group practice healthcare providers.

Key Functions

CMS On-ramp is designed to suit the private clinics' daily operation and workflows, including patient registration and appointment, consultation documentation, drug allergy checking, prescriptions, dispensary, and clinical administration functions.

eHR Core

Secured Protocol

Communication Module

CMS On-ramp (Server and Client)

CMS On-ramp Clinic
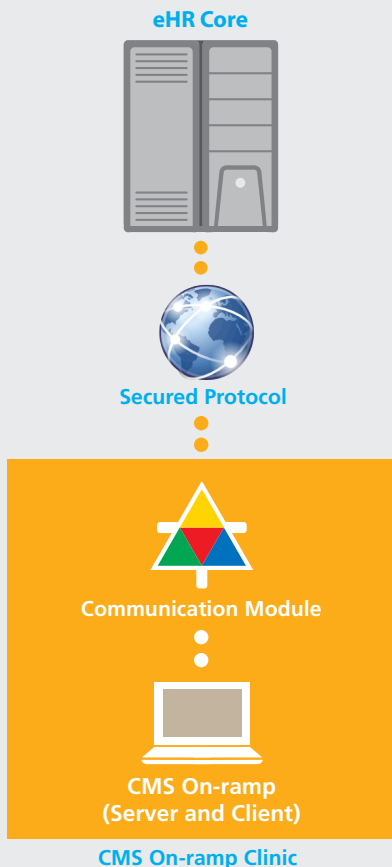
Connection with eHR Sharing System

CMS On-ramp is developed as portable, technology neutral, and with sharing and integration capability with the eHR Core platform through communication module.

The CMS On-ramp application is in compliance with the eHR security, system interoperability requirements, and eHR information standards.

Next Step for CMS On-ramp

The CMS On-ramp application will be provided to private healthcare sector for free. The cost of installation and hosting will be borne by private practitioners.

The CMS On-ramp pilot version was deployed to some private clinics for trial use since the third quarter of 2012. The final version of CMS On-ramp is scheduled for launching in early 2014. If you are interested to adopt the CMS On-ramp application, please contact us via *eHR@fhb.gov.hk*.

Public-Private Partnership Projects for eHR Sharing

The Government and the Hospital Authority (HA) have launched a series of Public-Private Partnership (PPP) Programmes to test the feasibility and acceptability of eHR sharing. By providing more choices to patients, the PPP Programmes also enables effective utilisation of resources by collaborating between the public and private service providers.

Cataract Surgeries Programme

To meet the growing demand from cataract patients and shorten the waiting time for cataract surgery, the Cataract Surgeries Programme (CSP) was launched in February 2008 to subsidise eligible patients to undergo cataract surgeries in the private sector.

Patients who choose to receive cataract surgeries from private ophthalmologists can obtain a fixed subsidy of $5,000. Patients can co-pay no more than $8,000 for the service package, which includes one pre-operative assessment, the cataract surgery (including intraocular lens), and two post-operative checks. Participating private healthcare providers can both upload and access patient's clinical information kept at HA, hence enabling two-way eHR sharing.

Public Private Interface – Electronic Patient Record Pilot Project

Patient flow and sharing of clinical information between the HA and the private sector are utmost important for the success of PPP. Through the Public Private Interface – Electronic Patient Record (PPI-ePR), participating private healthcare providers can access their patients' medical records kept at HA upon patient's consent. By June 2013, the PPI-ePR project has enrolled over 305,000 patients, 2,900 private healthcare professionals, 11 private hospitals, and 73 private or non-governmental organisations providing healthcare services.

Tin Shui Wai Primary Care Partnership Project

Tin Shui Wai Primary Care Partnership Project allows eligible chronic disease patients at public general out-patient clinics (GOPCs) to receive treatment from doctors with Government subsidy. The programme has been implemented in Tin Shui Wai North and Tin Shui Wai South.

Under the pilot, patients who suffer from specific chronic diseases, such as diabetes and hypertension with stable medical conditions, and those in need of long-term follow-up treatment at GOPCs are invited to join the programme on a voluntary basis. Participating patients are required to pay the same fee as charged by HA when they visit the participating private practitioners. Participating private doctors can access and upload clinical information kept at HA.
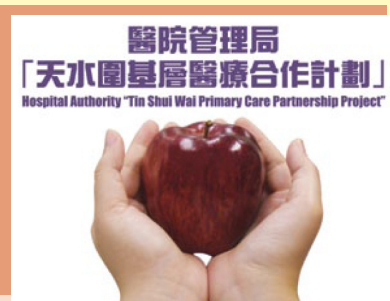
Haemodialysis Public-Private Partnership Programme

To cater for the growing demand of haemodialysis service for end-stage renal failure (ESRF) patients, the Haemodialysis Public-Private Partnership Programme (HD PPP) was launched in March 2010. Patients with end-stage renal disease receiving follow-up treatment at HA are subsidised to receive haemodialysis services in private haemodialysis centres. A specifically designed electronic information system was developed to allow sharing of clinical information between HA and the community haemodialysis service providers.

Patients who are currently on haemodialysis with stable condition in HA hospitals are invited to join HD PPP. For each treatment session, patients are required to pay the community haemodialysis centres the same fee as charged by HA.

Pilot Project on Enhancing Radiological Investigation Services through Collaboration with the Private Sector

Implemented in 2012, the Pilot Project on Enhancing Radiological Investigation Services through Collaboration with the Private Sector (Radi Collaboration) aims at enhancing radiological investigation services for cancer patients through collaboration with the private sector. It allows participating private healthcare providers with patient's consent to send radiological images to HA via electronic means.

During the pilot stage, Computed Tomography and/or Magnetic Resonance Imaging services are provided to newly confirmed patients suffering from colorectal cancer, breast cancer, nasopharyngeal cancer, and lymphoma under the care of HA. Target patients are invited to join the Radi Collaboration on a voluntary and full subsidy basis. HA will make referrals to patient's chosen private healthcare provider. Radiological images will be sent back to HA through an electronic platform for clinicians to formulate subsequent care and treatment plan.

For more information on the PPP Programmes, please visit *HA PPP Website*.

Seminar on eHR Content

A seminar on "Preparation for eHR – Briefing on eHR Content" was held on 28 June 2013 to update participants on the latest progress of standardisation of eHR content and eHR development programme.

The good practice on managing standards of eHR content and preparation required for eHR sharing were shared. The eHR Viewer for private healthcare providers to view patient's eHR was also demonstrated. Participants from public and private hospitals, healthcare and IT organisations attended the seminar. Please visit *eHR Office website* for more information.

Hong Kong Primary Care Conference 2013

The Hong Kong Primary Care Conference 2013, organised by the Hong Kong College of Family Physicians, was held on 16 June 2013. Hundreds of family physicians, nurses, physiotherapists, occupational therapists and optometrists participated in the Conference.

A plenary session on "eHealth Record Sharing in Hong Kong" was hosted by Mr Richard Yuen (Permanent Secretary for Food and Health), Ms Ida Lee (Deputy Head of eHR Office) and Dr Summer Chan (Deputising Senior Health Informatician of Hospital Authority). The session covered the vision and challenges for eHR and healthcare improvement, rules and principles adopted in the eHR Sharing System, and the user-friendly eHR environment for family physicians. Please click *here* to learn more about the Conference.

HIMSS AsiaPac13 Greater China eHealth Forum

Healthcare Information and Management Systems Society (HIMSS) AsiaPac13 Greater China eHealth Forum will be held in Hong Kong from 1 to 2 August 2013.

Dr Ko Wing-man, Secretary for Food and Health, will deliver the opening address. Dr Choy Khai-meng, Consultant (Public-Private-Partnership (PPP)) of the Food and Health Bureau, will share the PPP models for better collaboration between public-private healthcare sectors. Mr Sidney Chan, Head of the eHR Office, will give a closing address on the vision, mission and challenges of the eHR Programme in Hong Kong. To learn more about the Greater China eHealth Forum, please visit the *HIMSS AsiaPac13 Greater China eHealth Forum website*.

eHR Updates

Game Zone
Chance to Win a Prize!

Test your knowledge about the eHR development in Hong Kong with the following quiz. All answers can be found in this e-Newsletter. Readers who have answered the quiz correctly will have a chance to win a prize, while stock lasts. Enjoy the fun of exploring eHR!

Match the correct explanations by writing the corresponding alphabets in the circles. Fax the completed form to 2300 7921 or email to **eHR@fhb.gov.hk** on or before 2 August 2013. The deadline for submission is over. The correct answers are indicated in the circles below.

A	B	C	D	E
eHR Sharing Platform	Elderly Health Care Voucher Scheme	Benefit of eHR Sharing System	Public-Private Partnership Programmes	CMS On-ramp

D — A series of pilot projects which proved feasibility and acceptability of eHR sharing amongst healthcare providers. It enables effective utilisation of resources and provides more choices to patients.

A — A standard-based, secure and centralised platform for interconnecting electronic medical/patient record systems adopted by individual healthcare providers to upload and access health-related data.

E — An open-source and open-standard clinic management system to enable sharing of patients' clinical data with the eHR Sharing System.

C — It can reduce medication errors and improve accuracy of diagnoses, as well as avoid the cost of storing and transferring medical records in paper form.

B — It aims to provide additional choice for elders on top of the existing public primary care services. Starting from 1 January 2013, the Government has increased the annual voucher amount to $1,000 per eligible elder aged 70 or above.

Please provide your name, contact information, and postal address. Winners will be notified through email and the prize will be mailed to the postal address provided below.

Name:

Tel No.   Email:

Postal Address:

After the closing date on 2 August 2013, you can check the correct answers in the newsletter posted at the **eHR Office website**. The personal particulars and contact information collected in this game zone will only be used to notify and send prizes to the winners. All personal data collected from this game zone will not be disclosed to any third parties and will be deleted by the eHR Office two weeks after all prizes have been sent. The deadline for submission is over. The correct answers are indicated in the circles above.

Game Zone