The 10-year Journey of Developing a Dental Clinic Management System (DCMS) towards Electronic Health Record Sharing

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74% of the registered dentists are working in the private sector (according to the Health Manpower survey 2015), and this sector supports the majority of the dental care service in Hong Kong. Most of the dentists manage their practices independently, though there are some group practices.

For a long time, most dental clinics have no computer system to support their clinic operations. Those with computer systems under-utilize them mostly for inventory and billing management. Users do not computerize their patients’ medical records or surgical procedures records, reflecting a slow take-up in the use or sharing of electronic health records (eHR) amongst the profession. Although there are several existing clinic management systems for dentistry, none of them is good enough to address the needs of clinic management as well as to facilitate the management and sharing of medical and dental records which are designed for the situation in Hong Kong.

The key difficulties for the dental professionals in adopting computerized clinic management systems are:

1. Lack of vendor support: from IT vendors' perspective, Hong Kong’s dental care industry is a dispersed and diversified market as most clinics are operated by independent dentists, so the requirements at each clinic may be small in scale yet varied in detail.

2. Lack of an open solution: the existing solutions are controlled by specific vendors who may themselves be small companies. High chance that there is a risk that those vendors will go out of business, leaving the dentists stranded with obsolete systems with no support.

3. Usability: most existing systems in the market have been developed by IT companies that have little understanding of the need for dental care practice and the legal requirements of the Hong Kong Dental Council for record keeping. Hence the resulting systems may be technically sound but difficult to operate for the practitioners.

In addition to the above deficiencies, existing commercial solutions suffer from additional limitations and concerns:

1. Extensibility: most of the existing solutions are used by a small number of clinics, so their cost of on-going maintenance support is high, and the pace of enhancement is very slow.

2. Data standard and interoperability: most existing systems are not developed with data sharing or system interoperability in mind, and they create silos of isolated and incompatible data. In case of data retrieving for medical concern or clearance will be very difficult and time consuming for the dentists.

Furthermore, the eHR sharing initiative put forward by the Government to allow sharing of patients’ eHR between public and private healthcare providers, has yet to be widely and fully understood by the dental profession. This, added to all the above factors, could have affected the readiness and willingness of the IT industry in proactively developing a solution for Hong Kong’s dental professionals.
In May 2010, the eHR Office of the Food and Health Bureau provided support to HKDA to pursue the above objectives. In June 2010, DCMS 1.0, the first open-sourced dental clinic management system was launched at the Hong Kong International Dental Expo and Symposium (HKIDEAS), a major international event for the dental care profession. DCMS 1.0 offered a full solution for dental clinics to computerize their in-house operations. By 2012, more than 150 dentists have deployed DCMS 1.0 at their clinics, making DCMS 1.0 a leading de facto solution for dental clinics.

Since then, DCMS 1.0 was extended to support the pilot project on Outreach Primary Dental Care Services for the Elderly in Residential Care Homes and Day Care Centres. Moreover, the project website has also been visited regularly by both local and overseas visitors.

After the success of DCMS 1.0, HKDA continues to gather user feedback, via surveys and field support of the users. As with all technological innovation, DCMS 1.0 satisfied the demand of the early adopters. However, to attract broader adoption, the system had to be more user-friendly to dentists and staff who wanted a hassle-free, out-of-the-box solution. In 2015, HKDA with the support of eHR Office, embarked on the development of DCMS 2.0, a more versatile, flexible and most importantly more user-friendly version to the typical users. What is more, the system is also capable of connecting with the territory-wide eHRSS.

DCMS 2.0, launched in 2016, in addition to numerous enhancements, supports integration with other dental equipment (such as digital x-ray machine or digital intra-oral camera) to enable a more integrated workflow.

Different from its earlier version, DCMS 2.0 is the first dental clinic management system that connects with eHRSS. Being one of the first healthcare professions that is enabled access to eHRSS, dentists registered with eHRSS can view a patient’s medical record on the eHRSS, allowing them to have a more comprehensive view of a patient’s profile. Optionally, dentists can also share data including appointment, diagnosis, allergy, and prescription to eHRSS, contributing to a patient full medical record to facilitate continuity of care.

To date, more than 1800 dentists and staff in the profession have undergone training on DCMS 2.0 and eHRSS. More than 100 private dentists have installed DCMS 2.0 and registered as eHRSS healthcare professional users, allowing them to access a patient’s health record stored in the territory-wide system.

Today, DCMS 2.0 is a matured and versatile solution for managing 21st-century dental clinics. Users include not only solo clinics but also by major groups with multiple clinics, each with dozens of dentists.

The user feedback from the DCMS 2.0 has been constructive and encouraging. More than one fifth of the participants had shared their comments on the usage of DCMS 2.0, contributing to the improvement of the system and its further development plan. We found that the majority of participants are satisfactory for the new function added in the DCMS 2.0. In response to their valuable comment, we wish the system could be further improved to include more functions to benefit doctors and patients receiving dental service.

If you are interested in installing the DCMS 2.0, please contact us for the instruction for the installation procedure and requirement. Should you have any question regarding the DCMS 2.0, please do not hesitate to contact HKDA secretariat at 2528 5327. If you are interested in learning more about eHRSS, please approach the eHR Registration Office at 3467 6230.

[Dr Johnny Wong’s interview at eHealth News: https://www.ehealth.gov.hk/en/publicity_promotion/ehealth_news_10/boarding_eHR_train.html]