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Policy Implications from Selected Countries for Promoting EMR Certification in Korea[1)]

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Introduction

Electronic medical record (EMR) systems have been adopted by a large proportion of health care institutions in Korea. Due to differences in the way they function, however, these EMR systems have been less useful in sharing patient information between health care organizations.

An EMR refers to a digital record of patient information created and held by a specific health care organization. An electronic health record (EHR), by comparison, while also a digital version of patient information, is created by multiple health care organizations in a format that "conforms to nationally recognized interoperability standards."[2)]

The latest "Survey on the Current State of e-Healthcare" suggests that an estimated 93.3 percent of hospitals and higher-tier health care institutions (100 percent of tertiary general hospitals, 96 percent of general hospitals, and 90.5 percent of hospitals) have an EMR system in place, whereas EHRs are used only by 42.2 percent of hospitals and higher-tier health care organizations.[3)]

1) This brief is an amended extract from *A Comparative Study of Five Countries on Expanding Electronic Medical Record (EMR) Certification System (2022)* authored by Juha Baek, Hee-Chung Kang, Sujin Oh, and Sunghong Kang.

2) Ishigure, Y. (2011). Trends, Standardization, and Interoperability of Healthcare Information. NTT Technical Review, NTT Service Integration Laboratories, 9(4), 1-6.

3) Korea Health Information Service (2021). The Outcomes Report of the 2020 Survey on the Current State of e-Healthcare (https://www.khis.or.kr/board.es?mid=a10306040000&bid=0005&tag=&act=view&list_no=283)

The Korean government in June 2020 instituted a certification program to ensure that EMR systems that health care institutions use to promote patient safety, care continuum and cost savings, are in line with national standards. EMR certification is about ensuring that a certain EMR system is in conformity with national standards and that health care institutions use a certified EMR system. What is significant about the EMR certification program is that it allows via data standardization a health care organization to share with ease with other health care organizations patient data that have been used within that organization alone, in an interoperable EHR format.

The EMR certification program should be further expanded, because it promotes the quality of health services and ensures continuum of care by facilitating innovation and increased efficiency in the health system. Also, data standardization, a process inherent to EMR certification, is a pivotal element in various government projects such as My Healthway Platform (a "health information highway"), patient information sharing, and the building of national data exchange infrastructure.

If EMR certification is to take firm root in Korea and promote the use of standardized patient information, more of small hospitals and clinics, which account for 99 percent of all health care institutions, need to participate in the certification program.

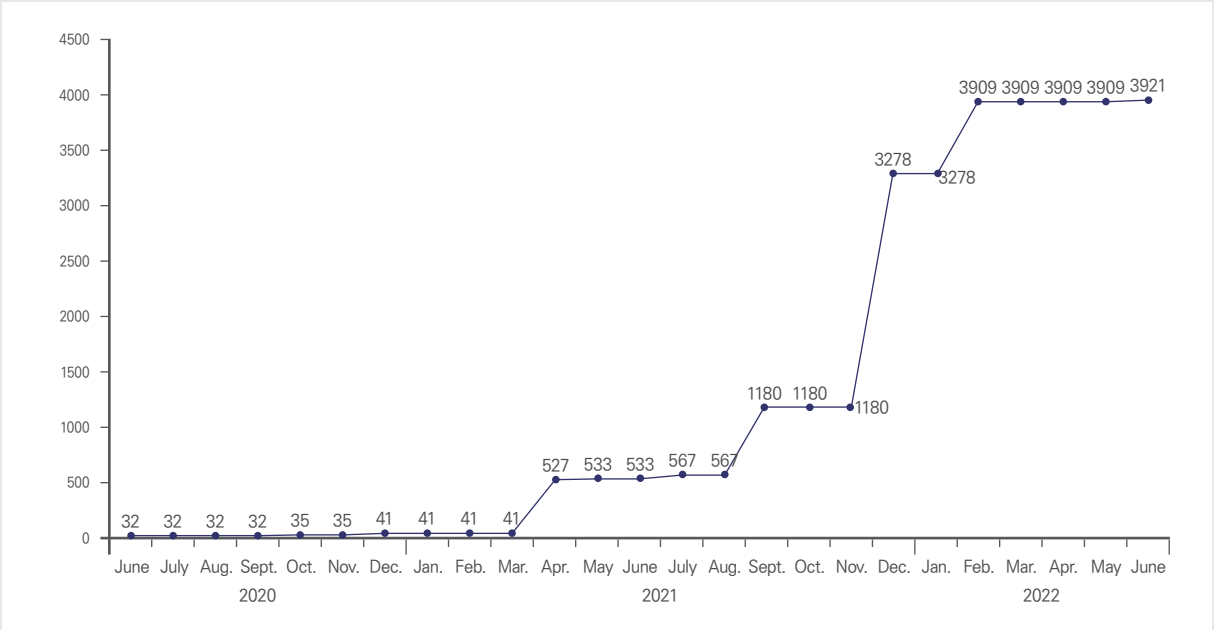
Current status of EMR certification in Korea

A growing number of health care organizations and EMR system vendors have participated in the EMR certification program. As of July 1, 2022, there were a total of 3,921 health care institutions qualified as certified-EMR users, and 83 EMR systems as complying with the national interoperability standards.

However, small hospitals and clinics, which, unlike large-scale tertiary care hospitals and general hospitals, often do not have enough financial room to invest in replacing their existing EMR system with one that conforms with the national standards, have little motivation to participate of their own accord in the certification program, especially when, as is the case now, there are no benefits offered incidental to participation. Nor is the government's recent decision that it would from 2024 have EMR certification factored in quality of care assessment, applicable as it is only to general hospitals and higher-tier health care institutions, a motivation for small hospitals and clinics to participate in the EMR certification program.

The government's policy effort thus far to promote the participation of small hospitals and clinics in the EMR certification program consists only of having worked on a short-term basis on a couple of cooperative projects with EMR vendors. With the first project, implemented for the period between August 2020 and April 2021, a total of the 478 clinics were brought to participate in the EMR certification program. In the second, one keyed to promoting the standardization of EMR systems across small health care providers, an estimated 3,000 small hospitals and clinics participated.

[Figure 1] Cumulative number of health care institutions with a certified EMR system



Source: Author's rendition based on monthly data (2022) from the Korea Health Information Service (https://www.k-his.or.kr).

[Table 1] Number of new cases of EMR certification by month (as of July 1, 2022), by type of health care institution

Care provider type	2020			2021				2022			Total
	June	Oct.	Dec.	Apr.	May	July	Sept.	Dec.	Feb.	June	
TGHs	3	3	4	4	3	3	5	4	1	5	35
GHs	18	0	2	4	3	18	4	14	4	4	71
SHs	5	0	0	0	0	7	3	11	8	3	37
Cs	6	0	0	478	0	6	601	2,069	618	0	3,778
Total	32	3	6	486	6	34	613	2,098	631	12	3,921

Source: Korea Health Information Service website (https://www.k-his.or.kr).

Note: TGHs = tertiary general hospitals; GHs = general hospital; SHs = small hospitals; Cs = clinics; months with no new cases of EMR certification are not included in the table.

Those participating in the EMR certification program account for only 11 percent of all health care

institutions. For small hospitals and clinics, which account for nearly all health care institutions in Korea, the participation rate remains low (2.6 percent in the case of small hospitals and 11.1 percent in the case of clinics). Moreover, the EMR certification program as it stands, devoid of financial incentives attached to participation, is unlikely to help increase to any significant extent voluntary adoption of certified EMR systems by small hospitals and clinics.

[Table 2] Health care institutions with a certified EMR system (as of July 1, 2022), by type of health care institution

Care provider type	Number of health care institutions	Number of health care institutions with certified EMRs	% of health care institutions with certified EMRs
TGHs	45	35	77.8
GHs	319	71	22.3
SHs	1,397	37	2.6
Cs	33,912	3,778	11.1
Total	35,693	3,921	11.0

Source: 1) Health Insurance Review and Assessment Service. Healthcare Bigdata Hub (http://opendata.hira.or.kr/op/opc/olapYadmStatInfo.do);
2) Ministry of Health and Welfare. EMR System Certification (https://emrcert.mohw.go.kr/certifiState/useCertifiStateList.es?mid=a10106020000&returnUrlL=null)

This brief examines the cases of five countries (the US, the UK, Taiwan, Australia, and Canada) where efforts have been ongoing to promote adoption of certified EMR systems by small hospitals and clinics, and draws out policy implications for the Korean EMR certification program. The health care providers with which this brief is concerned are small hospitals and primary care clinics, which relatively lack in resources and expertise.

National efforts in five countries to increase adoption of a certified EMR system among small hospitals

The US implemented its EHR Incentive Program and Regional Extension Centers (RECs) to facilitate meaningful use of EHRs by small health care providers. Instituted in 2011 as part of performance management, the EHR Incentive Program was designed to spur voluntary adoption of EHRs and facilitate meaningful use of EHRs by US health care organizations participating in Medicare and Medicaid. Eligible

health care organizations which participated in the program during the period 2011~2014 received up to USD43,720 for 5 years to 2016 under the Medicare EHR Incentive Program. Health care providers that participated in the Medicaid EHR Incentive Program in the period 2011~2016 were each paid an incentive of up to USD63,750 over the 6-year period to 2021. There was also an addition of 10 percent to a given incentive amount for eligible physicians and hospitals practicing in health professional-shortage areas.

The RECs have been established in a total of 62 locations throughout the US. The main aim of the REC program was to facilitate EHR adoption among primary care physicians, small hospitals, and rural health clinics and to support them so they could meet the requirements for incentives. The program consisted of assistance in EHR adoption and maintenance, education and training on health information communication, assistance in the protection and safety of private information, and continued technical assistance. Each REC received an annual grant of between USD500,000 and USD750,000 for the first two years.

The UK early on had pursued health information digitization with its National Programme for IT, which in 2011, met with broad-based resistance for its top-down approach, was dismantled, whereupon the focus of the UK government's project on health information digitization shifted to promoting adoption of EMR systems with certified interoperability. Scotland, for example, has in place an incentive program by means of which to compensate health care providers for the costs spent on switching from existing EMR systems to nationally certified EMR systems. As part of the program, EMR system vendors provide eligible primary care providers with tailored training and system conversion plans.

Taiwan's national EHR exchange centers were established with the aim of developing an interoperable system for sharing EMRs nationwide. Taiwan's EHR adoption subsidy program was designed so as to benefit smaller hospitals more than larger ones, with the usual subsidy amount for an eligible hospital ranging between USD80,000 and USD400,000.[4] The Taiwanese government has commissioned vendors to develop EHR systems for some 2,000 primary care clinics. In this process, the costs for adoption of newly developed EHR were kept low and applied at likewise low levels to the other clinics.[5] The Taiwanese government's efforts to promote HER adoption also include holding workshops and seminars intended to raise awareness of EHR adoption and information security and protection, and "follow-up seminars for hospitals to share their expertise and experiences."[6]

Australia initially had Personally Controlled EHR, which was replaced in 2016 by My Health Record (MHR), a nationwide personal health record system. Eligible primary care providers participating in the MHR can receive, through the Practice Incentives Program e-Health Incentive, up to AUD12,500 per quarter.[7] There is also support in place, in the form of online training and education, to assist primary

4) Ni, C. C., Hsu, M. H., Yang, P. T., Yeh, Y. T., & Liu, C. T. (2013). The strategies and approaches to develop electronic health records in Taiwan. In Proceedings of the International Conference on Bioinformatics & Computational Biology (BIOCOMP). The Steering Committee of The World Congress in Computer Science, Computer Engineering and Applied Computing (WorldComp).

5) *Ibid.*

6) *Ibid.*

7) Services Australia. (2016). Practice Incentives Program eHealth Incentive Guideline. Retrieved from https://www.servicesaustralia.gov.au/ehealth-incentives-for-practice-incentives-program?context=23046 2022. 6. 28.

care physicians in participating in the MHR system and in using it.[8)]

Canada launched a national digital health plan in 2001 to facilitate and expand adoption of interoperable EHR systems, to which an estimated CAD2.5 billion was committed to 2020. As a result, the provincial and territorial jurisdictions in Canada—13 of them in all—implemented EHR adoption programs, developed interoperability standards in partnership with the federal government, and, by means of incentive programs, encouraged primary care providers to adopt certified EMR systems.[9)] Each jurisdiction of Canada has its own organization tasked with promoting adoption of interoperable EHRs. A primary care provider opting for a certified EMR system is eligible for an incentive payment of up to CAD50,000.[10)]

Comparing Korea with other countries

The countries examined in this study have been running support programs that are aimed at encouraging small hospitals to adopt certified EMR systems. Those programs consist of financial incentives, training and education, assistance in adapting to the incentive programs, connecting health care providers with EMR system vendors, and financing advise. In some countries, working in partnership with EMR vendors, and workshops and seminars that were held to promote awareness of the benefits of using certified EMRs, also helped to promote adoption of certified EMRs.

Korea's policy efforts taken thus far to promote adoption of certified EMR systems are limited to having worked on a couple of projects in collaboration with EMR vendors. Financial incentives, the most important of the means for promoting adoption of certified EMRs, remain absent in Korea, as contrasted with the cases of the other countries, where the efforts to facilitate the use of certified EMRs, from the beginning, ran on considerable financial backing. The cases examined here also point to the need for efforts to identify the needs and barriers that small hospitals and clinics may find themselves facing as they participate in the certified-EMR adoption program and to provide them accordingly with tailored assistance and awareness-raising support.

Concluding remarks

Korea needs to implement a national incentive program to help small hospitals and clinics reduce the financial burden they have of shifting to certified EMR systems. In the countries examined here, financial incentives have played a pivotal role in drawing small hospitals, which in general have neither

8) Australian Digital Health Agency. (2022). My Health Record online training. Retrieved from https://www.myhealthrecord.gov.au/for-healthcare-professionals/howtos/elearning-modules 2022. 6. 28.

9) Chang, F., & Gupta, N. (2015). Progress in electronic medical record adoption in Canada. Canadian Family Physician, 61(12), 1076-1084.

10) *Ibid.*

sufficient resources nor enough motivation of their own to replace their existing EMRs, into adoption of certified EMR systems.

Working proactively in partnership with EMR vendors is crucial. Most small hospitals and clinics purchase and make use of vendor-developed EMR systems. An estimated 80 percent of clinics are found to use EMR systems that are developed by 5 major vendors. Given that in Korea adoption of certified EMR systems has grown in the recent past by means of projects conducted jointly with EMR developers, working in cooperation with such vendors could contribute to further adoption of certified EMR technology.

Support for small hospitals and clinics should be provided grounded in a precise understanding of what holds them back from substituting for their existing EMRs, or adopting, certified EMR systems. Awareness of the EMR certification program has been surveyed as part of the Survey on the Current State of e-Healthcare. Conducted only of general hospitals and higher-tier health care institutions, however, the survey needs to be extended to cover small hospitals and clinics. Policymakers may consider instituting a support mechanism, one like the US's REC system, by which to assist small hospitals and clinics in participating in and adapting to EMR certification. Health care providers which applied for participation in the EMR certification program but are not allowed to participate should be helped to reapply.

Lastly, policymakers should raise awareness of the EMR certification program and actively awaken small hospitals and clinics, via such means as seminars and workshops, to the benefits and effect of using certified EMR systems.