RECENT TRENDS AND BUSINESS OPPORTUNITIES RELATED TO MEDICAL DATA

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With increasing use of IT technology on the medical front in recent years, a large amount of medical data containing patients' treatment history and biological data, such as electronic medical records, various medical images, and health insurance claims data, are being generated. The utilization of such data has been impeded by personal information protection laws until recently. However, legal systems as well as infrastructure to use medical data are now being developed, particularly in developed nations, as medical costs are surging worldwide. According to major consulting firm Frost & Sullivan, the global market for medical data management and analysis stood at USD 4.4 billion in 2015. It is expected to reach USD 7.5 billion in 2020, with an average annual growth of about 11%. In this report, we will focus on recent trends and business opportunities related to medical data.

VALUE OF MEDICAL DATA

Medical data is expected to contribute to higher quality and efficiency in healthcare services, mainly in the following points.

Precision medicine: Clinical conditions differ from patient to patient even if they contract the same disease. As such, it is important to improve treatment results by offering precision medicine tailored to individual patients. For example, the response rate for anticancer and antipsychotic drugs is low at about 30% (based on FDA data), with effectiveness varying significantly among patients. It is thus essential to enhance treatment outcome by understanding each patient's condition in detail based on various test results and doctors' physical examinations, and administering appropriate drugs at the appropriate timing. Accumulating and analyzing medical data will lead to development of new medical technology that will help promote precision medicine.

Integrated healthcare system: As the division of functions among medical institutions becomes more explicit, the sharing of medical data among various medical institutions and coordinating various healthcare professionals who play different roles from the acute to the convalescence phase, including doctors, nurses, care workers, and physical therapists, will improve the quality of medical care through optimization of treatments for each patient, and reduce duplicate medical testing and medication.

Preventive medicine: Medical data can also be used to categorize a group of patients with a certain illness according to the risk of aggravation, and apply medical intervention (prevention of serious conditions, etc.) based on such risks. This approach, called population health management (PHM), is drawing attention.

As described above, the utilization of medical data will not only improve the quality of medical care but also reduce unnecessary medical expenses. In addition, it is important for pharmaceutical companies to make use of medical data to curb their surging development costs. For example, medical data can be used to obtain the

evidence-based data (safety and cost effectiveness of drugs, etc.), develop new treatment methods (additional indication, optimum dosage, timing of administration of drugs), and identify patients to be included in their clinical trials. Moreover, such data is also expected to be used for developing new insurance services and evaluation systems for medical care that focus more on cost effectiveness. As such, government institutions and insurance companies will also become beneficiaries of services utilizing medical data.

BUSINESS APPROACHES UTILIZING MEDICAL DATA

In developing and promoting services using medical data, the amount of integrated medical data holds the key. As medical institutions need to focus their resources on medical treatment, IT services providers play a major role in utilizing medical data.

As medical data contains personal information that should be strictly managed, it is essential for IT service providers to secure sufficient security technology that meets the standards required by relevant laws and regulations for handling personal information, and to build a relationship of trust with medical institutions, which strictly manage medical data. The following are notable examples of business approaches using medical data.

Offering individualized services for medical institutions

In the US, which is ahead of other countries in using IT technology in the medical field, some players offer services tailored for each medical institution and based on each patient's clinical condition, by making use of medical data. For example, electronic medical record vendor Cerner (US) and medical equipment manufacturers GE (US) and Philips (Netherlands) take advantage of their existing business relations with medical institutions. They provide services to help medical professionals optimize medical care based on patients' clinical condition, by developing a cloud platform to share information and facilitate regional medical cooperation. Meanwhile, Explorys, which was a spinoff from the Cleveland Clinic and acquired by IBM in 2015, provides the diagnostic decision support system for doctors by categorizing patients with chronic diseases, such as diabetes and asthma, into certain groups based on the medical records and insurance premium data of 50 million people.

As an approach to enter the market, US-based Practice Fusion's business model of providing a cloud-based free electronic medical record service to medical institutions is gaining attention. The company receives fees from such institutions by helping their peripheral business, such as referrals to specialists and data connections to outside clinical laboratories and/or payment systems, and enhancing users' convenience and operating efficiency. It also receives online advertising revenue from pharmaceutical companies, which pay much higher rates than the average rates, as Practice Fusion targets and lures them based on the results of medical data analysis. Development of electronic medical record systems costs several million yen to several tens of millions of yen per medical institution as such systems require a high degree of confidentiality. Practice Fusions fund such costs with the revenue and fees mentioned above. The company's electronic medical record systems are widely used by small- and midsize hospitals and practitioners, which are not cash laden, and the number of users has grown to five million per month. It has also provided information services to pharmaceutical companies and diagnostic decision support systems for doctors, and presented data on analysis of costs and outcomes in the treatment of chronic diseases at a conference of the International Society for Pharmacoeconomics and Outcomes Research in May 2017. As such, medical data is being used for a wider variety of purposes, including social contributions through secondary-use.

Integration of medical data with personal health record

Given the growing importance of home medical care, offering solutions to integrate personal health records (PHR) generated at patients' homes and medical data generated at medical institutions will be promising.

In Japan, Medical Data Vision, utilizing its strong business relationships with medical institutions whose operations it supports by providing services, developed “karteco” services for patients to keep their electronic medical record and examination data. The karteco services are linked to electronic medical record at medical institutions and allow patients to access some of the medical data via smartphone applications. They will be very helpful even if a patient visits another hospital, because examination data can be shared and previous medical records and medication status can be confirmed. In addition, patients can record their daily condition in the smartphone applications, which will help doctors to make a better diagnosis and treat patients more effectively. Furthermore, there will be new business opportunities using medical data, such as remote medicine and disease management via monitoring devices, as well as development of new drugs based on such data, if a sufficient number of users can be secured. Abovementioned Practice Fusion acquired Ringadoc, a US developer of mobile applications and web services for telemedicine, in 2014, as it intends to enhance services using PHR.

BUSINESS OPPORTUNITIES AND KEY POINTS

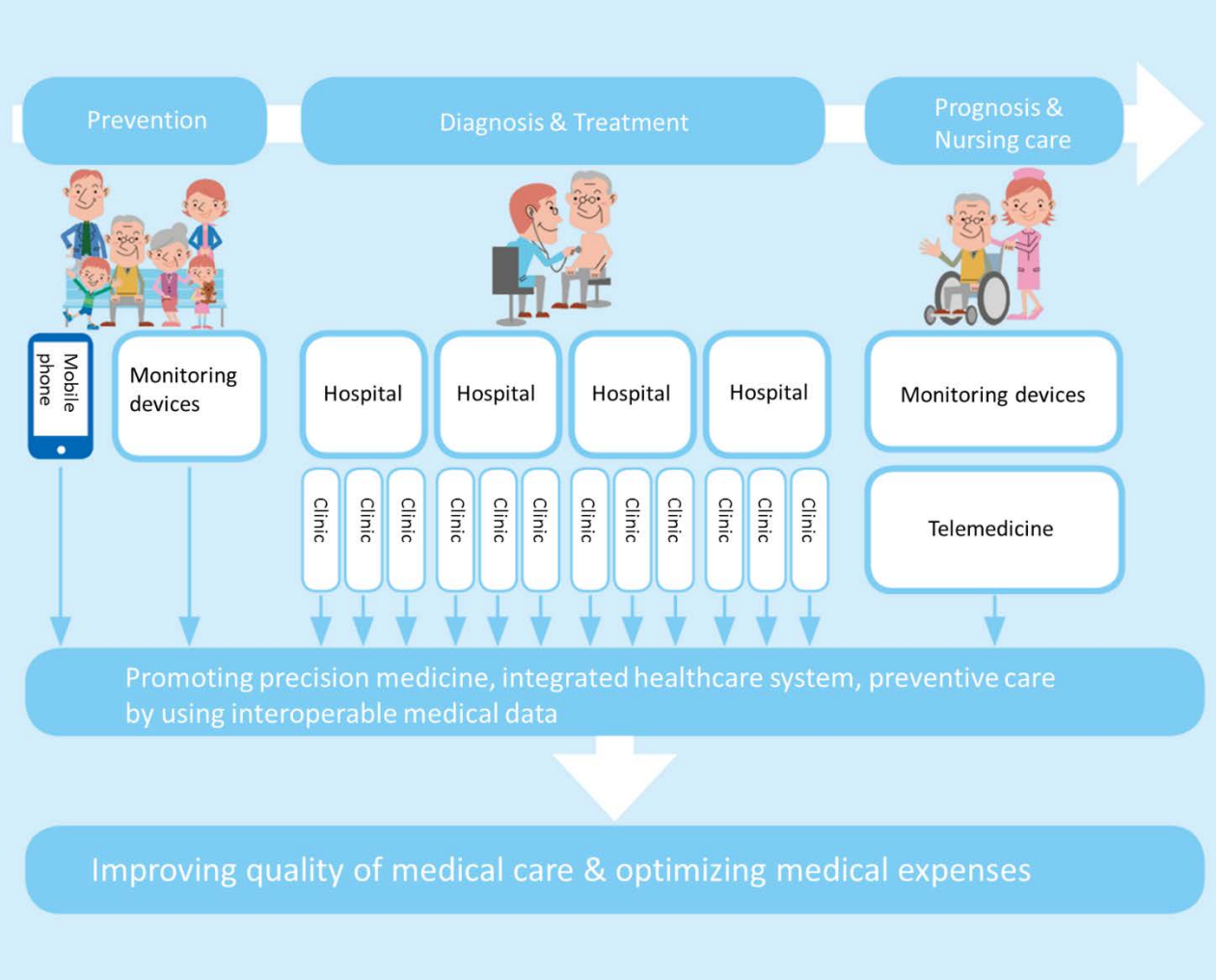
The key to success in offering services using medical data is how much integrated data can be collected and used to find useful insights, while giving sufficient consideration to personal information protection and information security. As such, it is essential to understand laws and regulations for personal information protection and other regulations for handling such data in each country.

In Japan, the Act on the Next-Generation Medical Infrastructure was established in April 2017 and will be enforced by May 2018. Under the new law, the government will introduce a system to certify business operators handling medical data. Then, requirements for such accredited business operators, which have sufficient information security technology and anonymization technology, to receive medical data from medical institutions, will be eased. After the enforcement of the law, the infrastructure to utilize medical data for drug discovery and other purposes, including by secondary-use, will be put in place. This will likely lead to new business opportunities.

Looking at the domestic market, efforts are being made to establish a network of medical institutions, with the aim of promoting regional medical cooperation. IT investments in developing information-sharing platforms to support such networks will likely be accelerated, presenting more opportunities to enter the market for services using medical data. Meanwhile, it is getting more and more difficult for medical institutions to eke out sufficient profit due to the government policy to rein in medical services fees. Relatively large-scale hospitals can center on advanced medical services with high medical service fees or improve operating efficiency by specializing. However, small- and midsize hospitals have limited options. As such, it may be a good strategy to target such hospitals in providing services using medical data. Offering cloud-based services to support hospitals’ operations and/or solutions to integrate their medical records with PHRs at reasonable implementation/maintenance costs could contribute to higher efficiency and better quality of medical services at medical institutions.

We also note a recent trend toward grouping medical institutions, which is typically seen in developed nations. Sharing patients’ information within the group will lead to closer cooperation among medical institutions and seamless medical services provided by them. As such, the grouping will contribute to improving the quality of medical services and reining in medical costs at the same time (Chart).

Chart: Medical Cooperation and Integration of Medical Data



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A good example is Kaiser Permanente, a major private healthcare plan provider in the US. The company operates 38 hospitals and 626 clinics in eight states, and it shares/utilizes medical data among such medical institutions by developing its own database of electronic medical record. Of note, improved cost effectiveness and reduced unnecessary medical expenses in its medical services have also led to cost reductions in its insurance operations. The company has thus set insurance premiums which are 15-20% lower than other insurers'. Going forward, the grouping of hospitals will be more widely seen in Asian countries, where the healthcare market is projected to expand. Our eyes are particularly on developments in Thailand and Malaysia. Medical infrastructure (including private medical insurance services) will likely be built up rapidly in these countries as the middle-income group grows. Against this background, capturing demand for IT systems and introducing electronic medical record and other IT systems on a timely basis will be important for business operators, not only because such projects are large in scale but also because operators can securely access the integrated medical data, which could bring them opportunities to develop a wide range of services in the entire process from prevention to prognosis and nursing care (including home medical care and telemedicine).