

Executive Summary

Study on the Introduction of Horizon Scanning System for Emerging Health Technology

Jieun Choi¹, Sungkyu Lee¹, Jee-In Hwang², Chae-min Shin¹, Eunjung Park¹, Su Jin Kwak³, Ji Jeong Park¹, Sungwon Lim¹, Yu Kyung Lee¹, Seul-gi Choi¹

¹ National Evidence-based Healthcare Collaborating Agency, Seoul, South Korea

² College of Nursing Science, Kyung Hee University, Seoul, South Korea

³ College of Nursing, Catholic University, Seoul, South Korea

□ Introduction

Due to the rapid population growth among old people and the increase in prevalence of chronic diseases, many countries around the world and the health industry have invested their large capitals and made efforts in order to develop innovative and the most advanced health technologies. The newly developed and advanced technologies provide benefits, but on the other hand, they also increase national healthcare costs and cause uncertainty in safety and effectiveness. In turn, there needs to be a monitoring system for emerging health technologies, and a solution can be the development and introduction of a horizon scanning system. The results of horizon scanning activities could provide information about potential impact and expected benefits of emerging health technology to patients, policy makers, and the health industry.

The purpose of the study was to develop Korea's framework of a horizon scanning system for emerging health technology that can identify health technologies early in the development stage, analyze their potential impact on public health, and provide objective and timely information on emerging technologies for healthcare industries, health service providers, policy makers, and patients.

□ **Methods and Results**

In order to develop Korea's own framework of horizon scanning activities for emerging health technology, we firstly, reviewed and investigated the activities of the Korea Institute of S & T Evaluation and Planning (KISTEP) and the Korea Institute of Science and Technology Information (KISTI). In the case of KISTEP, they employed experts' advice in order to select 10 promising technologies. The experts usually considered the concreteness of technologies, progressivity, and realizability. Various methodologies, such as the Delphi method, scenario analysis, cross-impact analysis, a professional panel for future forecasting, and analysis of patents or published papers, were employed. KISTI has established and operated a future technology knowledge-based monitoring system and conducted research to forecast and discover promising technologies through future technology analysis.

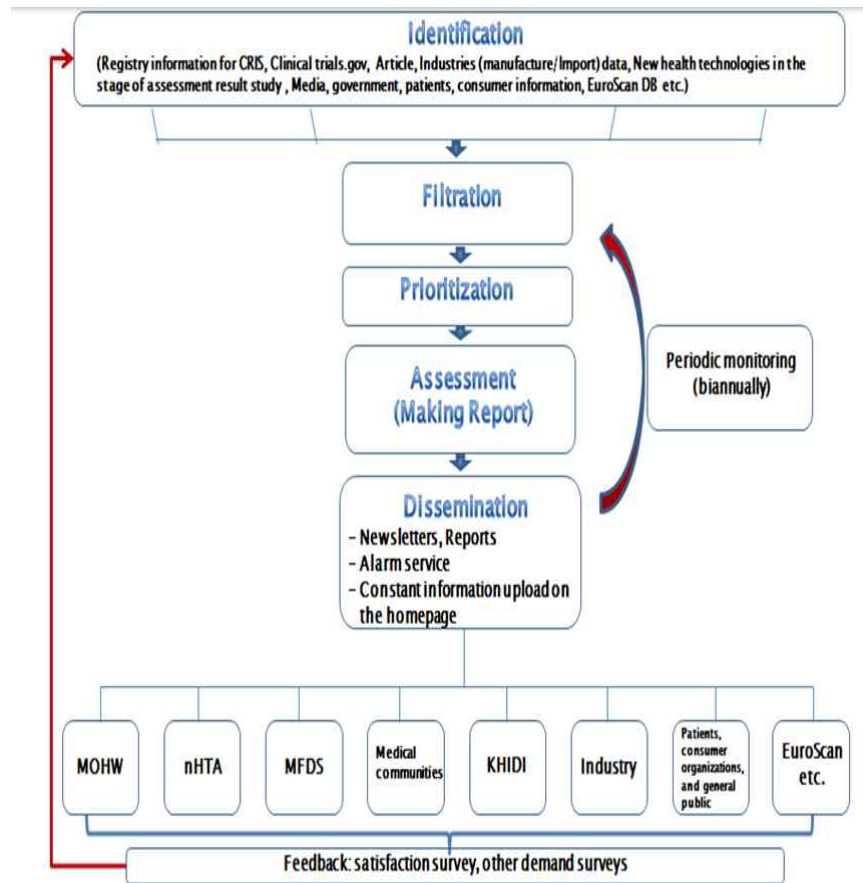
To understand horizon scanning activities in South Korea, we reviewed activities of the Medical Device Information & Technology Assistance Center from the Ministry of Food and Drug Safety and the Korea Health Industry Development Institute. The Medical Device Information & Technology Assistance Center is a government-funded institute established in 2012. The main activities of the institute include collection of global standard information, assistance for globalization of medical devices, assistance on fast commercialization of medical device, field-customized technical assistance, quality management training, and collection and analysis of safety information on medical device adverse events. The Korea Health Industry Development Institute has operated a New Excellent Technology Policy for the healthcare industry. However, we found that only a few technologies, which had been selected as a New Excellent Technology, were submitted to NECA's new health technology assessment. A plan is needed to support the transition from New Excellent Technology to the stage of new health technology assessment through providing relevant information.

To understand the international horizon scanning system, we mainly investigated UK's NIHR Horizon Scanning Centre (NIHR HSC) and a global horizon scanning network, EuroScan. NECA is the first organization in the East and West Asian countries to become a member of Euroscan, making it possible to collaborate on horizon activities between Euroscan and NECA.

To identify major areas, key words, and countries' collaboration in the global clinical trials in order to predict targets for health technology horizon scanning, we analyzed 150,756 clinical trials collected from ClinicalTrials.gov and ICTRP (International Clinical Trials Registry Platform). We used Vantage Point(Georgia Tech, USA) and VosViewer (v.1.5.5., Netherlands) programs which provide various maps to identify major areas, key words, and countries' collaboration in the global clinical trials. There has been an upward trend in clinical trials from 2000 to 2013. Most of the clinical trials we collected from ClinicalTrials.gov were in the areas of HIV, cancer, and type 2 diabetes. The clinical trials in their stage of phase II and III, which are the potential targets for health technology horizon scanning, were 13.63 % and 17.82 %, respectively. In ICTRP data, we used 'cancer' as a keyword and found that 41,988 clinical trials. The most frequent key words in the cancer clinical trials were, chemotherapy (1,372, 6.88%), breast cancer (1,042, 5.23%), surgery (1,189, 5.97%), and radiation therapy (920, 4.62%). In the map showing countries collaboration in cancer-related clinical trials, South Korea, Taiwan, Russia, Australia, Italy, Germany, and the UK had a close collaboration.

We also run a survey to understand demands of potential customers for horizon scanning activities and to consider the dissemination of results of horizon scanning activities.

Based on understanding and reviewing the overseas' horizon scanning systems, we developed 'Korea's horizon scanning system' as shown in Figure below. We named the activity as the 'Newly-Developed Promising Health Technology Search'. The scope of the search included, drugs, devices, technologies, and national-level healthcare programs or services. Drugs could be included in this category if they were in phase 2 or 3 of clinical trials with an estimated time to reach the market of 1-5 years. In the case of medical and diagnostic devices, the acceptance criterion was an estimated time to reach the domestic market of 1-5 years; these include the medical or surgical procedures and tests prior to the new health technology assessment.



<Figure> Korea's horizon scanning system

□ **Conclusions**

We believe that the developed horizon scanning system can provide preemptive information about potential impact and expected benefits of emerging health technologies to patients, healthcare service providers, clinical trial experts, health industries, and policy makers. It will also help to promote the domestic health industry through NECA's activities in EuroScan.

Key Words: Emerging Health Technology, Horizon Scanning System