Health technology assessment in the Asia Pacific region

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Objectives: Although health technology assessment (HTA) has been well established in all developed countries, it has not found a firm footing in many developing countries. This is especially true of the Asia Pacific region, which has much of the world population.
Methods: The beginnings of HTA in this region go back to the work of Dr. David Banta in China and the establishment of the Asian HTA Network. The Network embarked on increasing awareness and building capacity among personnel from the region. Attempts were made to introduce HTA in countries where it did not exist, as well as to strengthen existing HTA programs. The Network had regular meetings, and also carried out a study on the diffusion and utilization of magnetic resonance imaging in the region. In an attempt to boost the efforts of the Network, the author spearheaded the organization of the Asian Regional HTA Conferences in Kuala Lumpur in 2000 and 2003, and in Manila, Philippines, in 2004. In addition, the author carried out a survey on HTA in the region. There are two broad categories of countries in the region: Australia, Malaysia, Singapore, New Zealand, China, Philippines, Korea, Thailand, and Taiwan, which have formal HTA programs, and others for which informal mechanisms or related activities exist, which include Bangladesh, Bhutan, Brunei, Cambodia, India, Indonesia, Laos, Maldives, Mongolia, Nepal, Pakistan, Sri Lanka, and Vietnam.
Results: It is important that once HTA is established, it is used effectively. Perseverance and dedication is needed to ensure the success of an HTA program.
Conclusion: Some countries in the region have effective HTA programs, whereas in some, efforts are being made to establish HTA, or HTA-related activities are being carried out in the absence of a formal HTA program.

Keywords: Health technology assessment, History, Asia Pacific region

The concept of health technology assessment (HTA) has diffused rapidly throughout the industrial world, with North America and practically all of Europe having implemented HTA (1;11;14). A major factor in this development is the fact that a significant portion of a country's healthcare expenditure can be attributed to medical technology (especially pharmaceuticals). In fact, technological change has been said to be one of the principal drivers of escalating healthcare costs and, thus, a key target in efforts toward cost containment (8;10).

However, despite the fact that the larger part of the world's population lives in Asia, and that in addition to Japan, there are many other countries that can ill afford to acquire or adopt all the latest technologies the world has to offer, HTA has been relatively slow in gaining much of a foothold in Asia. It must be pointed out that this is linked to several factors, including a lack of awareness, the lack of local epidemiological data, disjointed efforts in research, and the like. For example, outcomes research and the study of pharmacoeconomics were introduced in East Asia only during the late 1990s.

This study attempts to provide an idea of the state of development of HTA among the countries in Asia. Most of the material in this study is based on the author's knowledge of developments in the region and on a formal survey of HTA in Asia carried out by the author.

THE BEGINNINGS OF HTA IN ASIA

Despite the lack of establishment of formal HTA programs in Asia, there has been a tradition of related activities, such as health systems research, quality assurance, and clinical epidemiology research. However, the beginnings of formal HTA activities were probably in China, where Dr. David

Banta was involved, for many years, in creating awareness of HTA and working toward the setting up of an HTA program.

Another important event was an intercountry conference on Technology Assessment in Health Care organized by World Health Organization (WHO)/SEARO in Bangkok, Thailand, on December 15–19, 1997, with Dr. David Banta and Dr. Alicia Granados as facilitators. This conference was attended by representatives from Bangladesh, Bhutan, India, Indonesia, Maldives, Myanmar, Nepal, Sri Lanka, and Thailand.

The Asian HTA Network

On of the early initiatives was the decision at the annual meeting of the International Society of Technology Assessment in Health Care in 1996 to set up a Special Interest Group on Developing Countries. Dr. Somsak Chunharas from Thailand was designated to lead activities for Asia. Subsequently, with the appointment of Dr. David Banta by the Ministry of Health Malaysia as consultant for HTA, the idea of an Asian HTA network was discussed as part of the work. The network was intended to pool available resources and maximize them to benefit as many countries as possible.

Some of the needs identified were to set up HTA capability in those countries where it did not exist, and to strengthen capability in those countries where it did. A major challenge was the sustaining of this network, faced with resource constraints both in terms of finance and manpower, and the task of convincing top policy makers and decision makers on the need to establish HTA in those countries where it did not exist.

The first meeting of the Network was held in Kuala Lumpur Malaysia in 1996 with representatives from Bangladesh, Hong Kong, India, Indonesia, Korea, Malaysia, Nepal, Philippines, Singapore, and Thailand. China subsequently joined the Network. At this meeting, there was general agreement to move HTA forward in the region. The next meeting of the Network was held in 1997 involving eleven countries, where progress in HTA was reported upon, and experiences shared. In addition, it was decided to embark on a study in 1997–98 on the diffusion and utilization of magnetic resonance imaging (MRI) in Asia involving Korea, Malaysia, Indonesia, the Philippines, and Thailand, as well as the cities of Shanghai and Hong Kong in China, and the state of Tamil Nadu in India. This study concluded that, although the numbers of MRIs per population in this region were not as high as that of most Organisation for Economic Co-operation and Development countries, it still reflected that a major share of the health resources of countries in the region was being devoted to expensive high-technology devices (9). In October 1998, the South East Asian Clinical Network (made up of Indonesia, Philippines, and Thailand) organized a regional conference on technology assessment in health care jointly with the Asian HTA Network. This provided an opportunity to further "spread the gospel" of HTA among personnel within the region. The Network also had a meeting in 2000 jointly with INCLEN, the International Clinical Epidemiological Network. Subsequently, the network was inactive for a few years. Attempts were made by the author to revive it with the organization of the Asian Regional HTA Conferences in Kuala Lumpur in 2000 and 2003, as well as the Asian Regional HTA Conferences in Manila, Philippines, in 2004. With perseverance, the Network still continues to exist, and has been able to foster interest in HTA, continue to build capacity in countries in the region, and adopt recommendations of HTA that have been successfully implemented in other countries (17).

Currently, the initiative to organize the HTAi annual meeting in 2009 in Singapore is a further step to boost HTA in the region. In addition, the setting of an HTAi Interest Group for Developing Countries chaired by Joseph Mathews from India will, it is hoped, fuel added interest in HTA in the Asia Pacific region, as well as foster closer working relationships with other countries.

HTA SURVEY

A formal survey was carried out by the author in 2002 to gather information as part of a study on Health Technology Assessment as a Tool for Policy Making in Developing and Transitional Countries, commissioned by WHO to the International Society for Technology Assessment in Health Care. The survey on evidence-based policy making and health technology assessment encompassed twenty-one countries. However, only participants in twelve countries responded, viz. Brunei, China, India, Korea, Laos, Malaysia, Pakistan, Philippines, Singapore, Sri Lanka, Thailand, and Vietnam (Sivalal, 2002, unpublished).

CURRENT SITUATION OF HTA IN ASIA PACIFIC REGION

With regard to HTA, the countries in the Asia Pacific region can be divided into two broad categories: those that have formal HTA programs, and others for which informal HTA mechanisms or related activities exist. Australia was among those that set up a formal HTA early, followed later by Malaysia, Singapore, Hong Kong, New Zealand, and China. Subsequently, HTA programs were set up in the Philippines, Korea, and Thailand, and more recently, in Taiwan and Iran. There are no formal HTA programs in Bangladesh, Bhutan, Brunei, Cambodia, India, Indonesia, Laos, Maldives, Mongolia, Nepal, Pakistan, Sri Lanka, and Vietnam. An account is provided below on the HTA programs in countries in the Asia Pacific region, dealing first with those countries with formal HTA programs, followed by others for which HTA or similar activities are being carried out. Countries for which no such activities have been identified or from which no information is available have been excluded from this study. In

addition, the countries for which individual HTA programs are described in detail in other studies in this publication have also been excluded.

Hong Kong

The Hong Kong Hospital Authority, an independent, statutory body funded by the government managing all the forty-two public hospitals and institutions, set up an Office of Technology Management in 1996 with the key objectives of coordinating the introduction of technologies at the appropriate stage and managing their dissemination, and ensuring that the technologies are applied to the appropriate patients with the relevant indications (6). A Clinical Effectiveness Unit (CEU) was set up to provide current, accurate, and usable information on technical efficiency, safety, and efficacy of new / evolving health technologies that have potential applications in Hong Kong. The CEU is responsible for HTA. Initially, HTA reports from other countries were used for decision making on technologies, but subsequently from 2001, HTA and technology reviews have been carried out. To date, approximately eleven in-depth HTA and six technology briefs on various technologies have been produced.

Iran

Iran spends approximately 6.5 percent of its gross domestic product on health, which is higher than the regional average, but it lags behind many countries in terms of health systems performance. Iran manufactures and carries out maintenance on the bulk of its medical devices (22). Although there are criteria for importing and installing high technology, for example, computed tomography scanning and MRI scanning, these restrictions are not very effective because there are multiple health providers (12). The Ministry of Health and Medical Education has established a Health Technology Assessment Unit in the Shaheed Beheshti University of Medical Sciences. In addition, an Iranian Health Technology Assessment Institute (IRAHTA) was established in 2005 by an independent professional group. IRAHTA carried out a study on health technology selection and use in Iran, working toward a new model of appropriate health technology licensing and utilization. It developed a technology management system for the Ministry of Health and Social Security Organization's health services, as well as a structure for the national center of evidence-based decision making (Marzban, 2007, unpublished).

New Zealand

New Zealand Health Technology Assessment (NZHTA) has been established at the Department of Public Health and General Practice within the Christchurch School of Medicine. The Health Funding Authority along with the Ministry of Health recently awarded a significant contract to the University of Otago to enable it to develop a health outcomes and health technology assessment clearing house.

NZHTA was originally set up in 1997, but was inactive for a period from June 2007 until recent efforts at re-establishment. A total of thirty-two systematic reviews of the literature were carried out since 1997. It was also contracted to carry out HTA studies for the Australian Medical Services Advisory Committee; nine HTAs were carried out under this contract. Horizon scanning has also been part of the program, and reports four technologies were produced. Shorter assessments referred to as Technical Briefs were also carried out, a total of seventeen such reports being produced since 2002. NZHTA also came up with an innovation called evidence tables where a critical appraisal of the literature on a specific topic was carried out and presented in the form of evidence tables. It also produced a health services research report on the cost-effectiveness of home-based services (20).

Taiwan

A decision was made to establish HTA under the Center for Drug Evaluation, and the HTA division was approved by the board of the Center for Drug Evaluation in December 2007. The HTA Unit is expected to provide evidence to the Drug Benefit Committee and the Bureau of National Health Insurance (BNHI) in the Department of Health, Taiwan (19). This HTA system requires all medical devices, new drugs, and innovative surgical procedures to provide evidence of effectiveness in improving patients' health and be cost-effective before being reimbursed by the BNHI insurance plan (16).

Bangladesh

There is at present no national HTA program in Bangladesh. However, research is being carried out in various institutions including the Essential National Health Research (ENHR) program of BRAC, a nongovernmental organization (3). A Directorate of Drugs Administration regulates drugs and medicine, including the controlling, monitoring production, and distribution of vaccines (23). Efforts were made to train an officer attached to BRAC in health technology assessment in a Malaysian course, while an official from the Directorate-General of Health Services attended the Asian Regional Health Technology Assessment Conference in Malaysia in 2000.

Bhutan

Bhutan has no national HTA program. Health research had previously not played a significant role in the decision-making process until 1996, when a unit of health research and epidemiology was established within the Health Division, with technical and financial support from WHO. Several small scale studies and assessments have since been carried out. Substantial financial allocation has been earmarked for development of research capacity within the Health Division (2). A representative from the Drug, Vaccine and Equipment Division, Health Department, attended the Asian Regional HTA Conference in Malaysia in 2000.

Brunei

There is also no national HTA program in Brunei, the emphasis being on health technology management. In the Ministry of Health Brunei, the Department of Policy and Planning is responsible for the national health strategic plan and health system policy analysis, while the Department of Health Care Technology looks into biomedical and physics engineering, risk management, and information and communication technology. This department also carries out the selection, evaluation, and acquisition of medical equipment, as well as being involved in its preventive maintenance and repair, in addition to user training (4). Brunei, too, was represented at Asian Regional HTA Conferences in Malaysia.

Cambodia

Cambodia, too, does not have a national HTA program. The Ministry of Health has a Department of Food, Drugs and Cosmetics, which also addresses matters related to medical equipment. Essential health research is being carried out. The major problems are communicable diseases, and there is a concerted effort to focus on evaluative activities (5). Cambodia was also represented at the Asian Regional HTA Conference in Malaysia.

India

There is no national HTA program in India. The Ministry of Health determines national policies, but each of the states in India are also responsible for its own health care. Research is well-established on a national level, especially essential national research, with the Indian Council of Medical Research identifying the priority areas. However, the main users of these research findings are academics and researchers. Evidence-based decision making is carried out on a very small scale at the national and health facility levels, with hardly any at the state level.

The fact that there is a large private sector on fee-for-service that caters to the more affluent section of the population poses a major challenge. Much technology, especially sophisticated medical equipment, is acquired by the private sector. Efforts have been made to carry out assessments, but these are mostly isolated, with little dissemination or implementation of recommendations. There is also much clinical and clinical epidemiological research, for example, by the Indian Clinical Epidemiology Network, but again suffer from a lack of application of findings. Dr. David Banta has conducted workshops in some parts of India and has had discussions with policymakers on the issue of HTA. Although there was general agreement on the need for HTA in India, this has not been taken forward, until recently, with renewed efforts being made emphasizing on capacity building. Participants from India have been trained in HTA in Malaysia in 1999, and have also attended the Asian Regional HTA Conference in Malaysia.

Indonesia

Policy making on health is centralized in Indonesia. In 1995, the Ministry of Health established an advisory body (Consortium of Medical Care) to coordinate the setting up of centers to select, adapt, and develop medical technology. A Centre for Health Services Research and Development was set up to monitor the effects of rapid development of health technology. Subsequently, a Research Group on Health Technology Assessment was set up in 1997. Later, an HTA Unit was set up in the Department of Health in 2003. A technical HTA team carries out evaluation of drugs and vaccines. There are also efforts to evaluate health systems, as well as examine efficacy of drugs and procedures, but these are mostly carried out at medical and dental faculties in universities. Personnel from the Department of Health and from various hospitals have attended HTA training courses in Malaysia. However, there is no effective institutionalized national HTA program in Indonesia as yet.

Laos

Laos does not have a national HTA program. It has been facing problems in trying to improve aspects of technology management especially in equipment acquisition. Formal national policies have been drawn up, among others, on health impact assessment, drugs, and management of advertisement on food, drug, and medical products and donation of drugs and medical products (21). There is a moderate amount of biomedical and health systems research, as well as evaluation-based research. Laos, too, was represented at the Asian Regional HTA Conference in Malaysia in 2000.

Maldives

There is no national HTA program in the Maldives. Health services are largely provided by the public sector, mainly under the jurisdiction of the Department of Public Health in the Ministry of Health. The Food and Drugs Authority is responsible for all matters related to medicines and therapeutic goods, and food safety. Central procurement is carried out under the Department of Medical Services (15). A surgeon from the Indira Gandhi Memorial Hospital attended the Asian Regional HTA Conference in Malaysia in 2000.

Mongolia

In Mongolia, too, there is no system of HTA. The National Center for Health Development is the main professional organization under the Mongolian Ministry of Health. It supports both policy and technical activities of the central governmental agency on health, including improving health management and information, and quality assurance activities. The government has set the standardization of existing and the introduction of new technologies as one of the Government's priorities since 2002, but this has yet to materialize fully (7). Mongolia sent a participant to the Asian Regional

HTA Conference in Malaysia in 2000, as well as to the annual HTAi meeting in Adelaide in 2006.

Nepal

There is no national HTA program in Nepal. The Nepal Health Research Council was established in 1991 to strengthen the national capacity for carrying out research and to promote its use. This Council is also the focal point for Essential Health Research. Nepal has identified the need for a health technology assessment program to resolve some of the existing problems related to inappropriate technologies (13). Nepal was represented at the Asian regional HTA conferences in Malaysia.

Pakistan

Although Pakistan does not have a national HTA program, some HTA activities are being carried out. Personnel from Pakistan were trained in HTA in Malaysia in 1999, and Pakistan was also represented at the Asian Regional HTA Conference in Malaysia in 2000. In addition, the author was involved in conducting an HTA workshop in Lahore in Pakistan to policy makers and healthcare providers in 2003, in collaboration with WHO. There was initially keen interest from a nongovernmental organization in Pakistan to carry out HTA, but this has been largely replaced by a network of interested clinicians. Approximately 10 assessments have been carried out to date, some of which have been presented at various HTAi annual meetings.

Sri Lanka

There is no national HTA program in Sri Lanka. The Ministry of Health is responsible for, among others, developing health policy, bulk purchase of pharmaceuticals and equipment, enforcement of regulations concerning health, and providing guidelines on professional matters. Under the strategic framework, new technologies and innovations will be evaluated and introduced into the state sector if there is clear demonstration of value and impact (18). Sri Lanka was a participant at the Asian Regional HTA Conference in Malaysia in 2000.

Vietnam

Vietnam, too, does not have a national program for HTA. It is facing some problems in technology management with a lack of medical equipment, especially since a national policy on medical equipment for 2002—10 approved in 1992, has not been implemented (24). Staff from the Center of Social Sciences in Health attended the Asian Regional HTA Conference in Malaysia in 2000.

DISCUSSION

It can be seen that for HTA to be established many factors have to be considered and multiple strategies applied. Fore-

most among them appears to be creating awareness among top policy makers not only to enable HTA to be accepted, but also that the results and recommendations of HTA are used. There is also a need for committed and dedicated manpower—people who are convinced of the benefits of HTA and are prepared to work extremely hard and who will persevere against odds to take HTA forward. It can also be seen that mere exposure to HTA at conferences or training personnel in HTA will not automatically ensure the establishment of HTA. Even after the establishment of HTA, it is important that continued efforts to create awareness among policy makers and decision makers are carried out, to ensure that there is a demand for HTA, and that HTA reports provide input into policy making.

CONCLUSION

In the Asia Pacific region, Australia was among the first to establish a formal national HTA program, followed by Singapore, Malaysia, and New Zealand. Other countries followed suit and HTA programs are currently available in China, Iran, Japan, Korea, Philippines, Thailand, and Taiwan. HTA activities are also present in Pakistan and Indonesia, while evaluative research activities are being carried out in India. There is a need for greater efforts to set up HTA in countries where it does not exist, and strengthen existing programs in others. It is expected that the annual HTAi meeting this year in Singapore will provide such an impetus to promote HTA in the region. Apart from this, efforts by the HTAi Interest Group for Developing Countries will, it is hoped, fuel added interest in HTA in the Asia Pacific region.

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REFERENCES

1. Banta D. The development of health technology assessment. *Health Policy*. 2003;63:121-132.
2. Bhutan National Health System Profile. http://www.searo.who.int/LinkFiles/Bhutan_CHP.pdf. (accessed June 10, 2008).
3. BRAC Centre, Bangladesh. http://www.brac.net/ (accessed April 10, 2008).
4. Brunei Health Expo. www.bruneihealthexpo.com/ministry (accessed April 10, 2008).
5. Cambodian Ministry of Health. http://www.moh.gov.kh (accessed July 6, 2008).
6. Chang DT. *Health technology management in Hong Kong (HK)*. In: The Annual Meeting of the International Society of Technology Assessment in Health Care, Hong Kong, 1997;13:105.

7. European Observatory on Health Systems and Policies. *Health systems in transition 2008.* www.euro.who.int/observatory (accessed June 12, 2008).

8. Fuchs VR. Health care for the elderly: How much? Who will pay for it? *Health Aff (Millwood).* 1999;18:11-21.

9. Hutubessy RC, Hanvoravongchai P, Edejer TT. Diffusion and utilization of magnetic resonance imaging in Asia. *Int J Technol Assess Health Care.* 2002;18:690-704.

10. Kleinke JD. The price of progress: Prescription drugs in the health care market. *Health Aff (Millwood).* 2001;20:43-60.

11. McDaid D. Co-ordinating health technology assessment in Canada: A European perspective. *Health Policy.* 2003;63:205-213.

12. National Health Sector Reform Unit, Iran. *The system for the selection and use of health technologies in the Iranian health system.* An APW report prepared under health sector reform project. Tehran: National Health Sector Reform Unit; 2006.

13. Nepal Ministry of Health and Population. http://www.moh.gov.np/functions/hser.asp (accessed June 12, 2008).

14. Oliver A. Health economic evaluation in Japan: A case study on one aspect of health technology assessment. *Health Policy.* 2003;63:197-204.

15. Republic of Maldives Ministry of Health. http://www.health.gov.mv (accessed June 12, 2008).

16. Research and Markets. *Market research reports.* www.researchandmarkets.com (accessed April 10, 2008).

17. Sivalal S. HTA Asian network: Challenges and opportunities for capacity building. *Ital J Public Health.* 2005;2:53.

18. Srilanka Country Health System Profile. http://www.searo.who.int/EN/Section313/Section1524_10879.htm (accessed June 12, 2008).

19. Taiwan Pharmaceuticals and Healthcare Report Q3 2008.

20. University of Otago, Christchurch. *New Zealand health technology assessment.* http://nzhta.chmeds.ac.nz (accessed September 26, 2008).

21. US Department of Health and Human Services. http://www.health.gov.la (accessed April 17, 2008).

22. WHO Essential Drugs Monitor issue 34; 2005.

23. World Health Organization. *Needs Based Tool Kit for Health Technology Assessment.* http://www.intermed.med.uottawa.ca/research/globalhealth/WHOCC/projects/nb_toolkit/nb_toolkit.pdf (accessed July 6, 2008).

24. World Health Organization. *Viet Nam Health System.* http://www.wpro.who.int/countries/2008/vtn/national_health_priorities.htm (accessed June 12, 2008).