

Translating evidence into policy in China: opportunities and challenges

Jiyao Wang (✉)^{1,3,*}, Xuejuan Jin^{2,3}

¹ Department of Internal Medicine, Zhongshan Hospital, Fudan University, Shanghai 200032, China; ² Shanghai Institute of Cardiovascular Diseases, Zhongshan Hospital, Fudan University, Shanghai 200032, China; ³ Center of Clinical Epidemiology and Evidence-based Medicine, Fudan University, Shanghai 200032, China

© Higher Education Press and Springer-Verlag Berlin Heidelberg 2011

Abstract Research and evidence are critical for the formulation of policies and practices in support of health care. In the past two decades, the Chinese Clinical Epidemiology Network has been promoting evidence-based policy making in China. Evidence-based policy has become a major part of the government's approach to policy making. The current article addresses the translation of evidence into health policies based on the expansion of evidence-based medicine in China. It also discusses the opportunities and challenges for certain evidence to be considered in policy making and practice in the future.

Keywords clinical epidemiology; evidence-based decision making; policy

Introduction

Research and evidence have significant public health and policy implications. Chinese medical societies became aware of evidence-based medicine (EBM) 20 years ago [1]. Since then, the concept has had considerable influence all over China, and experts estimate that more than 5000 physicians, nurses, and public health professionals have been trained on EBM and clinical epidemiology. The number of clinical trials has multiplied since 2004 [2]. EBM is now applied not only in the field of medicine but also in management, education, nursing, and so on. In the second decade since EBM was first introduced into China, extraordinary advancements have occurred in its advocacy, dissemination, and practice. The editorial in an issue of *The Lancet* (2007) pointed out that “China has the opportunity to lead the world not only in research quantity, but also in quality” [3]. As a result of these successes, evidence-based policy has become a major part of the government's approach to policy making and implementation in China. However, the process of translating evidence into policy involves a number of variables that have to be

considered. Therefore, the provision of guidelines for the translation of evidence into policy is needed urgently.

Organizations supporting evidence-based health care in China

Several organizations have developed programs to foster and strengthen a national culture of EBM. They are the Clinical Epidemiology Committee of the Chinese Medical Association, which was established in 1993 and is working with the Chinese Clinical Epidemiology Network (ChinaCLEN, registered as part of the International Clinical Epidemiology Network in 1989 and now has 2 Regional Clinical Resource and Training Centers, 9 Clinical Epidemiology Units, and 223 members (Table 1)); the Chinese Cochrane Center, which became the 14th center of the International Cochrane Collaboration in 1999; the Virtual Research Center of Evidence-based Medicine of the Ministry of Education, which was founded in 2004; and the Evidence-based Medicine Committee of the China Medical Doctor Association, which was organized in 2003. These organizations are responsible for helping the Chinese government obtain accurate, science-based information for the improvement of health care policy.

Received March 11, 2011; accepted June 30, 2011

Correspondence: wang.jiyao@zs-hospital.sh.cn

*Professor Jiyao Wang currently is the President of ChinaCLEN, the Chair of the Clinical Epidemiology Committee of the Chinese Medical Association, and a member of the Board of Trustee, INCLEN.

Table 1 Chinese Clinical Epidemiology Network (ChinaCLEN)

Regional Clinical Epidemiology Resource and Training Centers

- Fudan University
- Sichuan University

Clinical Epidemiology Units

- Peking Union Medical College
- Fourth Military Medical University
- Central South University
- China Academy of Traditional Chinese Medicine
- Zhejiang University
- Shanghai Jiao Tong University School of Medicine
- Shandong University
- Beijing University of Chinese Medicine
- Second Military Medical University

Main effect of EBM on government decision making on health care policy

The ChinaCLEN and other organizations are actively promoting evidence-based health care nationally. The goals are to improve the methods by which research-based evidence is conveyed to health policy makers and to bridge the gap between evidence and policy.

The prioritized research agenda focus on clinical research identified and advocated for key research needs from 2011 to 2015.

In 2009, a proposal called “Development Strategy for Clinical Research Report in China” was submitted to the Ministry of Science and Technology of the People’s Republic of China by experts organized by the Chinese Medical Association, including members of the ChinaCLEN. The long-term objective of this proposal was to strengthen the strategy for clinical research planning in order to improve the quality of clinical research, as well as to support and provide guidance on the planning, policy, funding, management, and administration of clinical research so as to accomplish an improvement in clinical research at the national level. The government increased its support for clinical research in recent years, and in 2010, the Chinese government invested about 1 Billion RMB (US \$150 million) into medical research [4].

Contributions to evidence-based public health safety policy and practice

In 2008, nearly 40 000 children sought medical treatment related to the consumption of melamine-contaminated powdered infant formula. Almost 12 900 children were hospitalized. Three deaths were attributed to the contamination of infant formula. Guan *et al.* reported that both

premature birth and exposure to melamine-contaminated formula were associated with urinary stones. Affected children did not exhibit the typical signs and symptoms of urolithiasis [5]. This monitoring study helped the national government become better informed and thus improved policy making.

Standards for the scientific review of the clinical efficacy of traditional Chinese medicine (TCM)

TCM has several thousands of years of history. However, TCM physicians make judgments based solely on clinical symptoms, and they do not use the scientific methods required in clinical epidemiology early in the 20th century. Since the 1950s, research methods such as mathematics, statistics, and data mining have been introduced gradually to TCM studies, thereby making TCM more scientific. However, the distinguishing features of TCM theories and diagnostic models have challenged constantly the methodology of statistics. With the contributions of ChinaCLEN members, the significance of EBM in the assessment of the clinical effectiveness of Chinese medicine has been considered. The consolidated standards of reporting trials for TCM were published in both Chinese and English in 2007 and were updated in 2011 [6]. In 2010, based on the characteristics of Chinese medicine and the methodology requirements of EBM, the guidelines for evidence-based Chinese medicine clinical pathways were established [7].

Establishment of an integrated platform for TCM and clinical research

Supported by the State Administration of Traditional Chinese Medicine of the Ministry of Health of China, a Chinese medicine clinical research platform was established in 2008 (Fig. 1). Currently, the integration technology platform has been applied to 117 clinical centers. Diabetes, cancer, stroke,

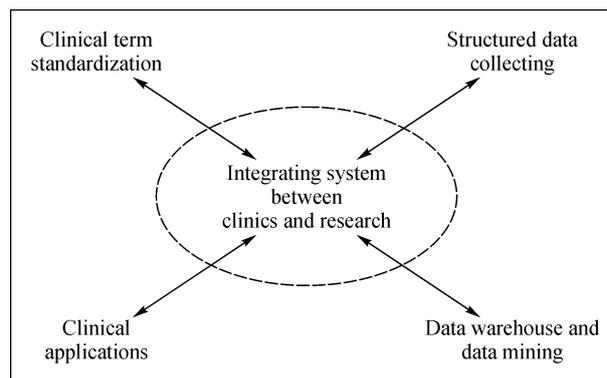


Fig. 1 Chinese medicine clinical research platform.

coronary heart disease, acupuncture, as well as TCM clinics were involved. The integration of clinical research information systems serves as a platform for clinical diagnosis and treatment information collection, analysis, and clinical research and information sharing. This integration is also a promising infrastructure for the full use of TCM clinical data for scientific hypothesis generation and promotes the development of TCM from individualized empirical knowledge to large-scale evidence-based medicine [8, 9].

Early in 2011, the platform proposed a new guideline for the reinforcement of the implementation of center construction job: “to start with key disease kinds by putting informatization, digitalization and network in the center construction, strengthened by setting up clinical research methodology and standards and improving the personnel quality. It shall be done to promote the construction of national TCM clinical research centers through reinforcing evaluation, supervision and inspection.” Meanwhile, the platform also organized experts to draft and refine the “Basic Requirements for Integration System Construction in TCM Clinical Research Centers” [10].

Improving the accessibility and availability of sound evidence

Evidence-informed Policy Network (EVIPNet)

In 2005, EVIPNet was launched by the WHO, the purpose of which was to promote evidence-informed health policy making and to improve health systems and population health. The global EVIPNet website is www.evipnet-china.cn. From 2007 to 2008, three sustainable regional networks between key stakeholders in China (Beijing, Shandong, and Sichuan) were established. The research teams in EVIPNet-China aim to identify and address priority topics in the country where a perceived need to strengthen the systematic use of research evidence to make informed decisions on policies for health has been identified. However, advocacy and dissemination cannot adequately influence policy change and implementation in practice through the model used by EVIPNet-China. A survey from the EVIPNet-China Shandong site showed that the current status of and the factors affecting evidence-informed public health decision making are not understood fully. Decision makers still have poor awareness of evidence-informed decision making, and the linkage between policy makers and researchers is inadequate [11].

Network resources for EBM

The resources for EBM are now available online. ChinaCLEN maintains the website “www.chinaclen.org.cn,” which has become the information platform for all ChinaCLEN members to share their experiences and updates on the progress of clinical epidemiology, as well as to report clinical

trial methodology. Other website platforms include those of the Chinese Evidence-based Medicine Cochrane Center and the Online Cooperation Center of the Ministry of Education of the People’s Republic of China (<http://www.ebm.org.cn/>) and the Chinese Medical Doctor Association (<http://www.cmda.gov.cn/>).

Other efforts

ChinaCLEN and its members are working actively on improving the accessibility and availability of sound evidence. First, a series of books which introduce EBM, clinical epidemiology, evidence-based Chinese medicine, clinical research methodology, evidence-based nursing, and qualitative research methods have been published in China by prominent publishers. Some of these books have served as textbooks for undergraduate and graduate medical students. For example, *Evidence-based Medicine and Clinical Practice* [12] was recommended to numerous local medical schools for undergraduate teaching, graduate students, and clinicians. Second, a series of journals have also been launched, including the *Chinese Journal of Evidence-Based Medicine*, *Journal of Evidence-Based Medicine*, and *Chinese Journal of Evidence-Based Pediatrics*. A number of papers have been published to expand the concepts of EBM. These papers not only help improve the quality of research but also refine health policy decision making in China. Third, a number of multi-level training programs on EBM and clinical epidemiology for physicians and policy makers are conducted yearly. Finally, several clinical guidelines for the diagnosis and treatment of common diseases based on evidence have been published, such as the *Guideline for the Diagnosis and Treatment of Acute Fever without Source in Children 0 to 5 Years of Age in China* [13], which has helped enhance both clinical decision making and policy making.

Challenges

Government support is the key to the success of controversial health policy decisions. With rapid advancements in technology and innovation, evidence-based policy decision making has become increasingly important and is in fact regarded as a new paradigm for the 21st century. However, healthcare policy implementation requires partnerships among multiple stakeholders. Therefore, the translation of evidence into policy and its implementation confront many challenges. At present, focusing on the directions for the future is necessary.

Evidence gaps

Evidence-based policy decision making requires high-quality evidence combined with real world data. However, in China, the existing gap between high-quality evidence and its limited

availability presents a major challenge for the implementation of effective and appropriate health policies. First, high-quality data on the benefits of both prevention and therapy for the prioritization of certain diseases are lacking. Although a large number of randomized clinical trials (RCTs) are initiated every year in China, many of these are unnecessary, inappropriate, inadequate, or impractical [14, 15]. These RCTs also have limitations. Interventions may not really be assigned randomly, the study comparators may not represent standard care, the population may not be available for sub-populations and vulnerable populations, and the outcomes reported may be intermediate ones rather than the main health outcomes of interest. Moreover, the evidence from RCTs has inherent limitations. For example, RCTs can only provide efficacy rather than effectiveness, the timing may be insufficient, and the setting may not represent typical practice. Second, the target epidemiological and cost-effective data are mostly unavailable in China. Third, real world data are becoming integrated into the decision and policy making process worldwide, and efficiency analysis is regarded as a new paradigm for the 21st century (Fig. 2). However, comparative effectiveness research and cost-efficiency analysis studies are very limited in China.

Gaps between researchers and policy makers

Aside from the limited use of available health research evidence to guide policy and practice, the limited use of research results and the apparent stalling of policy development are still seen widely in China. Communicating the evidence is not enough. In some examples, research findings were available but were not disseminated clearly or advocated by researchers or clinical professionals. Therefore, there is a need to bridge the gap between researchers and policy makers. The generated data have to be disseminated and translated into guidelines and must be integrated into policy. In the process of translating evidence into policy, researchers must pay attention to how structural, institutional, and political factors shape policy development and implementation [16].

Opportunities and directions for the future

Researchers and policy makers now understand the impor-

tance of evidence in health policy making. To enhance further the translation of evidence into policy making, three essential research and implementation goals must be considered.

Network building

The implementation of the numerous available evidence-based tools must be accelerated. Establishing a comprehensive network of health policy is essential for providing a good platform for the exchange between researchers and policy makers so that the research results can be used for decision making. Gathering evidence from studies and merging the information and findings, allocating resources rationally, optimizing methods and forms of evidence transmission, establishing virtual libraries and share points, and developing an evidence assessment system promote the success of evidence-informed health decision making [17]. To achieve this goal, developing a national integrated infrastructure for electronic healthcare data systems for medical product safety surveillance is critical. As an example, a web-based platform, *Lancet UK Policy Matters* was proposed recently by *The Lancet*. This platform will take the form of a public-facing web site with two main features. First, it will summarize existing evidence on health-related policies (e.g. child health) to build a library of concise, straightforward syntheses. Second, the site will publish contemporary evidence of the effect of government policies in real time, as submitted by professionals and the public [17].

Working together to obtain scientific evidence and bridge evidence gaps

ChinaCLEN and other organizations focusing on evidence-based health care should work more closely to enhance the development of their capabilities in key areas. These key areas include the use of local resources as appropriate to enhance training and development, improvement of communication and clarification of roles in medical societies, development of research plans for priority diseases (e.g. cardiovascular disease, cancer, diabetes, and chronic respiratory disease), acquisition of funding for programs in academic institutions, improvement of training and knowledge sharing among organizations and coordination with the government, and development of data sets and innovative methodological approaches for the conduct of robust analytic studies to

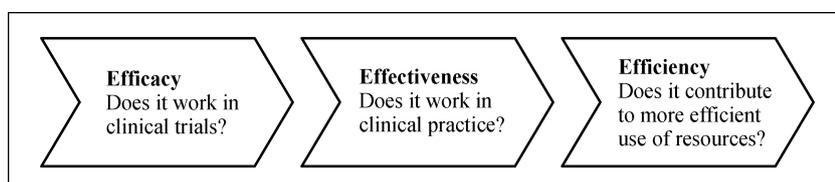


Fig. 2 A new paradigm for the 21st century.

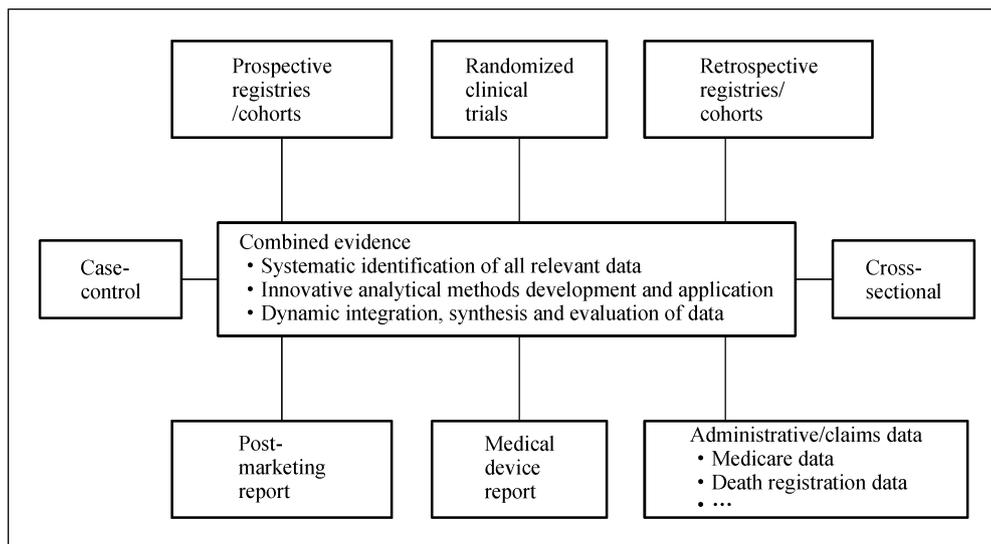


Fig. 3 Evidence sources and knowledge management.

improve policy makers' understanding of safety and effectiveness.

Collecting and using real-world data for policy making

Real-world data can provide rich information that can be used for policy decision making. There are numerous sources for real world data, which include health claims, chart reviews, prospective collections, data from existing safety monitoring systems, indirect comparisons, and meta-analyses. The socio-economic dimensions of long-term cohort studies can both create evidence and enable its integration into policy. The greatest challenge in using real-world data is the heterogeneous quality of such data. The development of methods that can provide valid and reliable information regarding what works best in health care settings has also proven to be challenging. However, new technologies that exist in meta-analysis, network meta-analysis, and cross-design synthesis provide practicable methods for the dynamic integration, synthesis, and evaluation of accessible qualitative and quantitative data. Existing registries should be used for conducting studies and surveillance, facilitating new registry development, and exploring registry capabilities for key domains of research. Combined evidence from both real world and research data can close the gap between evidence and medical guidelines (Fig. 3).

Conclusions

Accurate and unbiased information has significant public health and policy implications. Government health policies should be based on sound scientific evidence rather than opinion. Given the importance of translating evidence into policy, ChinaCLEN and other organizations focusing on

evidence-based health care work and government agencies should coordinate closely to integrate evidence into policy decision making. The challenges identified include the limited availability of high-quality evidence and the prioritization and definition of research questions. Ultimately, the effective communication between researchers and policy makers is useful not only for setting the guidelines but also for increasing the transparency of decision making. The current work hopes to contribute to the successful integration of science-based evidence into policy which will in turn translate into effective implemented solutions.

References

1. Wang J. Evidence-based medicine. *Chin J Intern Med (Zhonghua Nei Ke Za Zhi)* 2000; 39(4): 279–280 (in Chinese)
2. Wang J. Evidence-based medicine in China. *Lancet* 2010; 375 (9714): 532–533
3. The Lancet. Reforming research in China. *Lancet* 2007; 369(9565): 880
4. Guo L. China boosts medical research. *Lancet* 2010; 375(9716): 711
5. Guan N, Fan Q, Ding J, Zhao Y, Lu J, Ai Y, Xu G, Zhu S, Yao C, Jiang L, Miao J, Zhang H, Zhao D, Liu X, Yao Y. Melamine-contaminated powdered formula and urolithiasis in young children. *N Engl J Med* 2009; 360(11): 1067–1074
6. Bian Z, Liu B, Moher D, Wu T, Li Y, Shang H, Cheng C. Consolidated standards of reporting trials (CONSORT) for traditional Chinese medicine: current situation and future development. *Front Med* 2011; 5(2): 171–177
7. Wang SC, Liu JP, Li H, Yu H. Guidelines for evidence-based Chinese medicine clinical pathway report. *J Chin Integr Med (Zhong Xi Yi Jie He Xue Bao)* 2010; 8(9): 819–823 (in Chinese)
8. Zhou X, Chen S, Liu B, Zhang R, Wang Y, Li P, Guo Y, Zhang H,

- Gao Z, Yan X. Development of traditional Chinese medicine clinical data warehouse for medical knowledge discovery and decision support. *Artif Intell Med* 2010; 48(2-3): 139–152
9. Wang Y, Liu B, Xie Y. Establishing appraisal mechanism of clinic studies in traditional Chinese medicine with proofing medicine methodology. *Chin J Basic Med Tradit Chin Med (Zhongguo Zhong Yi Ji Chu Yi Xue Za Zhi)* 2003; 9(3): 17–23 (in Chinese)
 10. Liu B, Zhang Y, Hu J, He L, Zhou X. Thinking and practice of accelerating transformation of traditional Chinese medicine from experience medicine to evidence-based medicine. *Front Med* 2011; 5(2): 163–170
 11. Wang N. Current status of evidence-informed health decision-making and the establishment of priority issue in the evidence-informed health decision-making network. Dissertation for Master's Degree. Ji'nan: Shandong University, 2007 (in Chinese)
 12. Wang J, Gluud C. *Evidence-based Medicine and Clinical Practice*. 2nd. Beijing: Science Press. 2006 (in Chinese)
 13. Wang Y, Wang CM. Diagnosis and treatment guidelines for acute fever of unknown etiology in Chinese children aged 0 to 5. *Chin J Evid Based Pediatr (Zhongguo Xun Zheng Er Ke Za Zhi)* 2008; 11(3): 449–457 (in Chinese)
 14. Wang J. Correct the misconceptions about evidence-base medicine. *Natl Med J China (Zhonghua Yi Xue Za Zhi)* 2004; 84(12): 969–970 (in Chinese)
 15. Wu T, Li Y, Bian Z, Liu G, Moher D. Randomized trials published in some Chinese journals: how many are randomized? *Trials* 2009; 10(1): 46
 16. Hutchinson E, Droti B, Gibb D, Chishinga N, Hoskins S, Phiri S, Parkhurst J. Translating evidence into policy in low-income countries: lessons from co-trimoxazole preventive therapy. *Bull World Health Organ* 2011; 89(4): 312–316
 17. Aldridge RW, Cole KJ, Hurst L, McKee M, Horton R. Lancet UK policy matters: better evidence for better health. *Lancet* 2011; 377(9778): 1631–1633