



## **Model for Implementing Evidence Based Health Care System in Iran**

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**(Received 05 Mar 2013; accepted 22 Jun 2013)**

### **Abstract**

**Background:** Regarding the role and importance of paradigm of evidence based practice and its remarkable impact on the effectiveness and efficiency of clinical services and healthcare, development of an integrated system seems necessary in order to manage dispersed data and ensure using evidence in clinical decision making, thus the aim of this study was designing a model for implementing national system of evidence based health care in Iran.

**Methodos:** This paper is a study of comparative type which has been written in three stages: investigation of structure and process of evidence based practice in selected countries, investigation and analysis of current status in Iran in this regard and recommendation of strategies which make model implementation feasible in the country. Such methods as review of literature, focus group discussion and Delphi technique were used for investigation.

**Results:** According to studies, insuring an evidence based practice culture in the country requires a system called National Evidence Based Health Care System which consists of three subsystems including national system of clinical knowledge management, national evidence-based practice system and integrated national network of clinical effectiveness.

**Conclusion:** The ultimate goal of health care system in every country is maintaining and improving community health. Achievement of this goal depends on effectiveness of delivered services and consistency of the services with national and local priorities. In order to achieve clinical effectiveness, the best practice should be realized in the country, implementation of which requires a set of macro and micro strategies enabling facilitation, promotion or guaranteeing clinical knowledge application in the country.

**Keywords:** Medicine, Knowledge, Management, Translation, Model, Iran

### **Introduction**

Today's world witnesses rapid innovations and developments in the area of health care (1), so that medical knowledge has expanded rapidly over the past fifty years (2) and the number of scientific papers published has doubled over 10 years (3). On the other hand, studies indicate that

in the patient's bedside, 5 questions per every one hospitalized patient and about 2 questions per every one outpatient are raised for the physicians (4). Knowledge transfer from research to routine clinical practice is one of the main obstacles preventing from benefiting medical sciences (5).

Translation of knowledge into routine practice process is a difficult task (6). Some have assessed that more than 40% of the patients don't receive care in accordance with the best scientific evidences and 20% of patients receive care which is not sufficient or harmful (6).

Many physicians and experts are not subtle and skilful enough to evaluate the evidence. Generally there is a gap between what physicians do in their routine practice and what they must do (7). Evidence Based Medicine (EBM) is a new paradigm and philosophy which attempts to direct clinical services and care toward effective, efficient services with minimal complications and errors. In addition, EBM is influential in filling the knowledge gap in helping physicians to find the best evidence for patients care. Thus, it is a systematic approach for solving clinical problems which allows integration of available best evidence with clinical experience and preferences and values of the patients (8).

Evidence based medicine emphasizes on ongoing research for all kinds of patient health care. This new paradigm may confirm or reject previous acceptable practice methods or may suggest new care methods which are more effective and efficient and less vulnerable (9). The main challenge today is transfer and translation of knowledge which help physicians to make the best clinical decisions based on the best evidence in the minimum time (10). Using the best scientific evidence, sources can be distributed equitably and demands for "ineffective" treatment would be removed and effective services would be assured (11).

Regarding the facts mentioned it seems that common sources are not effective enough for obtaining information on the current method. As it was noted, evidence based medicine is integration of the best available evidence with clinical experiences and patients' preferences, and thus it is a solution for problem of lack of update information for physicians (12). Despite of these benefits, currently there is several factors affect the use of evidence-based medicine and evidence-based policy (13, 14).

Regarding the role and importance of paradigm of evidence-based practice and its remarkable im-

pact on the effectiveness and efficiency of clinical services and healthcare, development of an integrated system seems necessary in order to manage dispersed data and ensure using evidences in clinical decision making. Hence, in this paper a model is presented in order to produce and implement evidence in the form of a system. In order to achieve higher goals such as promotion of clinical effectiveness, patient safety, effectiveness and improvement of health outcomes, national evidence-based health care system insures the best evidence is generated, stored, used, shared and finally monitored and evaluated in order to provide effective and safe services in a systematic process and according to needs of different stakeholders.

#### *National Evidence based Health Care System*

National Health Care System is one of the main subsystems of the health system which is responsible for providing health service and health care. In fact, subsystem of health service delivery is regarded as the most objective and most tangible function of the health system and it reflects impacts of other health system functions. The ultimate goal of health care system in every country is maintaining and improving community health. Achievement of this goal depends on effectiveness of delivered services and consistency of the services with national and local priorities. On the other hand, among these functions, stewardship is considered as the central function of the health system and the trusted and reliance point of health systems in achievement of their goal. This function means determining and enhancing exclusive rules and providing directions and strategies for all actors of the system and accepting accountability at highest level which Ministry of Health and Medical Education on behalf of the government is responsible for this task. Stewardship status and social accountability of the governments necessitates that National Health Care System to provide the best quality health care and service for the people. One of the main dimensions of the health service quality is 'Clinical Effectiveness'. In order to achieve clinical effectiveness, the best practice should be realized in the country. The requirement

for the best practice is insuring reference to the best local evidence in different parts of the health care. The system which provides reference to the best local evidence and guarantees Evidence Based Decision Making (EBDM) in practice is called Evidence Based Health Care System (EBHCS). In other words, a system which is able to provide local

knowledge required by Evidence Based Clinical Decision Making (EBCDM) and guarantee and institutionalize its application among care providers, is called National Evidence-Based Health Care System (NEBHCS). Table 1 gives intermediate goals, strategies and subsystems of this system.

**Table 1:** Relationship between intermediate goals, strategies and subsystems of National Evidence-Based Health Care System

Intermediate Goals	Strategies	Responsible Subsystem
Achieving to the clinical effectiveness at highest possible level	Improvement of skill for knowledge products production	National system of clinical knowledge management
	Institutionalizing support culture for using evidence	National evidence-based medicine system
	Enhancing information technology infrastructures	Integrated national network of clinical effectiveness
Improving patient safety	Providing valid and related evidence for routine medicine area	Integrated national network of clinical effectiveness
	Improving skill of reference to evidence in care providers	National evidence based medicine system
	Institutionalizing support culture for using evidence	National evidence based medicine system
	Guaranteed access to evidence produced at the national level	Integrated national network of clinical effectiveness
Improving efficiency	Standardization of clinical performance	National evidence based medicine system
	Institutionalizing support culture of knowledge products production according to local conditions of the country	National system of clinical knowledge management
	Developing appropriate structure and process for producing local knowledge products	National system of clinical knowledge management

## Methods

This paper is a study of comparative type which has been written in three stages:

- 1- Investigation of structure and process of evidence based practice in selected countries,
- 2- Investigation and analysis of current status in Iran in this regard in terms of service delivery and medical education
- 3- Investigation and recommendation of strategies and methods which make model implementation more feasible in the country.

In order to investigate status of evidence based practice system, following related literature review,

some developed countries including England, USA, Canada, Australia, and Scotland were selected which were leading countries in this regard. Using search engines of Google Scholar, Pubmed and Implementation Science, key terms of ‘evidence based medicine’, ‘evidence based practice’ and ‘evidence based national system’ were searched accompanied by the name of the countries. Used sources included studies related to introduction and analysis of data bases and system associated to responsible agencies in respective countries. Evidence based practice were studied in the respective countries in terms of

dimensions of organization and stewardship, knowledge products, distribution and support of evidence application and the way of performance monitoring. Results of these studies are given in Table 2. In order to investigate and analyze the status in the country, 12 of the scholars, instructors and experts related to the subject were selected using purposeful sampling and focus group discussion was used in order to analyze and classify. Strengths and weak points and barriers to evidence based practice in the same areas (organization and stewardship, used knowledge products, distribution and support of evidence application, and performance monitoring) as well as knowledge of the physicians on the evidence based practice and motives of the physicians for change in practice system were evaluated and analyzed. Finally, focus group discussion was used in order to investigate strategies which are applicable and feasible in Iran, and strategies were studied in terms of the following aspects:

1. Needed structure
2. processes
3. knowledge products and outputs
4. motivation
5. needed support regulation
6. performance monitoring

Delphi technique was used so as to finalizing the country's status and results of the focus group discussion were sent to 46 experts and it was finalized following twice modification.

## Results

Evidence based health care system in England, USA, Canada, Australia, New Zealand, and Scotland were studied in terms of the organization and stewardship, knowledge products, distribution and support of evidence application and performance monitoring. Table 2 examines this system in the respective countries.

**Table 2:** Comparison of the evidence based practice system in respective countries

	Scotland (15)	USA (16)	England (17, 18)	Canada (19)
Organization and stewardship	Health Improvement Scotland acts as the main organization	Agency for Healthcare Research and Quality(AHRQ) synthesizes evidence for quality improvement and medical intervention effectiveness through centers of evidence based practice	Evidence based medical center which mainly acts on education and synthesis of evidence, and Kacrin which responsible for evidence synthesis. These are among institutions which are acting in this country.	Canadian universities participate in system of evidence based centers in evidence and Health and Quality Research Center
Knowledge products	Development of standard, clinical guidance and evaluation of new technologies	Meta-analysis, effectiveness cost analysis, clinical guidance	Developing a systematic review, clinical guidance, health technology assessment, standards and meta-analysis	Meta-analysis, effectiveness cost analysis, protocol
Distribution and support of evidence application	Training, guidelines for implementation, development of the clinical audit standards, executive supports	Protocols, decision support systems, training, development of standards for using evidence in various centers	National clinical policies, national guidance	Protocols, decision support systems, training
Performance monitoring based on evidence application	Reporting system, determination of indices,	Monitoring quality improvement of the centers		Monitoring quality improvement of the centers

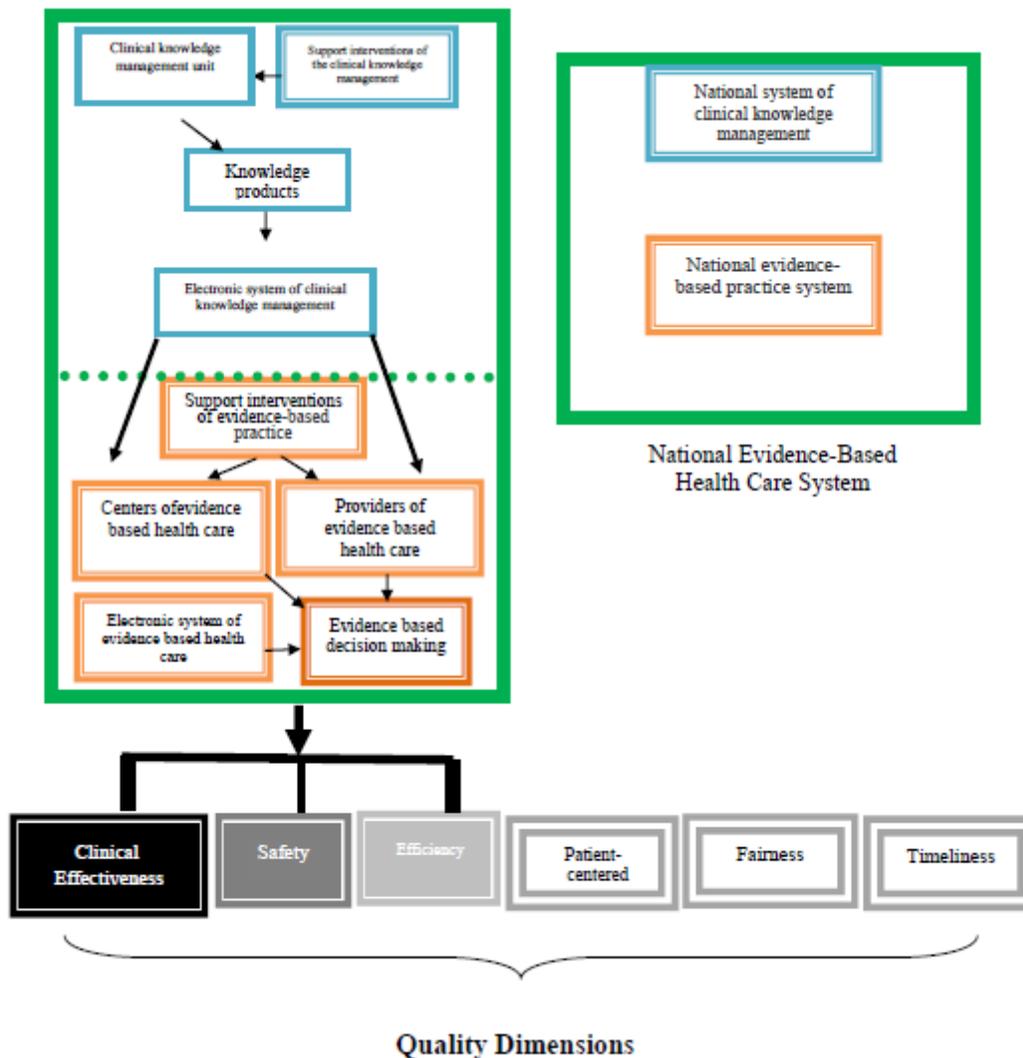


Fig.1: National Clinical Knowledge Management System (NCKMS)

According to studies, insuring an evidence based practice culture in the country requires a system called national evidence-based health care system which consists of three subsystems as follows:

- National system of clinical knowledge management,
- National evidence-based practice system
- Integrated national network of clinical effectiveness.

National Clinical Knowledge Management System (NCKMS) includes activities, actions, processes and structures which promote, facilitate and guarantee clinical knowledge management in the country (Fig. 1). This part of the national evi-

dence based health care system attempts to provide the best evidence for 'evidence based decision making' through analysis, synthesis and localization of the fragmented raw data, if necessary. When subject of insuring clinical knowledge management through frameworks of the national system of clinical knowledge management is raised, it means insuring monitoring and providing possibility for regular control of the new data which are published in scattered manner. The outcome of processes and actions carried out in the national system of the clinical knowledge management regarding dominant social, economic, cultural circumstances and values of the

country, leads to products which are called Knowledge Products. These products which are considered as the main constituents of the system in units of the clinical knowledge management, are produced based on two approaches: reactive and proactive. Reactive approach is the approach in which reaction is given regarding current problems and difficulties in the health system of the country and by developing and distributing appropriate knowledge products it is attempted to solve the problems. Proactive or prospective approach is the approach in which clinical knowledge management is done in parallel to knowledge push in the world. In other words, monitoring of the new information is done with a proactive approach regarding national priorities in different clinical levels in order to match knowledge resulting from this information with national needs of the country.

Clinical knowledge management units, multi-disciplinary teams of clinical knowledge management, and clinical knowledge managers are considered as the most important pillars of the national system of clinical knowledge management. In addition, this system provides structure, frameworks, incentives and requirements so as to achieve its goals so that production of knowledge products needed in the country are facilitated, promoted and insured. Knowledge products produced in this system include pay knowledge, health technology reporting, clinical guidelines, and systematic reviews. In case knowledge products possess considerable value added, they are considered in the national committee on clinical policy making and are imparted as a 'clinical policy'. In this case, its observation would be mandatory for all provides on public sector and non-governmental sector and licensing system at individual level and validating system at organizational level support such policies.

### *National Evidence Based Practice System (NEBPS)*

National Evidence Based Practice System (NEBPS) includes actions, activities, processes and structures which promote, facilitate and guarantee usage of clinical policies or knowledge products produced at national level (Table 3).

As it can be seen from Table 3, national evidence based practice system is composed of various components. In this system, evidence based provides in evidence based health centers that their structure, processes and infrastructures facilitate, promote and guarantee evidence based decision making, are seeking for establishment of such a system that institutionalize delivery of the most effective services to patients through production and application the local knowledge products.

Evidence based care providers make reference to knowledge products produced by national system of clinical knowledge management and local knowledge products produced by them in order to make decision. Providers in this system have a reactive approach to knowledge production since no clinical decision-making body would be able to acquire all the needed knowledge and predict all clinical questions needing answer. Thus, both evidence based care providers and clinical knowledge managers produce evidence, but there is essential difference in features and characteristics of the process of evidence production by these two groups (Table 4). Evidence demonstrated that less than 20% of the clinical actions and decisions of these providers are based on the best acceptable evidence; while evidence based providers have the necessary skill for achieving lifelong learning and thus, they are constantly trying to enhance their personal practice and increase effectiveness and safety of their interventions.

**Table 3:** Components of the National Evidence Based Practice System

Function and objective	Insuring application of the knowledge products results and institutionalizing evidence-based clinical decision making
Components	<ol style="list-style-type: none"> <li>1. evidence based health centers</li> <li>2. evidence based care providers</li> <li>3. electronic system of evidence based practice</li> <li>4. support interventions of the evidence application</li> </ol>

**Table 4:** Characteristics of the knowledge products produced by CKMs and EBCPs

Product characteristics	Evidence based care providers	Clinical knowledge managers
Objectives	Improvement of the personal practice by care provider direct benefiting to patients	benefiting to the community development and expansion of the knowledge boundaries
Product inclusion	the individual and in rare cases, some of the available colleagues	all provides of the product target
Evidence production process	search method: nonsystematic search sources: secondary sources (based on evidence) time allocated to finding evidence: very little time criticism criteria: not available or very simple criticism criteria documentation of the stages: it is not done often and if it is done, it is least used by others	search method: systematic (structured, broad and documented) search sources: primary sources time allocated to finding evidence: too much time (about for finding all relevant evidence) criticism criteria: very accurate documentation of the stages: accurate method for documentation at publishable at national level
Production considerations	regarding values, considerations and condition at patient level	at community proprieties and values level
Organizing people for product production	usually individually and personally	in the form of multi-disciplinary teams
Product type	provision of knowledge for evidence based decision making through semi structured process	types of qualitative knowledge products which are reviews by peers and are bases for practice in the community
Financial resources needed for production	usually very small	Production and updating it requires considerable resources

Traditional care providers have the least self-learning and therefore effort. Hence, evidence based care providers are divided into three levels based on their performance in production and application of the knowledge products, that is, care providers of level one, two and three. In this system, in addition to classification of care providers, service provider centers are also classified based on their evidence based units performance.

#### ***Electronic System of Evidence Based Practice***

This system is part of National Integrated Clinical Effectiveness Network (NICEN) which facilitates evidence based practice in the country. In this system, there such components as electronic evidence based performance portfolio, certificate and characteristics of the evidence based centers and departments, educational service on principles of evidence based decision making and evidence based practice.

## **Discussion**

Preserving and promoting service quality and health care is one of the major tasks of the governments. Trustee's role and social responsibility of the Ministry of Health and Medical Education as a custodian of the country's health system bounds it to provide infrastructures, processes and frameworks so that national service delivery system offer services and health care with the highest quality(20). Clinical effectiveness is one of quality aspects, requirement of which is access to the best evidence. Thus Evidence base health care system ensures that the best evidence are produced, stored, disseminated, used and shared for providing effective and safe services through a systematic process according to needs of different stakeholders and finally it is monitored and evaluated. It cannot be achieved without active participation of Ministry of health and

medical education and other involved organizations in health policy making.

Investigation of consideration process and emphasis on the health quality and care in UK and USA indicates that without imposing macro interventions at national level, quality improvement and especially clinical effectiveness promotion as the core of quality would not be possible(20). For example, report by *Institute of Medicine (IOM)* in USA in 2001 mentioned several basic interventions for quality promotion all of which suggest involvement of health system stewardship in this process and following cases can be mentioned: Prohibition of approval of drugs with name, packaging, color and appearance similar to it, change in payment system, search management and access to the best evidence, changes in the educational system, mandatory use of Computerized physician order entry (CPOE)- and use of reminders(21).

Lack of legal requirement to rely on the best available evidence, insufficient skills in the use of evidence in daily practice, evidence-based decision-making, inability to produce documentary evidence, lack of financial and non-financial incentives to produce evidence according to local conditions and similar experiences in countries like Australia(22) in the NHMRC program(22), UK in NICE program(23), Scotland in SIGN program(24), USA in AHRQ program(25), Canada in CMA Program(26) and New Zealand in NZGG program(27) demonstrate that only presence of national plan and macro interventions can guarantee evidence production and application.

## Conclusion

Implementation of the evidence based practice requires a system and this system needs a set of micro and macro strategies enabling facilitations, promotion and guaranteeing production and application of the clinical knowledge in the country. Thus, the government should adopt policies and interventions for changing behavior in three levels of promotional, facilitation and guarantying. Policies and interventions should influence on

both at individual and organization level and certainly implementation of such interventions needs external and internal cooperation of the various stakeholders in the country.

## Ethical considerations

Ethical issues (Including plagiarism, Informed Consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc) have been completely observed by the authors.

## Acknowledgements

The authors declare that there is no conflict of interests.

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