

THE ROLE OF EVIDENCE-BASED MEDICINE IN HEALTHCARE MANAGEMENT

A. Serafimov, A. Marolova D. Donchovska N. Velichkova M. Mishev

33rd International Medical Scientific Congress for Medical Students and Young Doctors, Ohrid; 05/2010

OBJECTIVE: To determine the exact role of Evidence-based medicine in healthcare management and in public health as criteria of good medicine practice and to give a scientific proof of its need to be implemented.

BACKGROUND: Evidence-based medicine (EBM) (sometimes called evidence-based health care or EBHC to broaden its application to allied health care professionals) has been defined as "the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients". Some define it more specifically as "the use of mathematical estimates of the risk of benefit and harm, derived from high-quality research on population samples, to inform clinical decision-making in the diagnosis, investigation or management of individual patients."

Evidence based medicine (EBM) has evolved from clinical epidemiology a discipline promoted by the creation of the *Journal of Clinical Epidemiology* in 1988. Clinical epidemiology aims to bridge the gap between clinical practice and public health using population health sciences to inform clinical practice. Thus, the methodology that underpins EBM applies methods used in the field of epidemiology to the clinical context (i.e. clinical epidemiology). In essence, EBM incorporates this quantitative (as well as qualitative) methodology in the "art" of clinical practice, so as to make the framework for clinical decisions more objective by better reflecting the evidence from research. By introducing scientific methods – particularly the methods of the population sciences – in clinical decision making, EBM has driven a transformation of clinical practice in medicine.

In 1996 David Sackett wrote that "Evidence-based medicine is the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients." This definition, put forward by one of the original proponents of evidence-based medicine, has since been adopted by major organizations, including the Cochrane Collaboration and the Centre for Evidence Based Medicine.

Evidence-based medicine in public health is a way of accepting decisions for group of patients or population. Such decisions are based on careful and thorough evaluation of the best available evidence on the effectiveness of decisions. Aim: The collection of evidence in health policy and health activity aims to analyze and assess the organization and management system as a whole and its individual components and to

prove: level of performance, structural adequacy, cost-effectiveness of the system, need to perform.

Using techniques from science, engineering and statistics, such as the systematic review of medical literature, meta-analysis, risk-benefit analysis, and randomized controlled trials (RCTs), EBM aims for the ideal that healthcare professionals should make "conscientious, explicit, and judicious use of current best evidence" in their everyday practice. Ex cathedra statements by the "medical expert" are considered to be the least valid form of evidence. All "experts" are now expected to reference their pronouncements to scientific studies.

The systematic review of published research studies is a major method used for evaluating particular treatments. The Cochrane Collaboration is one of the best-known, respected examples of systematic reviews. Like other collections of systematic reviews, it requires authors to provide a detailed and repeatable plan of their literature search and evaluations of the evidence. Once all the best evidence is assessed, treatment is categorized as "likely to be beneficial", "likely to be harmful", or "evidence did not support either benefit or harm".

A 2007 analysis of 1016 systematic reviews from all 50 Cochrane Collaboration Review Groups found that 44% of the reviews concluded that the intervention was "likely to be beneficial", 7% concluded that the intervention was "likely to be harmful", and 49% concluded that evidence "did not support either benefit or harm". 96% recommended further research. A 2001 review of 160 Cochrane systematic reviews (excluding complementary treatments) in the 1998 database revealed that, according to two readers, 41.3% concluded positive or possibly positive effect, 20% concluded evidence of no effect, 8.1% concluded net harmful effects, and 21.3% of the reviews concluded insufficient evidence. A review of 145 alternative medicine Cochrane reviews using the 2004 database revealed that 38.4% concluded positive effect or possibly positive (12.4%) effect, 4.8% concluded no effect, 0.69% concluded harmful effect, and 56.6% concluded insufficient evidence.

Generally, there are three distinct, but interdependent, areas of evidence-based medicine. The first is to treat individual patients with acute or chronic pathologies with treatments supported in the most scientifically valid medical literature. Thus, medical practitioners would select treatment options for specific cases based on the best research for each patient they treat. The second area is the systematic review of medical literature to evaluate the best studies on specific topics. This process can be human-centered, as in a journal club, or technical, using computer programs and information techniques such as data mining. Increased use of information technology turns large volumes of information into practical guides. Finally, evidence-based medicine can be understood as a medical "movement" in which advocates work to

popularize the method and usefulness of the practice in the public, patient communities, educational institutions and continuing education of practicing professionals.

METHODS AND MATERIALS: EBM has four basic methods of analysis and evaluation: *analysis to minimize the cost or cost minimization * cost-utility analysis * cost benefit analysis * cost-outcome or cost-effectiveness (i.e. to make a comparative analysis of different health technologies to their costs and consequences).

RESULTS: An evidence-based health service tends to generate an increase in the competence of health service decision makers and is the practice of evidence-based medicine at the organizational or institutional level. It strengthens the motivation of any health service decision-maker to use scientific methods when making a decision. The results of population-based research form the foundation of evidence-based medicine. It aims to use the experience of a population of patients reported in the research literature to guide decision making in practice. This practice of evidence-based medicine (EBM), which later evolved to evidence-based health care (EBHC), requires the application of population-based data to the care of an individual patient. In the past, we have we have relied on the experience of physicians or other health care workers to make decisions about therapy. In the current information era, this approach would be suboptimal as health care workers rapidly find themselves unable to cope with the influx of a huge variety of new information, from the irrelevant to the very important. Therefore, Evidence-based decision making gradually emerged as a solution to integrate the best research evidence with clinical expertise and patient values and expectations as practiced by the individual health care provider.

CONCLUSION: EBM helps to increase knowledge and skills of healthcare managers to order, value and receive adequate information to conduct business, discussion forums with the participation of scientists, politicians and managers to determine consensus on priority areas in healthcare.

References:

1. Doi, S.A.R. (2009). *Understanding evidence in health care: Using clinical epidemiology*. South Yarra, VIC, Australia: Palgrave Macmillan.
2. Grobbee, D.E.; Hoes, Arno W. (2009). *Clinical Epidemiology: Principles, Methods, and Applications for Clinical Research*. Jones & Bartlett Learning.
3. Howick, Jeremy H. (2009). *The Philosophy of Evidence-based Medicine* . Wiley.
4. Katz, David L. (2001). *Clinical Epidemiology & Evidence-Based Medicine: Fundamental Principles of Clinical Reasoning & Research*. SAGE.

5. Heinrich Weßling (2010). *Theorie der klinischen Evidenz: Versuch einer Kritik der Evidenzbasierten Medizin*. LIT Verlag Münster. pp. 39 – 50
6. Smith, A.F.M. (1996). "Mad cows and ecstasy: chance and choice in an evidence-based society". *Journal of the Royal Statistical Association, Series A* 159 (3): 367–83
7. Mariotto, A. (2010). "Hypocognition and evidence-based medicine". *Internal Medicine Journal* 40 (1): 80–82.