Chapter 8
Quality Assurance in Evidence–Based Medicine

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ABSTRACT

Evidence-based medicine (EBM) refers to the careful examination of all the available evidence when making decisions about the care of the individual patient. It assumes that well known medical practices and solutions are combined with the patient's preferences and necessities in order to provide the most appropriate solution per case. The abundance of medical information in the web, the expansion of Semantic Web and the evolution of search services allowed the easier retrieval of scientific articles. Although the available infrastructure exists and continuously improves in performance, EBM still remains a complicated and sensitive process of high importance and has a need for Quality Assurance (QA). The purpose of this chapter is twofold: first, to provide an introduction on the concepts of Evidence-based Medicine, and second, to stress the necessity for structured methodologies that will assure the quality of the EBM process and ameliorate the final recommendations therapy. Since evidences are the building blocks of EBM, we capitalize on their quality and provide a critical overview of the existing methodologies in Quality Assurance of evidences.

INTRODUCTION

Evidence-Based medicine (EBM) can be thought of as the careful, explicit and reasonable use of patient related evidence (e.g. preferences, special needs etc.) in order to facilitate doctors in the selection of the most appropriate medical solution per case. It assumes the integration of individual clinical expertise with the best available external clinical evidence from systematic research (Sackett, 2003).

Tons of scientific journals, articles, patient guidelines and other related information are produced every day from scientific bodies and

research centers. The development of the Internet and other related technologies made sharing, distribution, searching and retrieval of scientific information easier than ever.

Clinicians can use the scientific databases available on the Internet (PUBMED, Medline etc) or the general purpose search engines in order to retrieve information quickly and effectively. Moreover, apart from these "pull services, modern tools (RSS, mailing lists etc) can "push" selected information to their subscribers. Also, the development of mobile technologies and wireless networks made the distribution of knowledge at the point of care easier than ever. A clinician can use a smart phone or a PDA to retrieve information at the point of care, or in other words "on the move".

Although significant progress is made in the area of the distribution, retrieval and searching of information, less is done in the area of its quality assurance. Consequently, the increase in information quantity had not an analogous impact in the quality of medical decisions. As a result the clinician is "left alone" to perform a time consuming, costly and error-prone process: the filtering and evaluation of the available information.

Truly, not the entire flood of provided knowledge is valid or useful for patient care. The study of Lundberg (Lundberg, 1992) on 100.000 scientific journals revealed that only 150 of those publications reported the 90% of all major scientific advances and less than 1,000 journals attained the 80% of the citations noted by Science Citation Index. The need to identify relevant information and to critically evaluate the scientific methodology and conclusions of the available information is obvious.

The purpose of this chapter is bifold. Initially, a short introduction in the concepts of evidence based medicine is given. This short introduction will provide the necessary definitions of EBM in order to avoid common misunderstandings and incorrect interpretations of the concept. Moreover, the importance of EBM for everyday clinical practice will be stressed.

In the following section we emphasize on the need for structured methodologies for the quality assurance and strength of recommendations. We focus on the problems that arise in the absence of a methodology, which assures the quality and relevance of provided information. Finally, we provide a critical review of existing methodologies in this field. The purpose of this presentation is to examine the proposed solutions for the quality assurance of the provided evidence as well as the provision of some suggestions.

BACKGROUND

Evidence-Based Medicine (EBM)

Clinicians in their everyday medical practice confront an overwhelming number of patients. In each medical session made, several questions arise concerning the proper prognosis, diagnosis and treatment. Moreover the differences between each individual patient case require the questions to be specialized according to the patient's medical condition, history and personal preferences. Truly, the selection of the "proper" treatment for each patient depends not only on scientific evidence but also from personal factors such as quality, personal beliefs and preferences of the patient.

Unfortunately, usually the decisions made by the clinicians are not supported by the suitable knowledge. The heavy workload and the absence of appropriate decision making tools hinder the clinicians from the careful processing of the available information and the selection of the most appropriate solution per incident. The lack of trustworthy and up to date information, make things even worse. As a result, the clinician is frequently left alone and her decisions are not adequately supported. Obviously, it is not practical for individual clinicians and patients to make these judgments unaided. In this context, Evidence Based Medicine (EBM) can be of great

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