

Chapter 41

Social Context: Visualisation of Cooperation – Evidence– Based Medicine in Neurorehabilitation

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ABSTRACT

Evidence-based medicine (EBM) and Evidence-based practice (EBP) are sets of standards and procedures created to search, verify, and select up-to-date findings implemented by medical staff as a basis for decision-making process in a daily clinical practice. Despite efforts of scientists and clinicians, neurorehabilitation is regarded as a difficult area for EBM/EBP practices due to huge diversity of cases, clinical pictures, interventions, and scientific methodologies. More advanced tasks, including application of brain-computer interfaces and neuroprostheses, show the need for a new approach from medical practitioners. This chapter presents challenges, barriers, and solutions in the aforementioned area based on the personal experiences of the authors. Visualisation tools provide cognitive support for social context, cooperation patterns, and data interpretation. Taking into consideration that social issues may extend the visibility of the results and allow for easier dissemination of the results, the aim was to show how visualisation helps identify cooperation networks and disseminate research results.

INTRODUCTION

Evidence Based Medicine (EBM) and Evidence Based Practice (EBP) are sets of standards and procedures created to search, verify and select up-to-date findings implemented by medical staff as a basis for decision-making process in a daily clinical practice. Cause of emergence of EBM has been significant

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increasing of data flow (e.g. easier access to electronical databases of medical articles). There become hard to distinguish reliable and unreliable medical evidences. As a result - there was hard to develop medical knowledge of the staff. The priority become selection and elimination unreliable findings at the beginning. It was noticed, that rehabilitation methods should be as reliable as other methods in clinical use. Concept Evidence Based Medicine licked into shape Evidence Based Practice (Bridges et al. 2007; Dean-Baar & Pakieser-Reed 2004).

The following chapter presents challenges, barriers, and solutions in the aforementioned area based on the personal experiences of the authors. Chapter begins from familiarizing of fundamentals of EBM/EBP, including also debate with opponents. Paper contains also outcomes of the own research, their useful visualizations, and results of practical implementation of EBM/EBP based on experience and findings in Poland and abroad. Vizualization tools provide cognitive support for pattern recognition and data interpretation toward usable information and knowledge (Osińska & Bala 2015, Osińska 2011). Our aim was to show how visualisation helps identify co-operation networks and disseminate research results.

BACKGROUND: EVIDENCE BASED MEDICINE IN NEUROREHABILITATION – STATE OF THE ART

Neurological diseases are popular in main population and constitute one of the main cause of disability in adult people. Interdisciplinary rehabilitation teams deal with neurologically disabled patients applying the newest methods, drugs, and approaches to rehabilitation process (Członkowska & Sarzyńska-Długosz 2002). Rehabilitation should start as early as possible (Hömborg 2010). Integrative neurorehabilitation science based on dedicated rehabilitation research focused on neurorehabilitation is necessary (Kwakkel 2009; Gillen 2010). Therapeutic procedures should be evidence-based and modified to find patient-tailored solutions. General rules derived from neuroscience confirm their usefulness in designing new therapeutic techniques in neurorehabilitation. (Hömborg 2010).

Searching and reading the research literature seem be essential activities for enhancing the use of research and optimizing the quality of current clinical practice in neurorehabilitation (figure 1). From the other hand neurorehabilitation is regarded very hard area for EBM/EBP practices, especially due to huge diversity of cases, their clinical pictures, interventions, and scientific methodologies. Thus neuro-rehabilitation may be perceived clinical area with lacking evidences (Grimmer-Somers et al. 2007; Iles & Davidson 2006).

Enormous growth of knowledge in the neurosciences may cause significant progress in neurorehabilitation. EBM/EBP is a complex process that can be facilitated by the use of the Knowledge to Action Process model. It provides a sequence of phases for researchers and clinicians to follow in order to optimize knowledge translation (KT) across various fields of practice. Thus our ultimate aim is creating effective KT interventions to increase clinicians' knowledge and use of EBM/EBP among for clinicians, health care managers, and researchers (figure 2). Clinical application of the new tool/method, approach requires research on its:

- Reliability (interrater reliability, intrarater-reliability, test-retest reliability, etc.), i.e. measurement error associated with an instrument,
- Validity, i.e. extent to which an instrument measures itself in the absence of the “gold standard” (including compartmental studies with other existing clinical scores and scales),

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