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**SPECIAL COMMUNICATION**

## **Maximizing Usability of Evidence in Rehabilitation Practice: Tips for Researchers**

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**Abstract**

The ultimate goal of rehabilitation research is to improve the lives of people with disabilities; yet, little research is implemented into clinical practice. The objectives of the current article are to serve as a guide for rehabilitation researchers regarding factors that contribute to translation of the evidence base in clinical practice, to highlight some common problems encountered by clinicians when trying to implement evidence-based treatments, and to provide tips that researchers can use to enhance the likelihood of their research products being used in clinical practice. The impact of clinician and environmental factors on use of evidence-based medicine are reviewed. Practical issues encountered by clinicians when attempting to translate evidence-based findings into practice are highlighted by discussing 2 areas of research: compensatory strategies for memory impairment after brain injury and use of electrical stimulation for weakness and paralysis in persons with spinal cord injury. The article closes with a series of tips to assist researchers in translating findings to clinicians.

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The ultimate goal of rehabilitation research is to improve the lives of people with disabilities. One mechanism through which research can have an impact on people with disabilities is improving the clinical practice of rehabilitation, thereby facilitating overall function and participation. In order for this to happen, rehabilitation professionals must be able and willing to implement assessments and treatments that have demonstrated effectiveness through rigorous research. The term evidence-based practice has been used to describe the process of integrating the best existing evidence with clinical expertise to guide clinical decision-making for patients.<sup>1</sup> Research has demonstrated that there is generally a positive attitude regarding the use of evidence in practice among clinicians of various disciplines, including physicians,<sup>2,3</sup> nurses,<sup>4</sup> physical therapists,<sup>5</sup> and occupational therapists.<sup>6,7</sup> In spite of this, there is often a gap between the evidence and clinical practice. This is particularly a problem in the area of rehabilitation, where there is a minimal evidence base and much of what exists has not translated well into clinical practice.

The objectives of this article are to serve as a guide for rehabilitation researchers regarding factors that contribute to use of evidence-based techniques in clinical practice, to highlight common problems encountered by clinicians when implementing evidence-based treatments, and to provide tips to assist researchers to increase the likelihood of their research products being used in clinical practice. Other aspects of knowledge translation, including the process from inception to application, as well as aspects related to technology, are covered in the other articles in this supplement.

### **Factors contributing to translation from research to practice**

Existing research makes note of several factors that contribute to adoption of evidence-based techniques in clinical practice. The first set of factors relates to characteristics of the clinicians themselves. There is evidence that practitioners who are younger<sup>5</sup> and who received their degrees more recently<sup>7</sup> hold more positive attitudes toward evidence-based practice. Clinicians' beliefs about the utility of research in practice also play a role, as do their perceptions of how well recommended assessments or treatments fit into the realities of their daily practice.<sup>7</sup> Practitioners may not

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believe that a treatment conducted in a research setting will generalize to specific patients in their clinical settings.<sup>5</sup> Therapists often place more value on their own clinical experiences, advice from colleagues, and client preferences, as opposed to the evidence base.<sup>8</sup> Beliefs or confidence of clinicians regarding their ability to evaluate research and integrate it into practice is also important. Studies have documented that many practitioners do not feel confident critically reading research and synthesizing the results to determine the best evidence.<sup>4,8-11</sup>

Environmental factors have also been found to contribute to implementation of evidence-based practice. The most frequently documented environmental barrier to evidence-based practice is insufficient time to read research and integrate new techniques.<sup>4-7,9,10,12,13</sup> Clinicians simply feel that the daily pressures and demands of practice preclude keeping up with research and trying new assessments or treatments. Insufficient access to resources and information has also been cited as a barrier to evidence-based practice.<sup>7,9,10,14</sup> For example, 1 study<sup>7</sup> reported that only 52% of occupational therapists surveyed in Australia had Internet access at their practice site, and only 45% had access to common medical search databases, such as CINAHL and Medline. Finally, perceived lack of institutional or managerial support for evidence-based practice contributes to its nonimplementation.<sup>14</sup>

Given the complexity of personal and environmental factors that contribute to implementation of evidence-based practice, it is not surprising that there is a gap between evidence and practice in the field of rehabilitation. Unfortunately, even if all of these factors are favorable, implementation of evidence may not occur because of the quality of the research itself. There are several characteristics of treatments conducted in a research setting that may not promote translation in a clinical environment. First, good research design often dictates that study participants be homogeneous with respect to etiology and to absence of premorbid neurologic or psychiatric difficulties. While this helps to establish internal and external validity for a study, it does not reflect the diversity of clients that clinicians see in everyday practice. For example, it may be economically unfeasible for a cognitive rehabilitation therapist to implement 1 type of memory treatment for clients with traumatic brain injury, based on study results, while continuing to use the standard of care treatment for clients with stroke. Similarly, it may be unfeasible for institutions to purchase equipment that has been studied only in specific groups of patients.

Another potential difficulty in translating from research to practice is the lack of detailed descriptions of treatments or techniques reported in the research literature. A clinician wishing to implement evidence-based treatment may be unable to determine the how-to of doing it. The page limits that journals impose on authors discourage inclusion of sufficient detail, and there is often not reference to a manual that can be obtained from the authors. This can contribute to an air of mystery surrounding the treatment or technique, reinforcing clinicians' doubts about the utility of research in practice. Furthermore, many treatments described in the rehabilitation literature lack clear face validity. For example, memory interventions that use laboratory tasks, such as learning of face-name associations, may have limited

applicability in clinical settings. Finally, there is typically minimal attention to client or therapist preferences when designing assessments and interventions for research studies. This decreases the likelihood that the techniques developed through research will be adapted by clinicians.

Thus far, we have reviewed the complexity of factors that can contribute to implementation of the evidence base in clinical rehabilitation practice. Next, we will provide 2 examples of difficulties encountered when trying to integrate evidence-based treatments into clinical practice, as well as suggestions for overcoming these barriers. The first example focuses on implementation of memory notebook training for clients with traumatic brain injury. The second example concerns the use of electrical stimulation (ES) in persons with weakness or paralysis because of spinal cord injury (SCI).

### Implementing memory notebook training in clients with brain injury

Memory notebooks are economical, flexible compensation tools that are frequently considered the standard of care to help people compensate for memory problems associated with brain injury. Not surprisingly, they are among the most frequently used external memory aid for individuals with brain injury. In a survey that assessed types of commonly used memory aids, 64% to 94% of individuals with memory impairment as a result of brain injury were using a memory notebook.<sup>15</sup> Knowledge in how to appropriately train a patient in their use is an essential skill for rehabilitation professionals treating cognitive impairments.

Support for the use of memory notebook training as compensation for memory impairment after brain injury is provided in 3 seminal reviews<sup>16-18</sup> of cognitive rehabilitation research. For individuals with mild memory impairment, training in the use of internal and external compensatory memory strategies was recommended as a practice standard in all 3 reviews.<sup>16-18</sup> Use of external memory aids to facilitate specific functional tasks or skills for individuals with severe memory deficits was upgraded from a practice option to a practice guideline in the 2 more recent reviews.<sup>17,18</sup> The research detailed in these reviews demonstrated that there is consistent, sound evidence for effective memory notebook training. Unfortunately neither the reviews nor the literature on which they were based included the necessary how-to information that clinicians need in order to effectively implement the evidence-based recommendations in the clinical setting.

To provide a patient with the best rehabilitative care, a clinician must first be able to answer several questions about the memory compensation training. These questions often include: (1) What type of clients and memory problems are most responsive to compensation training? (2) When in the recovery course should memory compensation training begin? (3) How many sessions are necessary for successful training? (4) How should the training sessions be structured (eg, content and length of sessions)? (5) What therapist expertise is needed to train in use of the compensatory strategy? (7) What materials are needed for the training? (8) What can be done to promote generalization of the training to the home and community settings? (9) What supports are necessary for clients to use the compensatory strategy (ie, caregiver support, technological support)?

As previously stated, clinicians operate under many pressures and time demands; thus, the answers to these questions must be

#### **List of abbreviations:**

**ES** electrical stimulation  
**FES** functional electrical stimulation  
**SCI** spinal cord injury

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