

Defining the Active Ingredients of Rehabilitation

Rehabilitation treatments and services are an important part of the healthcare system, and the need for such services is increasing. A larger proportion of the population is aging or elderly and, thanks to advances in medical technology, a number of individuals with disability who might previously have died are enjoying improved survival rates.¹ Rehabilitation treatments are important both economically and in terms of quality of life, and can be expected to become more critical in the future.¹

Despite their importance, evidence supporting the efficacy and effectiveness of most rehabilitation treatments is sparse. There are many reasons for this, including inadequate funding of rehabilitation research, insufficient numbers of rigorously trained investigators, and the inherent complexity of the biopsychosocial (as compared to the biomedical) model that underlies the practice of rehabilitation.² However, an increasingly recognized obstacle to research is the difficulty in defining many rehabilitation treatments with respect to their “active ingredients” in such a way that their impact can be studied. Similar to psychotherapy—whose efficacy has also been challenging to study—most rehabilitation treatments are delivered through some form of interpersonal interaction between rehabilitation therapist and patient/client, may be tailored to the goals, strengths, and weaknesses of the individual, and may incorporate multiple active ingredients.³ For example, consider several patients with difficulty walking after a stroke. All may be receiving “gait training”, but in one case the emphasis may be more on correcting impaired balance; in another on clearing the toe with each step; and another on being more attentive to obstacles in the environment while walking. Are these all the same treatment or is each patient receiving a different treatment? Because of these complexities, many attempts at clinical rehabilitation research have resorted to defining the treatments merely as numbers of hours of physical, occupational, speech, and other therapies; length of stay in a particular type of institution; or the goal of the treatment (e.g.,

“attention training”), as though the actual services delivered by clinicians and institutions during the treatment time are unimportant. Although numbers of sessions or hours may certainly be relevant, just as the dose of a medication is important, the dose does nothing to define the active ingredients of the treatment.

Recently the National Institute on Disability and Rehabilitation Research (NIDRR), a major funding source for rehabilitation research, awarded a 5-year grant to Marcel Dijkers, PhD at Mount Sinai School of Medicine for a project entitled, “Classification and Measurement of Medical Rehabilitation Interventions.” This project is intended to begin a process of building a taxonomy of rehabilitation treatments that is suitable for research purposes and may also facilitate interdisciplinary communication, clinical education, documentation, and billing. The grant includes a subcontract to Moss Rehabilitation Research Institute (MRRRI) at the Albert Einstein Healthcare Network, an affiliate of Thomas Jefferson University, with John Whyte, MD, PhD and Tessa Hart, PhD as lead investigators at MRRRI.

A taxonomy is a way of dividing a set of entities—in this case rehabilitation treatments—into a set of ordered groups or categories. Building a taxonomy of rehabilitation treatments that is applicable across disabilities, treatment settings, and patient populations is an enormous task that cannot be completed in a single grant cycle. The current project contains several key activities that are expected to support ongoing taxonomy development beyond the duration of the project. First is the construction of a “blueprint” for the taxonomy—an effort that will be led by the author. The blueprint will specify the principles by which treatments are grouped in the final taxonomy. In principle, one could sort rehabilitation treatments into categories according to whether the treatment was provided by a woman, a man, or a robot; whether the treatment was conducted in the morning or the afternoon; or an infinite number of other dimensions. The development of the blueprint will be shaped by

reviewing published literature on a wide range of rehabilitation treatments and services, paying particular attention to overt or covert “treatment theory,” since treatment theory proposes the mechanism by which a treatment works. Thus, to the extent possible, the boundaries between treatment taxonomy categories should reflect the active ingredients of the treatments as opposed to dimensions that don’t bear on how the treatment will be used or how effective it will be. Upon completion of the blueprint, a multidisciplinary stakeholder conference will be held to review and critique the blueprint.

After the investigators obtain feedback from rehabilitation professionals and consumer advocacy groups, the blueprint will be tested by using it to construct treatment taxonomies in two focused areas: treatments to improve gait and mobility for individuals with neurologic impairments; and treatments to ameliorate executive function deficits in individuals with brain injury. The choice of exemplars is relatively arbitrary and reflects a desire to assess the blueprint’s capacity to guide organization of a more cognitive vs. more motor domain, and to use domains with which the research team is particularly knowledgeable. Taxonomy development in these two treatment areas may suggest further refinements of the blueprint itself, with the goal that, by the end of the five-year project, a relatively enduring blueprint will be published that can support further taxonomic development in many additional treatment areas. In the final stages of the project, the two taxonomies discussed above and the revised blueprint will be reviewed and critiqued by external stakeholders, and plans made to continue further development of a useful treatment taxonomy for rehabilitation. ■

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