Overcoming Ignorance and Ineptitude in 21st Century Rehabilitation

Last fall I had the privilege of giving the 2016 Coulter Lecture at the Annual Meeting of the American Congress of Rehabilitation Medicine. In preparing for that lecture, I came upon Atul Gawande’s 2014 Reith Lectures on “The Future of Medicine.”1 In his first lecture (“Why Do Doctors Fail?”), Gawande cited a 1976 essay written in 1976 by 2 philosophers—Samuel Gorovitz and Alasdair MacIntyre—in which they discussed the nature of human fallibility and its relevance to medical fallibility.2 In discussing why human beings fail at anything we set out to do, Gorovitz and MacIntyre posited that there are 2 primary reasons why human beings fail:

- **Ignorance**: a limited understanding of all the relevant physical laws and conditions that apply to any given problem or circumstance. Gawande argued that, in the 20th century, most medical progress resulted from overcoming ignorance; for example, with the introduction of penicillin to treat infection or the application of intravenous thrombolysis with recombinant tissue plasminogen activator administered within 3 hours of a cerebrovascular accident. He contended that unlike the 20th century, failures in 21st century medicine were not going to be due largely to ignorance but rather to the second major cause of failure:

- **Ineptitude**: meaning that knowledge exists, but an individual or group fails to apply that knowledge correctly in a particular circumstance. In rehabilitation, an example of failure due to ineptitude might be a clinician’s failure to apply an evidence-based treatment regimen for subacute low back pain despite clear and convincing evidence of its efficacy and cost effectiveness.3,4

Over the past several decades, evidence-based practice (EBP) has become a mainstay of rehabilitation education and has tried to change practice by reducing ignorance.5 Dr David Sackett and colleagues defined EBP as “the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients.”6(p71) The founders of EBP sought to overcome ignorance in rehabilitation practice by grounding clinical decision making with rigorous scientific evidence to set aside previously accepted but ineffective diagnostic tests, prognostic protocols, and clinical treatments, replacing them with new, more accurate, powerful, and efficacious ones. For instance, through numerous scientific breakthroughs, there has been a repudiation of “folk” treatments in our profession—such as hot packs or ultrasound for heat therapy—in favor of treatments based on scientific evidence. Evidence-based practice provides rehabilitation clinicians with a systematic approach to appraising, selecting, and applying research findings as part of the clinical decision-making process.

However, despite the excellent EBP resources now available, ineptitude remains a major 21st century challenge in medical and rehabilitation care. According to Dr Donald Berwick, former director of the US Department of Health & Human Services, “Health care is rich in evidence-based innovations, yet even when such innovations are implemented successfully in one location, they often disseminate slowly—if at all.”7(p1969) As I wrote in an earlier editorial, there is consensus that the transfer of evidence from proven health care discoveries to patient care is unpredictable and highly variable and needs to be accelerated.8

Why is the dissemination of practice innovations so slow? In the landmark *Diffusion of Innovations*, Everett Rogers9 identified 3 types of influence that have been shown to relate to the rate of spread of an innovation: (1) perceptions of the innovation, (2) characteristics of those who adopt the innovation or fail to do so, and (3) contextual factors.

**Perceptions**

Rogers9 argues that several perceptions of an innovation as seen by potential adopters are most influential in their speed of adoption. First, the perceived benefit of the proposed innovation relative to its cost is the most powerful influence. As Rogers notes, the more knowledge we gain about the expected consequences of an innovation, the more likely we are to adopt it. Second, rapidity of change is directly related to how compatible the innovation is to values, beliefs, and history. To spread quickly, a change must resonate with currently felt needs and beliefs, and radical changes are adopted more slowly. Third, the complexity of an innovation affects the rate of its adoption, and, as expected, simple innovations spread faster than complicated ones. The ability to test out a change on a small scale before implementing it everywhere (trialability) also speeds up adoption. And finally, the ability to observe how others have adopted the innovation also increases the likelihood of change. In my own work, I have seen these factors influence the adoption of an item response theory–based functional assessment instrument. Although initial adoption was slow due to its perceived complexity, once we simplified the tool at the request of colleagues at Cleveland Clinics, dissemination has proliferated widely throughout hospital networks across the United States.
Editorial

Personalities

According to Rogers,9 potential adopters can be classified into 5 categories which, I believe, can explain the speed of adopting clinical practice innovations:

1. Innovators – distinguished from others by their fascination with novelty and their tolerance of risk. These are the risk takers within a community of potential clinical practice adopters.

2. Early adopters – quicker to adopt a change than average. They are seen as the opinion leaders in their clinical community, and they tend to speak with innovators, cross-pollinate ideas, and have the resources and risk tolerance to try new things.

3. Early majority – tend to rely on people they know well in their local community. They rely more on personal familiarity than on evidence or science; therefore, they are more risk adverse than innovators and early adopters.

4. Late majority – adopt an innovation when and if it appears to be safe to try when the new clinical practice is becoming the new status quo. They look for proof before giving a practice innovation a try.

5. Laggards – their point of reference is tradition or the past. They are the clinical traditionalists who make choices carefully and tend toward the tried-and-true approaches based on their personal clinical experience.

Contextual Factors

Contextual factors within an organization or social system can either encourage or discourage the actual process of spreading new ideas and clinical approaches. Within health care, some health organizations and clinical environments are more nurturing than others for innovators and early adopters. Organizations that foster social exchange among its members are likely to see faster adoption of innovations as compared with institutions and organizations that foster habits of isolation and tradition.

Contextual factors create additional challenges for the spread of clinical innovations. The production of scientific evidence that is necessary for EBP is organized institutionally within highly centralized systems, such as Research 1 universities, which have been highly successful in fostering the creation of new knowledge. To have successful research careers, scientists must respond to the rules of the research culture created by the universities within which they work and by funding agencies such as the National Institutes of Health that support their research. In turn, scientists are more oriented to the audience of other scientists within their field for whom they publish than to the needs of local practitioners. An example is the perceived importance of publishing your research in a journal with a high impact factor, an index reflecting the frequency with which other scientists cite the work published within a particular journal. In striking contrast, the application of the science produced within those organizations into clinical practice is highly decentralized. Local worlds rule the clinical networks in which we live and practice and have substantial influence on the clinical behavior of rehabilitation professionals. This creates a clash of cultures that delays the adoption of practice innovations.

In its essence, diffusion of innovation is a social phenomenon.30 Getting to “X is what we do” means establishing “X” as the new norm. To create norms, you have to understand people’s existing norms and the various factors influencing rate of innovation adoption as outlined by the work of Rogers9 and others. This does not mean that publishing your research is unimportant. Publishing our work in journals is essential—but publication of research is not, by itself, sufficient if our goal is to change clinical practice. People follow the lead of other people they know and trust when they decide whether to take up an innovation and change the way they practice!

In the 21st century, the field of rehabilitation will certainly need to continue to focus on developing new clinical innovations based on scientific evidence (combating ignorance) but will also need to develop new and creative initiatives to overcome ineptitude by disseminating rehabilitation innovations at scale at a much faster pace than we have in the past. How this can be accomplished in rehabilitation will be the focus of a future editorial.

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