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Guest Editorial

Assistive Technology for People with Neurological Disability

We live in the *Era of Technology*. Few aspects of our everyday lives are not mediated by electronic devices, ranging from the alarm clocks that launch our days to Internet-connected email and social networks and the satellite-fed videophones and GPS systems that link us to others in ways imagined only in science fiction novels just decades ago. As I write this, a people's revolution in Egypt – partially driven by the social networking platform *Facebook* – has just overthrown a dictator.

For people with disability related to a neurological condition, the emergence of new technologies can be especially liberating, offering opportunities for improved mobility, communication, cognitive support and functional independence. Yet many obstacles stand in the way of access to these innovative tools. The sheer abundance of available technologies and their constantly evolving iterations make staying abreast of "best practice" applications daunting for even the most "connected" of therapists. Health insurance programs may be reluctant to support the purchase of "experimental" technologies that are too new to have undergone rigorous outcomes-based research. Promising research-based platforms suffer funding cuts and languish out of the mainstream of consumer production. And too often technological solutions are promoted as wonder cures, with clinicians failing to properly match device, consumer and functional need, so that the much-touted miracle tool ends up gathering dust in a closet.

The international roster of contributors to this special issue of *NeuroRehabilitation* addresses each of these challenges, while providing up-to-date assistive technology recommendations for people with wide-ranging neurorehabilitation needs. Access to cell phones and computers is essential to full participation in the modern world, and our first article explores the many ways people with mobility impairments may leverage adaptive access tools. We then examine innovations in the area of automated speech-generation linked to equally innovative switches (some driven by eye-blink or muscle twitch) and technologies enabling simulated vision that can be paired with low-tech environmental solutions to address individualized needs.

The automotive industry has begun to embrace safety technologies such as speech-activated GPS systems and sophisticated collision alert monitors that may dovetail with automated driving simulators and computerized training systems to enable neurologically impaired drivers, as discussed in our article on technologies for assessing and treating driving issues after brain injury. The use of functional electrical stimulation holds promise for improving muscular and circulatory tone among people with spinal cord injury; our article bridges research to practice in this area.

A trio of articles captures the possibilities of advanced smart homes from three perspectives: (1) a United Kingdom model that seeks to make smart home provision a collaborative relationship between provider and consumer; (2) an American-Canadian model for expanding smart home and smartphone-driven cognitive support technologies into community settings; and (3) an analysis of current research into cognitive support technologies that are intended to provide automated just-in-time functional assistance and support for people with cognitive challenges.

Having discussed emerging technologies in the neurorehabilitation field, we then explore the biggest challenge faced by clinicians and consumers alike, access to these technologies. A step-by-step description of the process involved in launching a hospital-based assistive technology clinic may be used as a guideline for entrepreneurial therapists who wish to offer access, assessment and training in the use of enabling technologies for their clients, and our concluding articles may be read side-by-side, offering a salutary comparison of

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two very different national approaches to the funding of assistive technology, that of the United States and Sweden. In neither case have all problems been solved, but the similarities and contrasts between the two approaches suggest ways that we may move forward to improve the lives of people with neurological conditions while also promoting the needs of society as a whole.

In closing, I wish to thank the editors of *NeuroRehabilitation* for this opportunity to highlight some of the many ways that assistive technology is evolving to better address the needs of people with neurological conditions, and to thank our international panel of contributors, who are doing so much to further this goal.

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