Traumatic brain injury (TBI) is a national dilemma and an enormous public health problem in the United States, accounting for one-third (50,000+) of all injury deaths in the US annually [26]. Advances in neuroscience research, improvements in emergency/trauma services and acute medical management have increased the number of survivors of TBI, producing societal consequences and medical challenges. The Centers for Disease Control (CDC) [7] report that approximately 5.3 million individuals live with disabilities, caused by TBI, principally as result of vehicular incidents, falls, violence, and sports accidents. Each year, approximately 80,000 to 90,000 individuals acquire substantial, long-term disabilities as a result of TBI; with adolescents, young adults and individuals older than 75 years being at greatest risk.

One way to help provide TBI treatment services is tele-rehabilitation, a strategy described in this paper by Forducey and her colleagues. Telerehabilitation is a versatile interdisciplinary service modality that demonstrates promising signs of facilitation the transition for specialized TBI follow-up care and neuro-restorative services in the home and community-based settings. It is defined as the remote delivery of a variety of rehabilitative services for persons with disabilities through telecommunication technology [6]. Several applications of Telerehabilitation have been identified by the INTEGRIS team: TeleMentoring, TeleMonitoring, TeleConsultation, TeleEducation, TeleSupervision, and TeleTherapy.

Telerehabilitation is a viable option to provide skilled therapy services for individuals with TBI who would otherwise have limited or no access to services in their post-acute setting and is not intended to supplant local clinician [10,23]. Pilot programs have shown that Telerehabilitation can be effective in providing services to underserved regions [1,8,9,25,27].

Although access to health care for rural patients remains a critical challenge, teletherapy may represent a viable means for the delivery of therapeutic services to such patients. A case study, Mr. L., is presented in which teletherapy was successfully utilized to improve the functional outcomes, both physical and cognitive, of a patient with a severe TBI. A physical therapist from a metropolitan rehabilitation center employed teletherapy to provide Neuro Developmental Treatment for a patient and to mentor staff in a nursing home located over 100 miles from the metro area. The patient, who participated in 48 physical teletherapy sessions over a 24-week period, demonstrated improvements in physical functioning and neuropsychological status. During the course of the therapy, goals were adjusted upward to match the patient's improvements. This case study provides confirmatory evidence that teletherapy represents and effective and efficient means for providing rehabilitation services for patients in rural communities, as well as for facilitating mentoring relationships between seasoned professionals and trainees located in rural settings. One of the major benefits of teletherapy is that this mode of delivery may provide a viable solution to the profound problems of health disparities for patients in rural and underserved areas. Patients/families would have increased access to PT and other specialty rehabilitation services, thereby facilitating recovery. This, in turn, could significantly decrease the emotional and physical burden on family members and primary caregivers.

The case study of Mr. L. readily illustrates the application and efficacy of Telerehabilitation. During
the course of this patient's treatment, it was possible for specialists in Oklahoma City to perform regular assessments of his treatments and medical status (TeleMonitoring). Likewise, using the direct video connection with staff in the nursing facility it was possible for senior therapists from the metro area to consult with (TeleConsultation), train (TeleMentoring and TeleEducation), and supervise both the patient's progress and the therapeutic interventions (TeleSupervision). Generally, the teletherapy delivered in this case study involved direct physical intervention, although at times the applications were more indirect and involved suggested changes only.

This was the case for Mr. L. This experience changed not only the clinical practice of the treating nursing home therapists, but also impressed upon them the potential efficacy of therapeutic interventions with seemingly unresponsive patients. It helped them realize the possibility of recovery within the brain, even thirteen years post-TBI. It is very likely that this will affect their therapeutic choices and influence their clinical decisions with other patients in the future.

References