

# Telemedicine Services for Children With Disabilities in Rural Iowa: From Research to Practice

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## INTRODUCTION

The University Hospital School (UHS) is a specialized hospital—part of the University of Iowa Hospitals and Clinics—that provides treatment and evaluation for people with chronic health care concerns and disabilities. A specialized interdisciplinary team that provides a telemedicine consultation service for children and youth with health and developmental disorders has been developed and is ongoing. This clinical service is unique in that the evaluations are completed by teams of professionals at both sites with both parents and children present.

Real-time communication is achieved by using the Iowa Communications Network, a DS3 fiberoptic cable network linking 99 counties to 750 sites throughout Iowa. This project utilized three studio sites in southwestern rural Iowa, approximately 100 miles from University Hospitals, with a population base of 75,000 families. The study answered three questions: (1) What services can be effectively provided using telemedicine? (2) Are telemedicine consultations effective? and (3) Will rural patients, families, and providers be satisfied with telemedicine consultations?

## TELEMEDICINE ENCOUNTERS

Patients of the UHS telemedicine consultations were scheduled cooperatively by our hospital-based scheduling center and a local (distant-site) predesignated coordinator. When scheduling the child and family as well as the local professionals, the designated local coordinator provided a brief orientation concerning the planned telemedicine consultation with all the various specialists at both sites.

A specific series of protocols for patient presentation and consultation was established prior to these specific encounters for each appropriate subspecialty. A General Consultation Protocol (GCP) was collaboratively developed, covering in detail the etiquette of telemedicine encounters. This was the guiding template for the evaluation sessions.

## CONSULTATION PROTOCOLS FOR CLINICAL CARE AND AGENDAS FOR EVALUATION

The GCP outlined logistics for sessions, designated leadership and specific responsibilities of participants, and processed confidential releases and reports, summaries of clinical consultation, and followup reports. Four subspecialty protocols were also developed collaboratively between the local UHS team and the distant-site team of professionals. These protocols focused on (1) children with severe behavior disorders, (2) children with swallowing disorders (dysphagia), (3) children needing assistive technology services, and (4) children and youth with unmet health needs, primarily traumatic brain injury.

## System Integration

Team-to-team consultation, a unique aspect of this consultation model, enables a number of factors that facilitate overall consultation:

- Coordination of all service systems in real time—school, local health, and health specialists
- Frequent and easy monitoring of health care, professional support, and followup at shorter and family-directed intervals
- Parents who act as “care managers” because of ongoing participation with all professionals
- More rapid adoption/implementation of treatment recommendations directly to all local providers
- Opportunity for real-time discussion of collaborative treatment recommendations

## Evaluation of Patient/Caregiver and Professional Satisfaction

A comprehensive patient and professional satisfaction survey was developed cooperatively and was administered by the Iowa Institute for Social Sciences, an independent social science consulting firm at the University of Iowa. This survey consisted of a 55-item, phone-based survey for each parent and professional area.

One hundred subjects (patients/families) were enrolled, and 73 families agreed to participate in the final interviews, for a participation rate of

73 percent. Complete data were available on 55 patient families. The control groups (family control) consisted of 64 families, 50 of which completed these interviews, for a participation rate of 78 percent. Providers (research and treatment) consisted of 192 individuals, and 135 participated, for a 70 percent participation rate. Of the 45 provider/controls contacted, 36 agreed to an interview, for a participation rate of 80 percent. All analyses were completed by contrasting matching groups (treatment versus controls) using two statistical tests: Fisher's exact test and Wilcoxon's rank sum test. Significance levels were set at .05 in all instances. Statistical comparisons of treatment versus controls on all demographics were nonsignificant, thereby ensuring the comparability of the research contrasts.

**Parent/Caregiver Evaluation of Telemedicine**  
Parents as consumers reported a very high degree of satisfaction (98 percent were satisfied to very satisfied) with virtually all aspects of services provided by the care teams. These positive evaluations include the high quality of care provided, more time with health care providers, positive attitudes of health care providers, and increased positive regard of telemedicine. Parents as consumers also reported that they were as positively satisfied (satisfied to very satisfied) with telemedicine consultations as they were with face-to-face, direct evaluations.

**Provider/Professional Evaluation of Telemedicine**  
Providers (physicians, nurses, social workers, educational/psychological specialists, and teachers) reported that telemedicine consultations provided access to high-quality care (88 percent), was a timesaver (96 percent), and provided better care (81 percent). Providers who were in favor of using consultation reported that families were very positive toward consultations and that more communication was permitted by telemedicine consultation.

Providers reported that telemedicine consultations were as good as face-to-face, direct consultations for the majority of clinical work involved. Specifically, 69 percent of the consultations offered were categorized this way. Providers reported that telemedicine consultations provided access to higher quality care and tended to have higher participation rates and viewed this type of consultation as a productive use of their professional time.

## ECONOMIC ANALYSIS

The average local savings to the local district (professionals and parents) and the State of Iowa was \$971 per telemedicine session, which included the costs of onsite team consultation and travel by the team to the local community. The average out-of-pocket savings for parents was \$125 per session.

## MAJOR HIGHLIGHTS OF THE PROJECT

- Parents become care managers during their participation in telemedicine.
- Recommendations for treatment are presented and discussed in "real time," promoting efficiency, coordination, direct practical applicability for the patient, and more immediate implementation.
- Followup can occur more frequently and in a more timely manner for families and patients.
- Increased professional collaboration and rapport are major benefits.
- Major savings in out-of-pocket costs occur for families by staying in the community.
- Parents/consumers report very high satisfaction with all aspects of telemedicine services.
- Professionals (local providers) report high satisfaction with easy access to tertiary medical consultation.

## LESSONS LEARNED

- Collaborative and mutual development of clinical evaluation protocols prior to implementation of services is essential.
- A local scheduling coordinator who is familiar with local professionals and agencies is necessary.
- Discussion of recommendations for treatments during the telemedicine consultation fosters "best practices."
- Quality and reliability of technical infrastructure of the video connections are needed.
- Adequacy and timeliness of written clinical reports following telemedicine consultations ensure acceptance.
- Confidentiality of studio locations is central and must be maintained.
- A predetermined agenda for telemedicine sessions, with a designated manager at respective sites, promotes a smooth clinical experience.

## FUTURE CHALLENGES FOR TELEMEDICINE IN IOWA

Telemedicine is much more than video-interactive consultation and should be integrated into an informational structure in the health care domain. Our telemedicine program is currently considering interaction with a complex array of services for patients and providers to include Internet access to Web-based systems for health care information, referral making, and access to all health care systems.

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