Increasing Access to Applied Behavior Analysis through Telehealth

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The Challenge

• There is a serious disparity in access to health care for people living in rural and other underserved areas.

• Reduced access to care is especially challenging for people with disabilities, who often require more complex, more specialized, and more frequent care.

• There are few practical strategies that can effectively overcome this “rural disadvantage” in access to services.
Telehealth Can Help Meet this Challenge

• Telehealth is defined by HRSA as “Use of electronic information and telecommunication technologies to support long-distance clinical health care, patient and professional health-related education, public health and health administration.”

• Telehealth has been shown to be an innovative and effective method for solving access problems that are based on geography and a shortage of rural providers.

• Telehealth can achieve cost savings while improving health outcomes.
An Autism Problem

• Many children with autism spectrum disorders (ASD) have serious behavior problems (e.g., aggression, self-injury, noncompliance, destruction).
• These problems limit cognitive and social development and interfere with educational and therapeutic opportunities.
• Too many young children with ASD lack access to urgently needed behavioral services.
• Access to behavioral services is especially difficult in small towns and rural areas.
How Can We Solve this Problem?

• We need to spread evidence-based ABA practices to all geographic areas.

• Behavioral interventions for ASD must
  – Reduce challenging behavior
  – Increase social communication and cooperative behavior

• Functional communication training (FCT) is the most widely used ABA intervention for the reduction of problem behavior in children with ASD and other DD

• We must use innovative methods to get ABA to underserved areas.
Behavioral Treatment through In-Home Telehealth for Young Children with Autism

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Behavior Consultants: John Lee, Patrick Romani, Wendy Berg, Alyssa Suess, Kelly Schieltz
Parents and children who have welcomed us into their lives

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Poll Question

- Do you use Applied Behavior Analysis (ABA) to reduce problem behavior or build social communication skills in children with Autism Spectrum Disorder?

  Yes ____

  No ____
**What is ABA?**

**Definition:** A systematic and experimental approach for evaluating the effects of changes in the environment on a person’s behavior.
Behavioral Procedures

Clinic & Home-Based ABA:

  - Assessment: Goal is to identify function of child’s problem behavior (e.g., escape, attention, tangible)

- Functional Communication Training: Carr & Durand (1985)
  - Treatment: Goal is to replace problem behavior with appropriate communication that serves the same function
Strategies Used for Behavioral Intervention in the Iowa ABA Studies

• Use functional analysis (FA) and functional communication training (FCT) to replace problem behavior with social communication
• Train parents to use FA/FCT with their children under the direction of a behavioral consultant
• Use telehealth to reach underserved areas
In-Home ABA Project (1996-2010)

- Young children (12-72 months) with DD who engaged in challenging behaviors
- Therapists drove to home and coached parents to conduct FA & FCT procedures (1 hr weekly)
- Social function identified in 84% of cases
- Treatment reduced challenging behavior by 90%
- High treatment acceptability

In-Vivo In Home

[Map of Iowa with a circle around a specific county]
Eligibility Criteria for ABA Telehealth

Children 18 to 83 months of age with:

- Autism Spectrum Disorder diagnosis
- Significant challenging behaviors (e.g., aggression, destruction, self-injury, repetitive behaviors, severe tantrums)
- within 50 miles of participating CHSC clinic (clinic-based) **OR** anywhere in Iowa (home-based)
ABA Telehealth Procedures

- Weekly 60-min telehealth sessions from UI Children’s Hospital to regional clinics or homes
- Parents conducted all sessions with telehealth coaching from behavior therapist
- Parents completed practice sessions each week
- All sessions recorded, coded, and graphed
- Participation lasts up to 9 months
- RCT design for in-home project:
  - Assigned to immediate or delay (control) group
Regional Clinic Telehealth

- CHSC regional sites:
  - Equipped with videoconferencing hardware (i.e., computer, camera, tv monitor)
  - Received live image and audio from therapist
  - Toys, picture cards, and other materials provided for each clinic
  - Parent assistants/family navigators present in clinic room to provide support
• Hospital site connected to regional clinic site or home through a secure network

• Hospital site:
  – Telehealth lab equipped with desktop computers and videoconferencing software
  – FA and FCT sessions recorded for subsequent data coding
  – 6-s partial-interval audio was embedded into 5-min sessions
Clinic-to-Clinic Telehealth (2009-2012)

• Similar procedures to prior *in vivo* project but delivered via telehealth
• Evaluation and treatment in clinic setting
• Focused on young children (ages 2 - 6) with ASD who were engaging in severe challenging behaviors
• 6-month involvement (1 hr/wk visits)
Clinic-to-Clinic Telehealth

- University of Iowa Children’s Hospital
- Regional Child Health Specialty Clinics (CHSC)
Clinic-to-Clinic Results

• Social function identified in 90% of cases, 90% average reduction in challenging behavior
• All children showed ≥ 64% reduction in problem behavior; 83% showed ≥ 90% reduction in problem behavior
• High treatment acceptability by parents
• Consultants could spend more time coaching families and less time in travel
• Decreased costs (Average weekly cost of telehealth = $58 per participant vs. $335 if therapists traveled weekly)


# In-Home Study Participants

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<td><strong>Sex</strong></td>
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In-Home Functional Communication Training Results

• 17 participants have completed FCT treatment
• Mean reduction in challenging behavior: 85.6%
• 15 participants had ≥ 90% reduction
• Only 2 non-responders
• Parents were able to implement procedures with acceptable fidelity

A Family Using Teleheath at Home

• Tera
  – 5 years old
  – Autism Spectrum Disorder
  – Destructive Behavior (aggression, property destruction)

• Mother and Father
Summary of ABA Telehealth Results

- Social functions were identified through functional analysis for over 90% of children.
- Most children with ASD show escape and/or tangible functions.
- FA was completed in an average of 4-5 visits.
- FCT was completed in an average of 8-10 visits.
- An average reduction in problem behavior of at least 85% has been achieved in both clinic and home settings.
Behavioral Telehealth Successes

• Reduction in problem behavior through telehealth averages over 85%, which is comparable to ABA provided *in vivo* when therapists visit the home
• Treatment acceptability ratings by parents at end of treatment were at least as high as when therapists went out to the home (Clinic=6.47, Home=6.75 of 7)
• Average weekly cost of delivering telehealth was $58 per participant, compared to $335 if consultants traveled to provide coaching on site or in home
• Treatment fidelity based on parent behaviors has been acceptable and produces positive changes in child behavior and communication
Challenges for ABA Telehealth

• Not all parents have the confidence and interest needed to learn ABA methods
• Not all families are comfortable with communication through teleconferencing
• Technical problems with equipment and internet connections can interfere with completing sessions
• For clinic-based telehealth, families must still find the time and transportation to attend clinic sessions
• Even though telehealth can extend the reach of behavioral consultants into underserved areas, there are still not enough trained behavior analysts to meet the need for ABA services
Take-Home Messages

• Function-based behavior analysis and treatment are highly effective for children with ASD.
• As little as 1 hour/week of behavioral consultation can teach parents how to reduce challenging behavior and increase social communication significantly.
• Telehealth can extend ABA expertise to rural, underserved areas.
Peace and Joy
(An Autism Haiku)

Hopes dashed and rooms trashed
until parents restore peace,
turning pain to joy!
Photographs by Timothy Archibald at timothyarchibald.com
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