Evaluation of Modes of Service Delivery for Behavior Analytic Services Targeting Children Engaging in Problem Behaviors

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Disclosures?

• None.
Introduction

• As discussed by Lindgren et al (2016), the “triple aim” of modern medicine is…
  
  – Improve population health (i.e., expand access to services while maintaining positive outcomes)
  
  – Reduce costs of care
  
  – Enhance care experiences (i.e., satisfaction)

Learning Objectives

1) Discuss two-phase applied behavior analytic approach to the assessment and treatment of severe problem behaviors exhibited by children diagnosed with autism spectrum disorders.

2) Compare three modes of service delivery for these behavior analytic services with regards to the triple aim:

   1) In-Home Services Only
   2) In-Clinic Telehealth
   3) In-Home Telehealth
Applied Behavior Analysis

- Applied behavior analysis is a science dedicated to the study of socially relevant problem behaviors (Baer, Wolf, & Risley, 1968).
  - A therapist is practicing applied behavior analysis when their analyses are applied, behavioral, analytic, technological, conceptually systematic, and effective.

Applied Behavior Analysis

- The behavior analytic approach to the assessment and treatment of problem behaviors most commonly occurs in a two-phase model (Wacker, Berg, Harding, & Cooper-Brown, 2011):
  - Functional analysis of problem behavior
  - Function-based treatment
Applied Behavior Analysis


  – Functional analysis evaluates the conditions under which problem behaviors occur and the consequences that may be reinforcing problem behavior (i.e., increasing the future occurrence of problem behavior).

Functional Analysis

• Functional analysis of problem behavior (Iwata et al., 1982/1994):
  
  • Free play (control)
  
  • Escape (social negative reinforcement)
  
  • Attention (social positive reinforcement)
  
  • Tangible (social positive reinforcement)
Functional Analysis

Escape condition: Evaluates if problem behaviors are maintained by social negative reinforcement, in the form of escape from demands.
Functional Analysis

Escape condition: Evaluates if problem behaviors are maintained by social negative reinforcement, in the form of escape from demands.

Applied Behavior Analysis

• Results of functional analysis lead to the development of a function-based treatment program (Fisher & Bouxsein, 2011).

  – A common function-based treatment is functional communication training (FCT; Carr & Durand, 1985).

Functional Communication Training

• FCT consists of two components: differential reinforcement of communication and extinction (i.e., planned ignoring) for problem behaviors (Hagopian, Fisher, Sullivan, Acquisto, & LeBlanc, 1998).

  – First-comply with a small request, and Then-communicate for reinforcement (i.e., toys and parent attention). Problem behavior is ignored.
Functional Communication Training


FA and FCT

• Research has validated this two-phase model for the assessment and treatment of severe problem behaviors (Tiger, Hanley, & Bruzek, 2008).

  – Inpatient Units (Hagopian et al., 1998)
  – Outpatient Clinics (Schieltz, Wacker, & Romani, 2016)
  – Homes (Wacker et al., 1998)
  – Schools (Machalicek et al, 2010)
Modes of Service Delivery

- In-Home Service Only

- Telehealth Services
  - Remote connection to satellite clinics.
  - Remote connection to homes.

In-Home Services Only

- Wacker et al. (1998)
  - Described the delivery of behavior analytic services for problem behavior exhibited by young children with intellectual and developmental disabilities (IDD) within home settings.
In-Home Services Only

- Wacker et al. (1998)
  - Behavior analysts from the University of Iowa Children’s Hospital (UICH) traveled to homes.
    - Range of 3 – 158 miles ($M = 67.02$ miles).
  
  - Coached parents to implement functional analysis and FCT treatment with their children.

### Service Evaluation

<table>
<thead>
<tr>
<th>Service Type</th>
<th>Average Distance (miles) from UICH</th>
<th>Average Number of Visits to Complete FA and FCT</th>
<th>Average Percentage Reduction in Problem Behavior</th>
<th>Average Costs per Child (to Completion of Treatment)</th>
<th>Average Parent Satisfaction (Out of 7)</th>
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<tbody>
<tr>
<td>In-Home Services Only</td>
<td>67.02</td>
<td>21.57</td>
<td>95.76%</td>
<td>$5,949.97</td>
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In-Home Services Only

- **Strengths:**
  - Behavior analysts were present in home and provided in-vivo coaching to parents.
  - Able to discriminate nonverbal cues regarding parent satisfaction.

- **Limitations:**
  - Time and geographic limitations.
    - Limits the number of patients providers can serve and also the geographic region providers can serve.

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What is telehealth?

- **Delivery of healthcare services via electronic modalities** (Institute of Medicine, 2012).

  - Psychiatry (Grubaugh, Cain, Elhai, Patrick, & Frueh, 2008)
  - Psychology (Wade & Wolfe, 2005)
  - Behavior analysis (Fisher et al., 2014)
In-Clinic Telehealth

• Behavior analytic research has shown that functional analysis could be conducted with remote coaching (Barretto, Wacker, Harding, Lee, & Berg, 2006).

• Thus, to account for limitations of the in-home mode of service delivery, Wacker and colleagues evaluated the efficacy of delivering behavior analytic services via telehealth (Wacker et al., 2013a; 2013b).

In-Clinic Telehealth

• Participants were young children (2-6 years old) diagnosed with autism spectrum disorders and their parents.

• All participants engaged in severe problem behaviors, such as self-injury (e.g., hand biting) and aggression (e.g., hitting, kicking).
In-Clinic Telehealth

- Participants drove to a Child Health Specialty Clinic associated with the University of Iowa Children’s Hospital (UICH).
- Behavior analysts at UICH would connect with a family navigator (i.e., nurse; social worker) at the satellite clinic.
- Conducted functional analysis and FCT treatment in the clinic setting.

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In-Clinic Telehealth

• Strengths:
  – Lower costs, expanded access while maintaining positive treatment outcomes.
  – Parent acceptability remained high.

• Limitations:
  – Parents still needed to travel with their children.
    • Precludes access to some families not near a specialty clinic or without the resources to travel to the specialty clinic.

In-Home Telehealth

• Participants were young children (2-6 years old) diagnosed with autism spectrum disorder and their parents.

• All participants engaged in severe problem behaviors, such as self-injury (e.g., hand biting) and aggression (e.g., hitting, kicking).
In-Home Telehealth

- Behavior analysis at UICH would connect with the parent at their homes via Skype.

In-Home Telehealth

- Initial Meeting
  - Introduce parent to Skype and make sure internet connection would support teleconsultation.
  - Determine space that would be used for sessions (e.g., living room, bedroom).
In-Home Telehealth

• Subsequent Meetings
  – Connect via Skype.
  – Review the week.
  – Develop game plan for sessions.
  – Begin sessions for day.

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<td>In-Home Telehealth</td>
<td>116.23</td>
<td>14</td>
<td>97.27%</td>
<td>$2,345.64</td>
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In-Home Telehealth

• Strengths:
  – Expanded access to a broader range of families. Maintained positive treatment outcomes at lower costs.
  
  – Parents conducted treatment with sufficient fidelity (Suess et al., 2014).

Summary

• The triple aim of modern healthcare (Lindgren et al., 2016):
  
  – Improve population health (i.e., expand access to services while maintaining positive outcomes)
  
  – Reduce costs of care
  
  – Enhance care experiences (i.e., satisfaction)
Expand Access

Maintain Positive Outcomes
Reduce Costs of Care

- Average Costs per Child (Dollars)

Enhance Care Experience

- Average Satisfaction Rating
Conclusion

• In-Home Telehealth services can be an effective way to meet the triple aim of modern medicine for children diagnosed with ASD engaging in severe problem behaviors.

  – Reduced costs, expanded access, maintained positive treatment outcomes, and maintained positive parent satisfaction.