Bringing An Intensive Treatment Team Into Your Home

Applied Behavior Analysis (ABA)

EIDBI Treatment Modality Fair
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Lovaas Institute Midwest
The Goals of Home-Based EIBI

- The development of a child who will
  - empathize and share affection with his family
  - independently make and keep mutual friendships
  - succeed in school
  - interact responsively and dynamically
  - be effective in social situations, and
  - meet the natural expectations of the environment
- *without requiring specialized therapy*
# Components of Medically Necessary Early Intensive Behavioral Intervention

<table>
<thead>
<tr>
<th></th>
<th>Child Behavior Therapy</th>
<th>Individualized Clinical Case Supervision Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Intensive Phase</td>
<td>Transition Phase</td>
</tr>
<tr>
<td><strong>Summary - Weekly</strong></td>
<td>37 hours per week</td>
<td>16 hours per week</td>
</tr>
<tr>
<td><strong>Lovaas 1987, McEachin, et al. 1993</strong></td>
<td>An average of 40 hours, with frequent co-therapy; range 10 to 60 hours per week</td>
<td>An average of 10 hours per week</td>
</tr>
<tr>
<td><strong>Cohen, et al. 2006</strong></td>
<td>35 to 40 hours</td>
<td>not reported</td>
</tr>
<tr>
<td><strong>Sallows &amp; Graupner 2005</strong></td>
<td>An average of 37 to 39 hours</td>
<td>not reported</td>
</tr>
<tr>
<td><strong>Howard, et al. 2005, 2014</strong></td>
<td>35 to 40 hours</td>
<td>not reported</td>
</tr>
<tr>
<td><strong>Eikeseth, et al. 2002, 2007</strong></td>
<td>28 hours of school-based and additional home-based parent therapy</td>
<td>18 hours per week</td>
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<tr>
<td><strong>Hayward, et al. 2009</strong></td>
<td>42 hours of scheduled, home- and school-based treatment</td>
<td>18 hours per week</td>
</tr>
<tr>
<td><strong>Larsson, et al. 2017</strong></td>
<td>37 hours per week, with co-therapy as needed; range 6 to 47 hours</td>
<td>19 hours per week;</td>
</tr>
</tbody>
</table>
Seminal Studies


Replication Studies


Independent Reviews


EIBI for Autism: What are the average group outcomes?
Independent Standardized Scores

Total IQ Scores in Various Studies

- Dawson 2010 Control
- ESDM 2010
- Smith 2015
- TEACCH 1989
- TEACCH 1992
- Lovaas Midwest High
- Lovaas Midwest Low
- Lovaas 1987
- Lovaas 1987 10-hr

Baseline vs. 2+ years
ABA Outcome Behaviors

Lovaas 1987 Child by Child Behavior Data

Number of Children

- Dramatic Play
- Complex Play
- Peer Play
- Normal IQ
- Best Outcomes
- Severe MR
- Stereotyped Behavior
- Tantrum
- Mute

Pre Post
EIBI for Autism: What is the range of individual outcomes?

**Average IQ Change**

16.4 points

0.45 points
Eldevik et al 2010

Some Children Lost IQ Points

Treatment Group: 35 Children with Autism Who Received Three or More Years of Early Intensive Behavioral Intervention

Comparison Group:
24 Children with Autism
Who Received Three or More Years of Special Education Classes

So how do we stay accountable to each parent?
Instead of managing the process,

Let’s manage the outcomes!

Through outcome-oriented six-month reviews.
Multi-Modal Evaluation
Six-Month Progress Assessments

• Long-Term Outcome Objectives
• Task Analyzed Individualized Treatment Plan Benchmarks
• Quality Features
  • Treatment Integrity / Informed Consent Checklist
• Clinical Focus Analysis
• Weekly ITP Progress Assessment
• Internal Curriculum Assessment
• Internal Developmental Norms Assessment
• Social Validity Assessments
  • Structured Video-tape Assessment
    • Outcome Validity Probes
    • Annual External Assessments
Best Outcome Goals (1)

- Generalized compliance
- Distal compliance
- Respond to novel adults
- Comply with group instructions
- Intelligible speech
- Generalized speech
- Colloquial speech
- Creative story telling
- Joint attention
- Generalized imitation
- Independent observational learning
- Cooperative play with adult
- Cooperative play with a typical age-peer
- Congruent social play
- Social responsiveness
Best Outcome Goals (2)

• Small-group attending
• Large-group attending
• Participate in a group conversation responsively
• Social comprehension
• Complete an errand
• Walk with adult
• Appropriate nutrition
• Appropriate sleep
• Independent toileting
• Stereotypy during play
• Waiting
• Self-control of health-threatening behavior
• Maintain two mutual friendships
• Learn without specialized therapy
• Attain typical developmental milestones
• Parent Mastery
Why is early intensity important?
The Development of the Young Child

Cumulative Skills Acquired

- Typical Child
- Autistic Child Without Intervention
- Autistic Child With Behavior Therapy

Months

0  6  12  18  24  30  36  42  48  54  60  66  72
The Development of the Young Child
The Development of the Young Child
Sample Weekly Schedule of Natural Environment and Structured Teaching Trial Activities

<table>
<thead>
<tr>
<th>Time</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Saturday</th>
<th>Sunday</th>
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</thead>
<tbody>
<tr>
<td>1 am</td>
<td>Bed</td>
<td>Bed</td>
<td>Bed</td>
<td>Bed</td>
<td>Bed</td>
<td>Bed</td>
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<td>4 am</td>
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<td>Bed</td>
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<tr>
<td>7 am</td>
<td>Morning</td>
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<tr>
<td>8 am</td>
<td>Breakfast</td>
<td>Breakfast</td>
<td>Breakfast</td>
<td>Breakfast</td>
<td>Breakfast</td>
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<tr>
<td>9 am</td>
<td>Drills</td>
<td>Play Date</td>
<td>Drills</td>
<td>Drills</td>
<td>Play Date</td>
<td>Drills</td>
<td>Play Date</td>
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<tr>
<td>10 am</td>
<td>Drills</td>
<td>Drills</td>
<td>Drills</td>
<td>Drills</td>
<td>Play Date</td>
<td>Drills</td>
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<tr>
<td>11 am</td>
<td>Play</td>
<td>Play</td>
<td>Play</td>
<td>Play</td>
<td>Lunch</td>
<td>Lunch</td>
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<td>12 pm</td>
<td>Lunch</td>
<td>Car Trip</td>
<td>Lunch</td>
<td>Lunch</td>
<td>Lunch</td>
<td>Car Trip</td>
<td>Drills</td>
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<tr>
<td>1 pm</td>
<td>Car Trip</td>
<td>Drills</td>
<td>McDonald’s</td>
<td>Drills</td>
<td>M Movie</td>
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<td>2 pm</td>
<td>Shopping</td>
<td>Drills</td>
<td>McDonald’s</td>
<td>Drills</td>
<td>Movie</td>
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<td>Playground</td>
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<td>Doctor Visit</td>
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<td>4 pm</td>
<td>TV</td>
<td>TV</td>
<td>Videogames</td>
<td>TV</td>
<td>Drills</td>
<td>Videogames</td>
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<td>5 pm</td>
<td>Cleanup</td>
<td>Dinner</td>
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<tr>
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<td>Dinner</td>
<td>Dinner</td>
<td>Dinner</td>
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<tr>
<td>7 pm</td>
<td>Videogames</td>
<td>Church Group</td>
<td>Dad Time Drills</td>
<td>Videogames</td>
<td>TV</td>
<td>Videogames</td>
<td>TV</td>
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<tr>
<td>8 pm</td>
<td>Reading</td>
<td>Church Group</td>
<td>Reading</td>
<td>Reading</td>
<td>Reading</td>
<td>Reading</td>
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<tr>
<td>9 pm</td>
<td>Nighttime</td>
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<td>Nighttime</td>
<td>Nighttime</td>
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<td>10 pm</td>
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<td>12 pm</td>
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</table>

Percent Mastered

<table>
<thead>
<tr>
<th></th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Saturday</th>
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</thead>
<tbody>
<tr>
<td>3/24</td>
<td>12.5</td>
<td>20.8</td>
<td>3/24</td>
<td>25.0</td>
<td>12.5</td>
<td>12.5</td>
<td>12.5</td>
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</table>

Total Week Percent Mastered

<table>
<thead>
<tr>
<th></th>
<th>26/168</th>
<th>15.5</th>
</tr>
</thead>
</table>


Actual Natural Teaching Trials in Selected Natural Environment Activities

<table>
<thead>
<tr>
<th>Morning Routine</th>
<th># of Trials</th>
<th>Videogames</th>
<th># of Trials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Come to kitchen without bolting</td>
<td>1</td>
<td>Spontaneous appropriate request for games</td>
<td>1</td>
</tr>
<tr>
<td>Select genuine reinforcer for dry bed</td>
<td>1</td>
<td>Compliant choice of novel game</td>
<td>1</td>
</tr>
<tr>
<td>Toilet appropriately</td>
<td>1</td>
<td>Play with novel game 5 minutes</td>
<td>1</td>
</tr>
<tr>
<td>Dressing (i.e., beginning next step within 2-seconds of completing last step)</td>
<td>8</td>
<td>Wait for two minutes without noncontextual talk or grinding</td>
<td>1</td>
</tr>
<tr>
<td>Appropriate walking (i.e., no toe-walking)</td>
<td>4</td>
<td>Self-control of frustration tantrums</td>
<td>2</td>
</tr>
<tr>
<td>Appropriate response to receptive language within 2-seconds</td>
<td>8</td>
<td>Operant expressive language (generative three-terms)</td>
<td>8</td>
</tr>
<tr>
<td>Operant expressive language (three-terms)</td>
<td>5</td>
<td>Comply when told to finish</td>
<td>1</td>
</tr>
<tr>
<td>Contextual talking per opportunity</td>
<td>5</td>
<td>Spontaneous toilet</td>
<td>1</td>
</tr>
<tr>
<td>Self-control of teeth-grinding per 5 minutes</td>
<td>5</td>
<td></td>
<td></td>
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</tbody>
</table>
Growth against Developmental Norms

6 Mo Review LAP Growth in Developmental Ratio Index

Mean Growth in DRI

Consecutive Review Interval
Social Normative Assessment

Phase 1 Appropriate Behavior

- Child: 68%
- Peer 1: 74%
- Peer 2: 80%
- Peer 3: 84%
- All Peers: 82%
Social Normative Assessment

Phase 2 Appropriate Behavior

- Child: 86%
- Peer 1: 88%
- Peer 2: 78%
- Peer 3: 84%
- All Peers: 78%
The average length of treatment for these 68 children was 34 months.
The average Total hours per week of Direct Treatment, including Supervision, for these 68 children was 39 hours, Range 1-57.
The average Behavior Therapist hours per week for these 68 children was 24 hours, Range 0-36. During the final six months of treatment, the average Behavior Therapist hours per week was 10 hours.
The average Supervision hours per week for these 68 children was 15 hours, Range 1-21.
Treatment Models

Focused ABA

- Behavior that threatens the health or safety of the client or others or that constitute a barrier to quality of life (for example, severe aggression, self-injury, property destruction, or noncompliance);
- Absence of developmentally appropriate adaptive, social, or functional skills that are fundamental to maintain health, social inclusion, and increased independence (for example, toileting, dressing, feeding, and compliance with medical procedures).

Comprehensive ABA

Typical Program Components
Treatment components should generally be drawn from the following areas (ordered alphabetically):

- adaptive and self-care skills
- attending and social referencing
- Cognitive functioning
- Community participation
- Coping and tolerance skills
- Play and leisure skills
- Pre-academic skills
- Reduction of interfering or inappropriate behaviors
- Safety skills
- Self-advocacy and independence
Essential Elements of Practice

The four core characteristics listed above should be apparent throughout all phases of assessment and treatment in the form of these essential practice elements:

1. **Comprehensive assessment** that describes specific levels of behavior at baseline and informs subsequent establishment of treatment goals
2. An emphasis on **understanding the current and future value** (or social importance) of behavior(s) targeted for treatment
3. A practical focus on **establishing small units of behavior** which build towards larger, more significant changes in functioning related to improved health and levels of independence.
4. Collection, quantification, and analysis of **direct observational data** on behavioral targets during treatment and follow-up to maximize and maintain progress toward treatment goals
5. Efforts to **Design, establish, and manage the social and learning environments(s)** to minimize problem behavior(s) and maximize rate of progress towards all goals
6. An approach to the treatment of problem behavior that **links the function** of (or the reason for) the behavior to the programmed intervention strategies
7. Use of a **carefully constructed, individualized and detailed behavior-analytic treatment plan** that utilizes reinforcement and other behavior principles and excludes the use of methods or techniques that lack consensus about their effectiveness based on evidence in peer-reviewed publications
8. Use of **treatment protocols that are implemented repeatedly, frequently, and consistently** across environments until discharge criteria are met
9. An emphasis on **ongoing and frequent direct assessment, analysis, and adjustments to the treatment plan** (by the Behavior Analyst) based on client progress as determined by observations and objective data analysis
10. **Direct support and training of family members and other involved professionals** to promote optimal functioning and promote generalization and maintenance of behavioral improvements
11. A **comprehensive infrastructure for supervision** of all assessment and treatment by a Behavior Analyst
Some models assume the following:

1. The BCBA or BCBA-D is responsible for all aspects of clinical direction, supervision, and case management, including activities of the support staff (for example, a BCaBA) and Behavior Technicians.

2. The BCBA or BCBA-D must have knowledge of each member of the treatment team’s ability to effectively carry out clinical activities before assigning them.

3. The BCBA and BCBA-D must be familiar with the client’s needs and treatment plan and regularly observe the Behavior Technician implementing the plan, regardless of whether or not there is clinical support provided by a BCaBA.
Covered Service Components

Authorization periods should not typically be for less than 6 months and may involve some or all of the following services. If there is a question as to the appropriateness or effectiveness of ABA for a particular client, a review of treatment data may be conducted more frequently (for example, after 3 months of treatment). In addition, if third-party clinical review (also known as peer review) is required by a healthcare funder or manager, the review should be a Behavior Analyst with experience in ABA treatment of ASD.

The following list represents common services that should be authorized for optimal treatment outcome. Others may be appropriate.

1. Behavior-Analytic Assessment
2. Treatment Plan Development and Modification
3. Direct Treatment to Individuals or Groups with Implementation by Behavior Analysts and/or Behavior Technicians
4. Supervision (both direct and indirect) by Behavior Analysts
5. Travel to Ensure Equitable Access to Services (for example, rural and underserved areas)
6. Parent and Community Caregiver Training to Individuals or Groups
7. Consultation to Ensure Continuity and/or Coordination of Care
8. Discharge Planning
Medically Necessary Case Supervision

Direct Supervision Activities
• Directly observe treatment implementation for potential program revision
• Monitor treatment integrity to ensure satisfactory implementation of treatment protocols
• Directing staff and/or caregivers in the implementation of new or revised treatment protocols (client present)

Indirect Supervision Activities
• Develop treatment goals, protocols, and data collection systems
• Summarize and analyze data
• Evaluate client progress towards treatment goals
• Adjust treatment protocols based on data
• Coordination of care with other professionals
• Crisis intervention
• Report progress towards treatment goals
• Develop and oversee transition/discharge plan
• Review client progress with staff without the client present to refine treatment protocols
• Directing staff and/or caregivers in the implementation of new or revised treatment protocols (client absent)
When the older child has not benefited from Comprehensive ABA, will Focused ABA be effective?
Social Skills Meta Analysis

• Reichow and Volkmar, in 2010, reported on 31 studies of children, aged four to fifteen, who benefited from ABA social skills training:

  • “The school-age category had the highest participant total of the three age categories (N = 291).” (page 156).

  • “Within the last 8 years, 66 studies with strong or acceptable methodological rigor have been conducted and published. These studies have been conducted using over 500 participants, and have evaluated interventions with different delivery agents, methods, target skills, and settings. Collectively, the results of this synthesis show there is much supporting evidence for the treatment of social deficits in autism.” (page 161).
Aggression

• Brosnan and Healy, in 2011, reported on 18 studies of children aged three to 18, who received effective ABA treatment to reduce or eliminate severe aggressive behavior:

  • “All of the studies reported decreases in challenging behavior attributed to the intervention. Of the studies included, seven reported total or near elimination of aggression of at least one individual during intervention in at least one condition.” (page 443).

  • “only four of the studies conducted follow-up assessments. However, each of these studies reported that treatment gains were maintained.” (page 443).
Anxiety

• Lang, et al. in 2010, reported on nine studies which involved 110 children aged nine to 23, who received a variety of forms of behavior therapy for anxiety:

  • “Within each reviewed study, at least one dependent variable suggested a reduction in anxiety following implementation of CBT.” (page 60).

  • “CBT has been modified for individuals with ASD by adding intervention components typically associated with applied behaviour analysis (e.g. systematic prompting and differential reinforcement). Future research involving a component analysis could potentially elucidate the mechanisms by which CBT reduces anxiety in individuals with ASD, ultimately leading to more efficient or effective interventions.” (page 53).
Problem Behavior

• Hanley, Iwata, and McCord in 2003, reported on 277 studies which involved 536 children and adults (70% of the studies included persons between the ages of 1 and 18, and 37% also included persons older than 18), who received functional analyses of problem behaviors:

• Of these, 96 percent were able to yield an analysis of the controlling variables of the problem behavior. The specific functional analysis of individual problem behaviors is crucial to the successful intervention with those behaviors.

• “Large proportions of differentiated functional analyses showed behavioral maintenance through social-negative (34.2%) and social-positive reinforcement (35.4%). More specifically, 25.3% showed maintenance via attention and 10.1% via access to tangible items. Automatic reinforcement was implicated in 15.8% of cases.” (pages 166-167).
Self Injury

• Iwata and colleagues, in 1994, reported on the effective treatment of self-injurious behavior with 152 children, adolescents, and adults. In their sample, 39 were between the ages of 11 and 20, and 74 were 21 and older. The function of the self-injurious behavior could be identified in 95% of the persons, and in 100% of those cases an effective treatment could then be prescribed.

• “Results of the present study, in which single-subject designs were used to examine the functional properties of SIB in 152 individuals, indicated that social reinforcement was a determinant of SIB in over two thirds of the sample, whereas nonsocial (automatic) consequences seemed to account for about one fourth of the cases.” (page 234).
The Behavior Analyst Certification Board®
BCBAs in Minnesota

Growth of BCBAs: Number of Children with Autism per BCBA in Each State

Number of Children with Autism per BCBA in
Twin Cities   Greater Minnesota
85           102 (2018)

16,370 Children with Autism Birth to 20 in MN

Wisconsin License in 2016
Oregon License in 2013
Verified Course Sequences (2018) in Accredited Colleges and Universities

218 in the USA
87 in other countries
What to expect over three years
Phases and Balance of Behavior Therapy

<table>
<thead>
<tr>
<th>Autism</th>
<th>Training</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavior</td>
<td>Language</td>
</tr>
<tr>
<td></td>
<td>Parent</td>
</tr>
</tbody>
</table>

Optional Pre-Training (Attending)

Foundational (Basic Foundation Skills)

Application (Application of Basic Skills to Learning)

Naturalization (Generalization to Natural Skills)
Phases and Balance of Behavior Therapy

**Behavior**
- reinforcement
- self-control
- observational
- learning

**Language**
- operant
- structured
- generalized

**Social**
- structured
- natural

**Parent**
- structured
- self-care
- 24-hour follow-through

**Staff**
- 24-hour follow-through

**Optional Pre-Training (Attending)**

**Foundational (Basic Foundation Skills)**

**Application (Application of Basic Skills to Learning)**

**Naturalization (Generalization to Natural Skills)**
Find a BCBA

MNABA
Minnesota Northland Association for Behavior Analysis

Your Minnesota ABA Resource

Learn More
Find an ABA Program

Cultivating, sharing, and advocating for provider best practices in autism services.

View a list of Members, Benefits of Membership, and find service providers.

EXPLORE MEMBER SERVICES
Find a local resource!

Looking for Resources? Contact the Autism Speaks Autism Response Team

100 Day Kit: A Guide for Families after an Autism Diagnosis

See all Families & Adults
- Adult Services
- Autism Apps and Technology
- Autism Response Team
- Community Outreach
- Grants
- Non-English Resources
- Resource Guide
- Resource Library
- Safety Resources
- Tool Kits
Find Credible Information About ABA for Autism

"M-CHAT-R™ (Modified Checklist for Autism in Toddlers, Revised) developed by Diana Robins, PhD et al. & recommended by the American Academy of Pediatrics.

On this page you and other parents of individuals with autism navigate the complex maze that is autism treatment. Learn about what autism is, effective treatment options, and even how to overcome some of the day-to-day challenges that you or your child may experience. The task of choosing amongst treatments can be overwhelming, but we're here to support you and to help you see the value of science in guiding your decision making.

Don't forget to sign-up for our newsletter.
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