

Applied Behavior Analysis

Question to the Defense Health Board

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Autism Spectrum Disorders

- **Autism Spectrum Disorders are:**
 - Complex neurodevelopmental disorders of unknown etiology
 - Autistic Disorder (AD), Pervasive Developmental Disorder Not Otherwise Specified (PDDNOS), and Asperger's Disorder (AS), DSM-IV-TR
 - When serious, apparent by age 2, diagnosis usually at 3–5 years
 - Nature & severity of deficits best indicator of treatment needs
- **Core Deficits of ASD:**
 - Communication Deficits—Lack of speech, lack of desire to communicate, lack of nonverbal compensatory efforts, such as gestures
 - Social Skills Deficits—decreased drive to connect with others and share complementary feeling states
 - Restricted, repetitive, and stereotyped patterns of behavior, interests, and activities



The Universe of Autism Services

- **Medical Interventions**

- Chelation (mercury, lead, etc)
- Vitamins and minerals
- Gluten and casein-free diet
- Secretin
- Psychopharmaceuticals (off-label)
- Anti-fungals

- **Motor skills therapies**

- Occupational therapy
- Physical therapy



The Universe of Autism Services

- **Sensory therapies**

- Sensory Integration Therapy
- Auditory Integration Therapy
- Vision Therapy
- Weighted/pressure vests
- Oral-Motor Training (e.g. Kaufman Method, PROMPT (Prompts for Restructuring Oral Muscular Targets), Rosenfeld-Johnson Method)

- **Communication therapies**

- Augmentative Communication
- Facilitated Communication
- Speech-language therapy

- **Other therapies**

- Animal therapy (e.g. therapeutic horseback riding, dolphin therapy, pet therapy)
- Art therapy
- Music therapy
- Recreational Sports/Exercise
- Magnet therapy
- Holding therapy
- Patterning
- Craniosacral Therapy
- Hyperbaric Oxygen Therapy



The Universe of Autism Services

- **Comprehensive developmental/behavioral interventions**
 - Developmentally-based Individual-difference Relationship-based intervention (DIR)/Floor Time
 - TEACCH (Treatment and Education of Autistic and related Communication-handicapped CHildren)
 - RDI (Relationship Development Intervention)
 - Developmental intervention model (GWU School of Medicine)
 - Denver model (Univ Colorado Health Sciences Center)
 - LEAP (Learning Experiences, an Alternative Program for Preschoolers and their Parents)
 - Others



ABA

Applied Behavior Analysis

- **ABA is an educational modality (generally for autistic children) intended to produce “socially significant improvement in human behavior”**
 - “Discrete trial teaching” first advocated by Lovaas in the 1960s, findings published in 1987
 - *Outcome in the intervention group compared favorably to a control group*
 - Involves extensive, structured one-on-one interactions intended to shape behaviors and teach new skills.
- **Published studies showing favorable results used 35-40 hours ABA per week**



Applied Behavior Analysis

- **Is a behavioral strategy and method, not an intervention, built on the tenets of operant conditioning**
- **As a method it embodies a set of rules**
 - Identify the target of teaching
 - Determine appropriate antecedent and consequence for the behavior
 - Use systematic instruction (ABA techniques) to teach target behavior
 - Use systematic assessment (data-driven) to measure student progress
- **As a method it can be and is used eclectically in a variety of settings (see comprehensive programs)**



Applied Behavior Analysis

- **The family of ABA techniques have been used as intervention tools to address a wide variety of deficits associated with ASD***
 - Learning to learn: looking, listening, imitating, following instructions, discriminating and matching stimuli, etc.
 - Communication: verbal and nonverbal; comprehension and production; from simple vocalizations to complex conversations
 - Social skills: simple reciprocal exchanges, playing with peers, sharing, expressing emotions, empathizing, dramatic play, etc.
 - Self-care: hygiene, personal safety, community living, etc.
 - Academics
 - Motor skills and leisure activities
 - Vocational skills

*Green, G 2007



Critical Reviews of Previous Findings

- The findings of the Lovaas and McEachin studies have now been independently examined and claims of “recovery” from autism strongly criticized by many observers.
- Schopler et al. (1989) argued that the study design was not a true experiment, as subjects were not randomly assigned to the experimental and control groups. He suggested that the procedures for assigning subjects to groups likely resulted in important differences between the experimental and control conditions that may have contributed to the observed outcome differences (favorable selection bias).
- Gresham and MacMillan (1997) observed that neither Lovaas nor McEachin provided details of the degree to which treatment procedures were implemented as planned for individual treatment therapists. The (Lovaas) 40-hour-or-more treatment protocol was supposedly responsible for dramatic behavior change, and the 10-hour-or-less treatment produced no effects. This suggests that the dramatic treatment effects for the experimental group were due primarily to the intensity of the treatment. However, without detailed information on treatment protocols, Gresham and MacMillan could not determine which aspects of the (Lovaas) treatment supposedly made it work.



Issues of Interest

- **What do we know about the short-term effects of applied behavior analysis (ABA) therapy on children?**
- **What are the long-term effects of early childhood ABA therapy?**
- **What does the literature indicate about treatment benefits and intensity and duration of ABA therapy services?**



Implications

- **By law, ABA is not a benefit under the basic TRICARE program, but only available under the ECHO as special education benefit**
- **Currently ABA is the only non-medical intervention (outside of standard occupational and speech therapy) covered by TRICARE**
- **Because TRICARE considers ABA an educational intervention it does not use the standards for effectiveness that would be used for medical interventions.**