

Effectiveness of the Nova Scotia EIBI Program Summary – June 2008

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The Government of Nova Scotia introduced a new autism treatment program in December 2004, for young children diagnosed with autistic spectrum disorder. The program was developed based on Early Intensive Behavioural Intervention principles and the implementation process was launched in the spring of 2005. As this new treatment program for Nova Scotia introduced a novel clinical model of service delivery, the Department of Health initiated an independent program evaluation. The purpose of the evaluation was to determine whether the model was providing effective treatment for these Nova Scotia children. The following summary provides a brief background on autistic spectrum disorder and its treatment, a description of the unique model developed in Nova Scotia, and the treatment outcomes of the first families involved in the program.

Brief Background on Autistic Spectrum Disorder and the Traditional Treatment Model

Autistic spectrum disorder (ASD) affects how a child's social and communication abilities develop. "Spectrum" refers to the range of severity of autism symptoms, which also include unusual repetitive thinking and behaviour patterns. For example, a child with ASD may display an intense interest in one narrow topic, and only be interested in talking about or learning that topic. Individuals with ASD are generally not aware that others may not share their interest. They may also become very upset when things do not happen in the sequence they are expecting. This, in turn, can lead to severe tantrums or angry outbursts. Due to a child's communication difficulty, parents and caregivers may not be aware of what is distressing him or her. Research shows that early treatment helps young children with ASD by decreasing autism symptoms and by increasing the ability to function more appropriately in family, child care, and school and community settings.

Effective treatment methods are based on the scientific study of learning. This study of learning is called applied behavior analysis, or ABA. ABA-based treatment usually involves many hours of specialized one-to-one teaching. The goal is to build up all of the basic skills that many children with ASD do not have. The most-researched early intensive behavioural intervention (EIBI) model for autism was developed by Ivar Lovaas, a psychologist at UCLA. In university studies that use the UCLA-model EIBI, about half of the children with ASD show large improvements. However, children may have a hard time using the skills they have learned in their everyday lives. For the rest of the children, gains are more modest. It can be difficult to start these intensive EIBI programs in communities, and to keep them going. For example, it is hard to find experts to ensure that the quality of treatment is high. Some studies have shown that "EIBI" programs run by private agencies actually had little or no effect on children's skills. A new ABA-based intervention model was designed to address these and other concerns.

The Unique Treatment Model Developed in Nova Scotia

The Nova Scotia Early Intensive Behavioral Intervention (NS EIBI) model was created through the partnership of Dalhousie University, the Koegel Autism Center at the University of California at Santa Barbara (UCSB), and the NS Department of Health. It uses an ABA method called Pivotal Response Treatment (PRT), developed by Drs. Robert and Lynn Koegel. PRT has a number of advantages as a basis for EIBI. It is used to teach children in their “natural environments” (that is, home, playground, preschool). PRT can be used during play and everyday activities. Studies show that PRT teaches children to communicate and interact with others. Parents can easily learn to use PRT. When PRT is used, the skills that children gain generalize to other areas, which means that these skills are shown in different situations with a variety of people. The NS EIBI model combines intervention by therapists and by parents to make treatment more intense. Parent training also helps to generalize skills, since parents and children interact in all sorts of daily activities. PRT is a well-established method for teaching children with ASD. However, it has never been used before in a community-based EIBI model. Therefore, the NS Department of Health arranged for a formal evaluation of the new program.

Summary of Evaluation Results

This evaluation focused on the outcomes for the first families who took part in the program. Between the summer of 2005 and the fall of 2007, 45 families in three areas of NS completed 12 months in the NS EIBI program. At the start, the children with ASD were between the ages of 2 and 6 years. As is usual in ASD, there was a wide range of ability among the children. Some had no speech at all; others talked a lot but did not use appropriate social language. On average, the children were about 4½ years old when they began treatment. Their overall abilities were just above the 2-year-old level.

Children’s progress was assessed in two ways. The first used standard tests of understanding and using spoken language (for example, answering questions, talking about pictures). Tests of problem solving without words (for example, solving puzzles, copying patterns) were also given. Children with ASD often show varying levels of ability in different situations. For this reason, parents also completed questionnaires and interviews about their children’s everyday skills and behaviour.

The main focus of the NS EIBI Program is on increasing children’s ability to communicate. Like in other EIBI programs, the children who started the NS EIBI Program with more skills showed the biggest improvements. However, *on average*, children in the program gained more than a year’s worth of language in 12 months. Typically developing children gain a year’s worth of language in 12 months, on average. Without treatment, these children with ASD would have been expected to develop at a slower rate. So, not only did the children in the program match the developmental rate of typically developing children, in some cases they actually surpassed it. This resulted in the children acquiring skills closer to the level of their typically developing peers. Some children learned to talk during treatment. Others’ speech became less repetitive and was used more to interact with people. For example, some children began to ask questions. It

is important to note that improvements were seen both in the children's ability to speak, and to understand what other people said (e.g., following directions).

After one year in the EIBI program, children were performing, on average, much better than expected on a standard problem solving test. Before treatment, their development was on average much *slower* than that of typical children. This makes this fast rate of learning even more impressive. During the year in the EIBI Program, half of the children with ASD developed skills (either problem solving or language) at *double* the rate expected in typical children. Improvements in children's attention, awareness, and compliance may have produced these changes. Parents commented that their children were more aware of what went on around them, played more appropriately with toys, and showed more interest in people.

There were other positive "spin off" effects. One very important result was that children's disruptive behaviour (such as aggression) decreased during treatment. Often, difficult behaviour is caused by children not being able to express what they want. Improvements in a child's ability to communicate might lead to less frustration and anger. Some parents also reported decreased severity of their children's autism symptoms (that is, repetitive behaviours, need for sameness and limited interests) after treatment.

The EIBI program also helped other family members. Many parents said that they felt less stress over their children's difficult behaviour. Parents also had more confidence in their own ability to help their children. Some parents were more able to participate in social and leisure activities, and to carry out errands with their children. Parents also talked about more positive interactions between the children with ASD and their siblings. In an anonymous survey, 95% of parents said that they would recommend the EIBI program to other parents with no or very few concerns.

Thus, in the EIBI program, the average child made very good gains in key social and communication skills. As well, children had better problem solving and fewer difficult behavioural symptoms after treatment. Children who started the program with higher levels of ability showed quicker and larger gains. Although there was a range of outcomes, all families who completed the program were helped in some way, based on testing and on parents' reports. Compared to other, more intensive, ABA-based programs, children's average improvements were similar. Broad gains were reflected in improved behaviour and more socially appropriate interests and interactions with others. The evidence so far strongly supports the effectiveness of the NS EIBI model for young children with ASD.

These evaluation results are part of ongoing nationally-funded research being conducted by Dr. Isabel Smith and others. For more information on this please contact 424-5650.