



**The Denver Model: An Integrated Approach to Intervention  
for Young Children with Autism**

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**A Guideline for Parents**

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## **Introduction to the Denver Model of Intensive Therapy for Young Children with Autism**

The main goals of treatment for young children in the Denver Model are: (1) bringing the child into coordinated, interactive social relations for most of their waking hours, so that imitation and both symbolic and interpersonal (nonverbal, affective, pragmatic) communication can be established and the transmission of social knowledge and social experience can occur; and (2) intensive teaching to “fill in” the learning deficits that have resulted from the child’s past lack of access to the social world, due to the effects of autism. The main tools for accomplishing these two major treatment goals include teaching imitation, developing awareness of social interactions and reciprocity, teaching the power of communication, teaching a symbolic communication system, and making the social world as understandable as the world of objects, so that the child with autism comes into the rich learning environment of social exchange. Just as the typically developing toddler and preschooler spend virtually all their waking hours engaged in the social milieu and learning from it, the young child with autism needs to be drawn back into the social milieu – a carefully prepared and planned milieu that the child can be an active participant, can understand, and to predict.

### **Definition of the Denver Model:**

Our approach to young children with autism is based on a knowledge base, described above, a set of beliefs, and a set of practices.

### **Beliefs at the Core of the Denver Model:**

- Families should be at the helm of their children’s treatment.
- Each child with autism and family is unique; thus, goals, interventions and approaches must be individualized.
- Children with autism can be very successful learners. Lack of progress generally signals problems with the design and implementation of the educational activity, rather than the inability of the child to learn.
- Autism is at its core, a social disorder; thus, treatment for children with autism must focus on the social disability. This requires that relationships be at the core of treatment of the children and their families.
- Children are members of families and communities and need to have a role in family life and family and community activities.
- Children with autism have minds, opinions, preferences, choices, feelings; they have a right to self-expression and some control of their world.
- Autism is a complex disorder affecting virtually all areas of functioning; thus, interdisciplinary professional guidance is needed to address the wide range of challenges that autism presents.
- Children with autism are capable of becoming intentional, effective, symbolic communicators and most children with autism can have useful, communicative speech when provided with appropriate interventions of sufficient intensity during the preschool years.

- Systematic instruction is a powerful tool for young children with autism. It involves concrete, well-written objectives that are accomplished through pre-planned instructional activities. Progress is measured through ongoing data collection on each targeted objective.
- Several intervention approaches for children have demonstrated their effectiveness in certain instructional methodologies; a comprehensive, contemporary treatment approach must be able to draw from all the expertise available in the field.
- Play is one of the young child's most powerful cognitive and social learning tools. Building play skills in young children with autism will maximize their capacity for independent learning.
- Successful intervention for young children with autism requires that most of their waking hours are spent in socially oriented activities. Providing more than 20 hours per week of structured intervention is necessary for optimum progress.

**Population Served:**

The Denver Model was developed to serve children with autism during the toddler and preschool years. The curriculum and teaching practices are targeted for children ages 2 through 5 with autism spectrum disorders. While this is the target population, we have also had the opportunity to serve a number of young children who were diagnosed with other kinds of developmental and behavioral disorders. We have found that this approach also benefits those children as well. Over the past 18 years of the development and implementation of the Denver Model approach, more than 100 children have received ongoing services through the center-based preschool, and many more than that have received services through our diagnostic/evaluation clinic and/or school consultation activities.

**Treatment Team:**

The Denver Model is an interdisciplinary model, in which early childhood special educators, child psychologists, speech-language pathologists, and occupational therapists have been core disciplines for every child. Since its inception, the program has been directed by Sally J. Rogers, Ph.D., a developmental psychologist. The treatment team is responsible for an individual child's intervention plan and implementation. The treatment team is headed by the parents and one professional from the core disciplines who becomes the coordinator of a child's care. After the child has received an interdisciplinary assessment, the coordinator develops the child's quarterly objectives, teaching activities, programs, and data collection system. The coordinator then sets up the curricular notebook containing the aforementioned components. In addition, the coordinator works directly with the family, the child, and the classroom staff to implement the objectives. They also provide whatever training is needed for home teaching assistants, inservices in community preschools, classroom assistants in the community and monitors the child's progress through bi-weekly or monthly team meetings or "clinics" with all intervention providers. The coordinator observes and fine tunes the intervention being implemented in the three main settings, reviews data and puts new objectives in place at the "clinic" or team meetings, helps problem-solve, and insures that the intervention is proceeding appropriately and the child is progressing as rapidly as possible.

Other team members support the head of the team with disciplinary expertise in other areas. These professionals have varying roles on a child's team. They may act as consultants, therapists, or evaluators. Their roles may well change over time, as the child's needs change. They help the team leaders update treatment objectives and plan and evaluate the course of

treatment. In the Denver Model approach, the head of the team functions as a generalist, attending to all aspects of the child's development, seeking disciplinary help as needed, but carrying responsibility for the child's treatment and progress by orchestrating the various aspects of the child's treatment. Parents and the head of the team share the responsibilities for all aspects of the team functioning.

### **Staff Training:**

Parents and home teaching assistants are trained in teaching techniques and in delivery of the quarterly objectives by the main coordinator, who combines both didactic teaching, role playing, and actual work with the child, through the use of modeling and by practice and correction of the trainees. The training team is observed at regular intervals by the main coordinator, who meets with the whole team every 2 to 4 weeks for a 1½ -2 hour clinic. In the clinic, each person takes a turn teaching the child and the main coordinator provides feedback and training to refine the teaching skills of each team member as well as the delivery of the curriculum. In community preschools, the main coordinator provides ongoing consultation to the teaching team, including inservice training and ongoing consultation (every 2-4 weeks). Through ongoing contacts, various aspects of the Denver Model are incorporated into the established classroom routine.

### **The Inclusive, Community-Based Model:**

Interventions through the Denver Model involve three teaching settings: teaching within daily family routines, daily inclusive group preschool instruction, and 1:1 teaching. The amount of instruction delivered in each of these three settings depends on the child's learning needs and learning style. Children with autism appear to need a significant number of hours per week of structured teaching in order to progress well. Instructional objectives are systematically taught in each of these settings. We believe that children need to receive more than 20 hours per week of planned, systematic instruction focused on a concrete set of short term objectives, taught across these three teaching settings.

**Teaching Within Family Routines:** each individual family determines how a child's current treatment objectives will be incorporated into family routines. Activities like meals, bathing, playtime, chores, and family outlines are core learning experiences. Children with autism need to become active members with valued roles in their families' routines.

**Teaching Within Inclusive Preschool Settings:** Inclusive group preschools provide important learning situations that cannot be duplicated elsewhere. Young children with typical development have social abilities that can scaffold interactions involving peers with autism. Daily preschool is a crucial part of children's treatment once they are three years old. However, children with autism need very carefully orchestrated teaching experiences and routines in order to benefit from group preschool and to be able to generalize what they have learned at home and through direct instruction. Careful planning and coordination across all treatment providers and family members is necessary to realize the benefits of preschool. Progress in preschool is reflected through systematic implementation of short-term objectives and ongoing evaluation through performance data.

**Intensive 1:1 Teaching:** We have found that children with autism generally progress more rapidly when they receive carefully designed regular 1:1 teaching from adults. The kind of individual treatment may vary widely for different children or for the same child at different points in development. For some children, several hours every day of 1:1 intensive, highly

structured instruction is necessary for them to develop to their fullest capacity. For children whose development is less severely affected, the use of other kinds of teaching settings may be the best supplement to daily preschool: speech-language therapy, regular play groups with typical peers, music, dance, art, gym, or science classes for preschoolers. By embedding carefully designed learning objectives and direct instruction into these typical activities, such normalized community-based group activities became additional focused sources of intervention for the child with autism. Some children can learn effectively in carefully structured small group situations, but need individual instruction for motor problems, speech dyspraxia, and play development. The type and amount of individual teaching will vary from child to child and for the same child at different developmental points, but the intervention goal is to fill the day for each young child with autism with carefully planned and delivered interventions that promote social and communicative development and to address the individualized needs of each child.

### **Main Aspects of the Intervention Approach**

**Design and Implementation of the Intervention Plan:** The intervention plan and curriculum for each young child with autism needs to be individually constructed. Children receiving Denver Model treatment have quarterly objectives that are very specific, cover all affected areas of development, including play, social relationships, and family routines. The objectives are designed to drive the child's treatment across all settings and across various people. The team leader and the parents formulate this plan with input from the interdisciplinary team that supports the child's care. Quarterly objectives are written and teaching plans and activities are developed for each of the teaching settings. This constitutes the child's curriculum. The Child's curriculum is packaged in a notebook that contains goals/objectives, instructional plans with specific activities, and data collection systems. Various objectives and teaching activities are assigned to each of the treatment settings (e.g., preschool class, intensive teaching, or home teaching routines). The curriculum is then implemented across settings and monitored frequently with progress data gathered and analyzed throughout the teaching quarter. Progress is reviewed at bi-weekly "clinics" or team meetings and adjustments are made as needed to assure progress. The objectives and teaching plan drive all of the child's instruction in each setting. This allows for maximum generalization and practice.

**Emphasis on Relationships, Share Control, and Positive Emotion:** Children learn from people with whom they have positive emotional relationships. Autism particularly affects children's ability to engage in social relationships. In the Denver Model, teaching is embedded within positive social relationships between adults and children with autism. Fostering warm, affectionate and playful relationships is part of day to day, moment to moment treatment. Development and maintenance of positive affect during teaching is a core part of the model ("find the smile").

### **Content Areas:**

Six content areas are addressed in each child's individualized curriculum: communication, social interactions, play skills, fine and gross motor development, cognition, and personal independence, and participation in family life routines. A developmental orientation dominates the initial approach to choosing appropriate objectives and learning activities. However, since children are in inclusive settings, they need to have the skills that their age-mate peers have in

order to gain the most from peer encounters. Thus, chronologically important skills are also stressed. A task analysis is used to break down skills into small, easily mastered components with shaping and chaining used to develop complex skill sequences. Using age appropriate materials is stressed. Denver Model interventionists must be quite familiar in a very wide range of intervention techniques ranging across theoretical orientations and educational practices in order to maximize the learning rate and repertoire of each individual child.

**Communication:** Communication and imitation are the means by which people carry out social relationships to be an active participant in their culture and to accumulate social knowledge to the next generation. There is nothing that is more important for a young child with autism than the development of intentional, spontaneous communication. All children need a useful communication system and this need dominates treatment. The Denver Model uses a multifaceted approach to the development of communication that includes four separate teaching strands, each with its own sequential curriculum that begins in the first treatment session and permeates all areas of the child's treatment. These four areas of emphasis include:

- 1) Teaching the child to use nonverbal communicative gestures
- 2) Teaching motor imitation
- 3) Teaching the meaning and importance of communication
- 4) Teaching symbolic representations

Major emphasis is also placed in engineering the environment for the facilitation of communication. In order for communication to take place, there must be a need to communicate.

**Play:** The Denver Model began with a focus on developing play skills. Play of all kinds including: social, physical, constructive, symbolic, and independent is built into the child's curriculum because of the crucial role it plays in normal development. Children with autism cannot benefit maximally from interactions with other children if they cannot engage in the core social and learning play activities that preschoolers use. Age-appropriate play skills are directly taught in individual teaching and directly guided in inclusive preschool experiences. Besides the inherent developmental value of play skills, the ability to engage in risk of social isolation.

**Sensory Activities:** In the Denver Model, the child's sensory system is viewed as a crucial regulator of attention, arousal, and affect. Sensory activities are a primary means to optimize attention and positive affect in order to facilitate learning. Sensory-based activities are included in several ways: 1) through sensory-social dyadic routines and 2) through planned group sensory activities.

**Personal Independence and Participation in Family Routines:** In the Denver Model, child independence is highly valued. Skill acquisition in this area is developed by carrying out routines of daily living, fostering independent play and increasing the participation in independent, goal-directed tasks such as chores that contribute to family life. This is often a potential area of strength for persons with autism and by developing these skills as fully as possible, it allows the individual with autism to demonstrate their competence. Visual strategies are used as needed to scaffold these activities and maximize independent functioning. These objectives are primary targets for structured intentions carried out in home routines, but they are actively taught in each of the three treatment settings.

**Social Skills:** The ability to initiate, maintain, and appropriately terminate social interactions and to engage in a wide range of social activities is crucial for the interpersonal and communicative development of young children with autism. Social skills are carefully taught in the context of natural social exchanges, sensory social activities, group activities at home/school, and dyadic interactions that occur in all life routines. The entire communication curriculum is by

nature a social curriculum as well. By teaching a combination of imitation skills, play skills, and nonverbal/verbal communicative behaviors across settings and people through the use of structured teaching and family life routines, the child can have the opportunity to generalize skills across activities, environments, and people.

**Motor Skills:** The Denver Model understands that deficits in motor development, motor sequencing, and motor planning (dyspraxia) are often present in autism and can interfere greatly with social exchanges, play, independent daily living skills, and participation in preschool. Interventions in this area are aimed at functional skill development for play and learning. Motor skill development is taught through 1:1 instruction as well as carefully planned classroom activities, via systematic instruction with a variety of typical preschool activities with toy/activity adaptation as needed. Gross motor play is taught as part of play and leisure skill activities, which could involve ball play (catching, throwing, kicking), riding a tricycle, effectively using playground equipment, and engaging in preschool movement games.

Hand development is a particular focus of intervention across the preschool years because it forms the foundation for dressing skills, handwriting, and other fine motor tasks, which frequently pose a constant challenge for these children. Other contributing factors to difficulty children with autism face with fine motor development include poor muscle tone and praxis as well as the lack of practice over the years. Initially, cause-effect and one-step action toys are used to build hand and finger manipulation, hand strength, bilateral coordination and purposeful play. As the hands are developing through a developmental motor sequence, tool use is incorporated in toy play and eventually into writing, art activities, home activities, dressing skills, and other preschool activities.

### **Typical Daily Schedules of Intervention:**

For a child in a community-based preschool program, a typical schedule might involve the following:

7:30-8:30 am – Home dressing and mealtime programs, including working on communication

9:00-12:00 - Inclusive preschool intervention

12:00-1:30 – Mealtime programs, hygiene programs

1:30-4:30 – 1:1 structured teaching programs

4:30-5:30 – Play indoors and outdoors (gross motor objectives, independent play, social communication objectives), outings, and errands with the family

5:30-7:00 – Chores, mealtime program, communication programs

7:00-8:00 – Play, dressing, bath, and toileting programs

8:00—Bedtime, book routines

Weekly intervention hours across the entire week include approximately 12 hours of preschool, 15 hours of structure one to one teaching in addition to school, and 7-14 hours of structured home routines for a total of 34-41 hours per week of structured and preplanned teaching.

### **Behavior Management:**

The focus of the Denver Model is on optimizing relationships in a variety of environments and teaching new, adaptive skills that allow children great control, autonomy, competence, and personal satisfaction within their social experiences. By increasing positive interactions among child and family members through the use of functional analysis, communication training, structured teaching of alternative, more conventional behaviors,

redirection, and adding structure and visual cues to the physical environment, children with autism can be equipped with new behavioral strategies to decreasing unwanted or unacceptable behavior.

### **Role of Families:**

Families are at the helm of their child's treatment. The family's values, preferences, goals, and dreams guide their child's treatment plan. Parents are the primary teachers of all young children; thus, parental teaching is crucial to the child's progress. However, autism is a complex disorder and parents may need guidance, support, and help in various aspects of designing and carrying out treatment for their child.

Parent and family involvement is an essential component to Denver Model intervention. Beginning with the diagnostic evaluation, parents are encouraged to observe and actively participate in the assessment process by sharing background information and developmental information with the team members in order to provide the assessment team with accurate information about their child's developmental progression. Home visits are scheduled as needed and have been found to be quite helpful in providing additional information that is both useful diagnostically as well as instrumental in planning treatment interventions. Focused teaching techniques are typically demonstrated in our first contacts (i.e., use of a visual schedule, 1:1 teaching strategies, use of positive behavioral supports). In this way, parents have the opportunity to see the efficacy of these approaches and the learning capacity of their children from their very initial contacts.

### **Funding for Denver Model Treatment:**

Using existing preschool classrooms and school staff supported by the school districts in addition to providing the majority of the additional teaching hours through the use of persons with bachelors level education and parents saves tremendously in professional fees as does the use of the generalist model. Once a team is trained, the coordinator's time averages one hour per week of professional fees (sometimes reimbursable by third party payments such as Medicaid or private insurance), with another 15 hours per week provided by bachelor level people being paid \$10-\$15 per hour, generally from a combination of family funds and education or community funding. Consultations from other professionals on the team are likewise reimbursable by third party sources. The initial costs of setting up and training a team are challenging to many families, and unfortunately not usually reimbursable by third part payers. At this point, the funding of each child's program is individually determined since Medicaid funds are generally not available in Colorado for home teachers at this time. Helping families locate funding and working with community resources to make more funds available for this kind of intensive approach to early autism are crucial activities for our team.

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