Early Intervention Colorado Autism Guidelines for Infants and Toddlers

Early Intervention Colorado
for Infants, Toddlers & Families

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Colorado Department of Human Services
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Colorado Department of Human Services Division for Developmental Disabilities

In Collaboration with
The University of Colorado Denver
School of Education and Human Development
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Preface

In July 2009, the Colorado Department of Human Services, Division for Developmental Disabilities, with funding from the American Recovery and Reinvestment Act of 2009, began collaborating with the University of Colorado, School of Education and Human Development to develop the *Early Intervention Colorado Autism Guidelines for Infants and Toddlers.* The purpose of these *Guidelines* is to ensure that infants and toddlers, birth through two years of age,who have a diagnosis of, or characteristics of Autism Spectrum Disorders (ASD) receive early intervention services based on their individualized identified need, and not on a prescriptive curriculum or treatment model.

The *Guidelines* document is also intended to assist local early intervention programs to provide early intervention services that are derived from evidence-based practices, published research and early childhood clinical judgment that will increase the awareness and knowledge of families, providers, and early intervention administrators.

The content of the *Guidelines* is compiled from a review of research-based programs and models, as well as state-of-the-art information from experts in the field of Autism Spectrum Disorders, and work with family members who have infants and toddlers with ASD. The *Guidelines* approach early intervention service decisions consistent with the Individuals with Disabilities Education Act of 2004 (IDEA) that mandates that appropriate services be based on scientifically based research, are available statewide to all infants and toddlers, and meet the individualized needs of the eligible child and family.

The *Guidelines* are organized in different sections to address the various target audiences of this document. While anyone who has an interest in the provision of or receipt of early intervention services for infants and toddlers with ASD will benefit from reading the entire document, the “Guiding Principles” section is essential reading for all—administrators, policy makers, providers, families, and advocates. Other sections of the *Guidelines* may be of more or less utility to various readers. For example, all early intervention providers working with infants and toddlers with ASD and their families should be familiar with and directly incorporate into their practice the strategies suggested in the “Designing Individualized Family Service Plans (IFSP)” section. Similarly, teams of providers and program administrators may find the “Tiered Model for Thinking About Specific Needed Services” section to be useful in the overall design of systems and the allocation of resources. Families and providers are always keenly concerned about the use of specific practices with the best chance of producing desired outcomes. These readers may well find particularly valuable information in the “Evidence-Based Practices and Measuring Outcomes” section.

Introduction

The arrival of a new baby brings joy and happiness to families. This new beginning is met with anticipation and the desire to love and nurture the new family member. Most parents follow their child's developmental milestones very closely. They watch and observe, compare achievements to that of others the same age, read informational books, search the internet, and ask questions of their primary care physician, friends, childcare providers, or anyone who may offer some reassurance and insight on their child's development.

Despite extensive information available to parents about early childhood development, there are times a family is faced with puzzling questions about their child's development. They may wonder why their child is not babbling by 12 months of age, or why he or she does not seem to relate to other children during story time at the library. What about those screaming episodes every time mom tries to comfort? When a parent or referral source expresses concerns about a child's language and communication, social, and behavioral development, it merits deeper questioning to analyze the root of these issues and explore supports and services that can address these concerns.

Autism Spectrum Disorders (ASD) are neurological, pervasive developmental disorders characterized by patterns of delay and difference in the development of communication, social, and behavioral skills (Volkmar, 1999). The onset of these conditions generally takes place in the first years of life, and these conditions may manifest in varying degrees both across and within individuals. ASD affects individuals of all socioeconomic levels and different cultures (Autism Society of America, 1990; Scott, Clark, & Brady, 2000). In the 1990s, it was believed that ASD affected one out of every 250 individuals (Brison, Clark, & Smith, 1988; Ehlers & Gillberg, 1993; Sugiyama & Partington, 1998). More recent findings reflect an increase in prevalence and it is now believed that one out of every 150 individuals could be diagnosed within the autism spectrum (National Autism Center's National Standards Project Report, 2009).

A diverse collection of behavioral patterns are exhibited by children with ASD. These behavioral patterns are observed across multiple developmental areas and are highly distinctive (Volkmar, 1999). This diversity in the expression of ASD is what presents the greatest challenge for professionals and parents looking for the most appropriate early intervention approaches. Each child requires an individually tailored program of services in which the most appropriate collection of services is not always clear. The child's lack of specific social communication skills often hinders the child in expressing wants and needs, regulating the actions of others, and engaging in reciprocal social interactions. These deficits in particular result in the need for careful teaching strategies to facilitate learning in young children with ASD. Early intervention services are very important for enhancing the development of infants and toddlers with disabilities, and they are especially crucial in determining the future language, social and behavioral outcomes of very young children with ASD (National Research Council, 2001).

The *Early Intervention Colorado Autism Guidelines for Infants and Toddlers* offer a general orientation to the design and delivery of high quality services to infants and toddlers with ASD who are receiving early intervention services in Colorado. The document is divided into three major sections. First, the reader will find a set of twelve Guiding Principles that outline Colorado's general guidance around the development, implementation and monitoring of early intervention services for infants and toddlers with ASD. The next major section provides more detailed information and guidance around key practice issues for all providers and recipients of early intervention services including:

- Strategies For Designing Individualized Family Service Plans (IFSPs)
- A Tiered Model For Thinking About Specific Needed Early Intervention Services
- Implications for Implementation

The final section provides detailed information on the Established Interventions for individuals with ASD, case studies, strategies for monitoring progress and information about using data.

Guiding Principles

The crafting of this set of guidelines has been influenced deeply by a set of principles that reflect both the science of early intervention as well as a core group of values. These principles are:

1. Services must be individualized for each child and family.
2. Family involvement and participation is critical.
3. Early delivery of intervention must be encouraged.
4. Families have a right to evidence-based practices.
5. Intervention is based on an individualized developmental curriculum designed to address the specialized needs of the infant or toddler with Autism Spectrum Disorders.
6. Intervention is planned and systematic.
7. Infants and toddlers with Autism Spectrum Disorders should have regular and deliberate exposure to typically developing peers.
8. Challenging behaviors are addressed using positive behavioral interventions and supports.
9. Intervention should focus on developing communication skills.
10. The development of social relationships is integral to successful outcomes.
11. Getting to quality outcomes is not just about hours of direct services.
12. The transition from the early intervention program to preschool special education and related services should be well planned.

Each principle is described in detail below.

■ Principle 1:
Services must be individualized for each child and family.

"Individualization" means that each child's and family's services are based on that child's needs, strengths and interests and the family's concerns, priorities and resources. This is different for each child and family because each child and family is unique and has different needs and values. The development of the intervention plan, known as the Individualized Family Service Plan (IFSP), and ongoing changes in the plan are done with the family. Families have a decision-making role as members of the IFSP team. The team determines who will be involved in the program, when services will take place and what will be the focus of the services. Families determine how they will be involved in implementing their child's IFSP. Even though the intervention may follow a specific curriculum, the infusion of intervention into daily activities and routines must be customized for each family. Therefore, it is essential that the IFSP be sensitive to and respectful of the enormous diversity in family life circumstances that impact family member's participation in intervention. The life circumstances include, but are not limited to: family structure, income stability, informal supports, coordination with other relevant services, etc.

■ Principle 2:
Family involvement and participation is critical.

A goal of early intervention services is to help families meet the developmental needs of their infants and toddlers. Families are the first and most important teachers for their children. They are the constant in their children's lives. Infants and toddlers learn as they experience life with their families. Service systems and personnel change over time, but families maintain the continuity from day-to-day and year-to-year. Families become lifelong advocates for their children.

Families need to be actively involved in their children's program, at a minimum, in the following ways:

1. Planning and helping to decide what services their children will receive;
2. Instructing and assisting with activities of daily living and developing strategies for addressing the needs of their children, and
3. Evaluating the progress of their children.

Relationships between families and professionals should reflect a respectful reciprocity where both parties learn from each other. Family members are not expected to be primarily responsible for delivering the specialized services on the IFSP, however, they are absolutely necessary partners in intervention.

Principle 3:
Early delivery of intervention must be encouraged.

Empirical data support the value of early intervention (Fenske, Zalenski, Krantz & McClannahan, 1985; Harris & Handleman, 2000; Lovaas, 1987; Strain & Bovey, 2008). This makes a compelling case for practices to expedite the delivery of services under Part C of the federal Individuals with Disabilities Education Act (IDEA). Therefore, parents and providers who suspect an infant or toddler of having ASD should insist on early screening.

To address this need for early screening, the M-CHAT™ (Modified Checklist for Autism in Toddlers) was developed for very young children older than 12 months who show signs of ASD. It is designed to screen for social development, such as joint attention and pretend play, in comparison to typical infant and toddler milestones. The M-CHAT™ can be useful in narrowing down behaviors that may lead ultimately to an ASD diagnosis for infants and toddlers and can help highlight the red flags associated with ASD so that early intervention can begin as soon as the child is found eligible for services.

Families and children should not have to wait for early intervention services while waiting for a medical diagnostic evaluation. The American Academy of Pediatrics recommends referring simultaneously for a diagnostic medical evaluation and also to an early intervention program as soon as an ASD diagnosis is suspected. Even without a formal diagnosis of ASD, children may qualify for and benefit from early intervention services.

Principle 4:
Families have a right to evidence-based practices.

Part C of the IDEA mandates that states have in effect a policy that "ensures that appropriate early intervention services based on scientifically based research, to the extent practicable, are available to all infants and toddlers with disabilities and their families…" (20 U.S.C.1435(a)(2)). Families should expect that all services delivered as part of the IFSP are based upon a contemporary understanding of efficacious intervention practices as articulated by the National Autism Center's National Standards Project report (2009) and the National Professional Development Center on Autism Spectrum Disorders definition of evidence-based practices for children with ASD (2009). Moreover, families should have a right to services that address all the core deficits of ASD.

Intervention selection is complicated and should be made by a team of individuals who consider the unique needs and history of the infant or toddler with ASD along with the environments in which he or she lives. However, in all cases, IFSP teams must select established evidence-based practice (see "Evidence-Based Interventions" section, pp. 17–27) for service delivery to any infant or toddler with ASD. Established Interventions have sufficient evidence of effectiveness. The IFSP team must give serious consideration to these interventions because a) these methods have produced beneficial effects for children involved in the research studies published in the scientific literature and, b) access to methods that work can be expected to produce more positive long-term outcomes. However, it should not be assumed that these methods will universally produce favorable outcomes for all children with ASD.

In addition to relying on Established Interventions first, the judgment of professionals with expertise in working with the individual child with ASD must be taken into consideration (see "Strategies for Designing IFSPs" section, pp. 9–11). Once methods are selected, these professionals should collect data to determine if a method is effective. Professional judgment plays a particularly important role in decision-making when:

1. A method has been correctly implemented in the past and was not effective or had harmful side effects.
2. The method is contraindicated based on other information (e.g., the use of prompts for a child with a prompt dependency history).

Moreover, the values and preference of the parents or other primary caregivers play an important role in decision-making.

Finally, early intervention providers should be well positioned to correctly implement the selected intervention. Developing capacity and sustainability of an established method may take a great deal of time and effort, but all people involved in intervention to infants and toddlers with ASD should have proper training, adequate resources, and ongoing feedback

about fidelity. Capacity plays a particularly important role in decision-making when:

1. A service system has never implemented the intervention. Many evidence-based methods are very complex and require precise use of techniques that can only be developed over time.
2. A professional is considered the "local expert" for a given method but he or she actually has limited formal training in the technique.
3. A service delivery system has implemented a system for years without a process in place to ensure the intervention is being implemented correctly (with fidelity).

Principle 5:
Intervention is based on a developmental curriculum designed to address the specialized needs of the infant or toddler with Autism Spectrum Disorders.

IFSPs for infants and toddlers with ASD should be based on widely accepted principles of child development. The instructional program builds on these principles and the child's individual strengths while also addressing his or her unique needs. The curriculum for a young child with ASD needs concentrated or specialized instruction to address the areas of language, social interaction, play skills and interests. The essential areas for a specialized curriculum for an infant or toddler with ASD include:

1. Attending to and staying engaged in the environment, including people and developmentally appropriate play materials;
2. Using verbal and non-verbal communication, such as gestures, vocalizations and words;
3. Understanding and using language to communicate;
4. Playing appropriately with toys;
5. Playful interactions with others;
6. Reciprocal interactions;
7. Spontaneous interactions;
8. Making choices;
9. Following daily routines and variations in routines; and
10. Addressing atypical sensory preferences and aversions.

Principle 6:
Intervention is Planned and Systematic

Intervention is carefully planned, concentrated, and systematic. It involves assessing, planning, teaching and consistent measuring of progress with each intervention step. Each step is coordinated toward a meaningful set of outcomes or goals. The only reliable way to determine if the intervention is effective is to be systematic and to measure progress on a regular basis. It is important to note that many indicators that are easiest to measure, such as vocabulary, intelligibility of words, or duration of engagement may not be as meaningful or important to the family as the sense of the child and family's quality of life, such as reduced frequency of tantrums, ease of transition between home and other settings, or the ability of family members to spend quality time together.

Systematic instruction relies on intervention decisions that are driven by the results of data collection. Data is used to measure the change in a behavior or skill over time. For example, data may be taken on the frequency (how often) a behavior does or does not occur, the duration (how long) a behavior does or does not occur, and the independent nature of a behavior (how much support or prompting a child needs). In order to use data in reviewing the effectiveness of intervention, the following must happen:

1. An assessment is completed prior to intervention;
2. Outcomes and objectives are written in measurable and functional terms. There must be a specific description of the desired behavior;
3. Data on outcomes and objectives are taken prior to intervention and used as a baseline for intervention;
4. Steps or tasks towards outcomes are analyzed and defined;
5. Instructional strategies and supports are identified (e.g., where, when, with whom, level of support);
6. Methods for motivating or reinforcing the desired behaviors are identified;
7. Methods and timelines for measuring progress are determined;

8. Data is taken and analyzed on a routine basis; and
9. Adjustments in intervention plans are made based on analyzing progress on the IFSP outcomes.

Ongoing collaboration between the family and service providers in the analysis of data and adjustment of strategies is a key to successful teaching and learning. Continuation of ineffective strategies or relying on techniques merely because they have been shown to be effective with other children may be harmful. Many early intervention providers find that a regularly scheduled meeting of all team members (including the family) is important to review data, maintain consistency in intervention, and make timely changes in the intervention. It is also essential that services are carefully coordinated and involve the disciplines needed to address the unique needs of the child and family.

Principle 7:
Infants and toddlers with Autism Spectrum Disorders should have regular and deliberate exposure to typically developing peers.

This empirical and values based principle has, at its core, two irrefutable facts. First, children with ASD experience significant social relationship delays that represent primary diagnostic criteria (Luisell, Russo, Christian, Wilczynski, 2008; Mahoney & Perales, 2003; Strain & Schwartz, 2009). Second, by a wide margin, the most effective intervention in this domain involves teaching typically developing children to be therapeutic resources (National Autism Center, 2009; Strain & Bovey, 2008). For children ages birth through two years of age, this means involvement in preschool/childcare settings, "play dates," or planned interactions between siblings, where the early intervention provider could facilitate peer training scenarios.

Principle 8:
Challenging behaviors are addressed using positive behavioral interventions and supports (PBIS).

PBIS (Carr et al, 2002) is a set of principles that frame how to think about and respond to children and their behavior. The principles are grounded in the appreciation of each child's strengths and needs. To practice PBIS means getting to know the whole child and assuming his or her behavior has meaning and that the behavior is a form of communication. It requires recognizing that a child develops and responds best when he or she is respected and supported to enjoy relationships and make choices. Challenging behaviors displayed by a young child with ASD are complex and may create frustration and confusion for those who interact with the child. Behavior may range from aggression, tantrums, or self-injury to withdrawal or repetitive, stereotypical actions. Some of these behaviors also occur in a child who is typically developing. For an infant and toddler with ASD, behaviors can be extreme, occur more frequently, disrupt development, or contribute to high levels of stress among family members.

Before developing IFSP outcomes and strategies to address problem behavior, a thorough assessment of the behavior must take place. This assessment, which may be referred to as a "functional behavioral analysis," is completed by the appropriate members of the IFSP team and is designed to answer questions, such as "Why is the behavior happening?," "When does the behavior occur?," "What function does the behavior serve?," "Is the behavior preceded by any biological, environmental, sensory, and/or emotional conditions?" The assessment also looks at what happens after the behavior occurs, "How do people respond to the behavior?" The assessment helps the team understand how their response to the child's behavior may increase or decrease the behavior.

Once the assessment is completed, a PBIS plan is developed as part of the IFSP. The plan includes developing strategies to keep the behavior from occurring, providing the child with new skills to replace the undesirable behavior, and assisting family members or other caregivers to respond to the behavior in new ways. The ultimate goal of the plan is to help the child and family gain access to new activities and settings, have positive social interactions, develop friendships, and learn new communication skills. The result of the support should be that the child has fewer problem behaviors and more typical ways of interacting with others.

Principle 9:
Intervention should focus on developing communication skills.

The importance of having an effective communication system cannot be underestimated. Communication is much broader than simply talking to others. A good communicator uses verbal, as well as non-verbal behavior to engage a listener. Infants and toddlers communicate to make their needs known long before they can talk. As young children develop, their non-verbal communication (i.e., pointing to desired object, lifting their hands to be picked up) becomes natural and is understood by others. Young children with ASD, whether verbal or non-verbal, must develop some type of communication system in order to be socially successful. They must be able to communicate in a manner that others will understand.

Some toddlers with ASD lack verbal communication while others with ASD may often have large vocabularies or imitate spoken language well, but lack joint attention skills or functional use of language to communicate. Alternative or augmentative communication systems are one way to assist a toddler who has limited verbal language. The type of communication system used varies depending on the child and the activities and environments in which he or she spends time. The system may include simple gestures, sign language, objects, pictures, or an electronic communication device. The use of an alternative system does not mean that the child does not develop verbal language skills or speech. The communication system is used as an aid to improve communication and speech, increase social interactions, and provide structure to daily activities or routines. Because a child with ASD tends to have strong visual skills, he or she is often successful with picture communication systems such as the Picture Exchange Communication System (PECS) (Bondy & Frost, 1994). If a child has difficulty understanding spoken communication, pictures are often used to give more information. For example, a child may be offered a choice of what he wants to play with by showing him two pictures. The child chooses what he or she wants by pointing to the picture or handing it to the adult. The purpose of an alternative system is to expand the ways in which the child can interact with and be understood by a variety of people.

Whether a child is using an alternative communication system or not, communication interventions noted in the IFSP should focus on the development of functional communication, including receptive and expressive language skills such as getting someone's attention, requesting, commenting, pointing to objects, asking for help and greeting others appropriately.

Principle 10:
The development of social relationships is integral to successful outcomes.

In addition to difficulties with communication, infants and toddlers with ASD typically lack appropriate interaction and social skills. Intervention for a child with ASD needs to specifically address this core, defining characteristic as early as possible.

Promoting the social development of infants and toddlers with ASD must be one of the primary goals of early intervention services, as is facilitating the ability of young children with social delays to develop appropriate friendships. With early and intensive intervention, the seemingly pervasive social skill deficits of many children with ASD can be remediated (Lovaas, 1987; McGee, Daly & Jacobs, 1993; Strain, 1987). To successfully target these important skills, intervention efforts, even within early intervention, must include: a) regular access to typical peers, b) thoughtful planning of meaningful social situations embedded throughout the day, c) the use of "social" toys, d) multiple-setting opportunities (home-inclusive, community-based) to practice emerging social skills, and e) intensive data collection in order to make midcourse corrections to existing intervention plans (Strain & Danko, 1995).

Principle 11:
Getting to quality outcomes is not just about hours of direct services.

There can be no doubt that achieving quality outcomes is first and foremost on the minds of families affected by ASD. In many situations, and for many years, families ***and*** providers have assumed that getting a certain amount of hours of direct service or a certain intervention practice is the essential ingredient to achieving quality outcomes.

Regretfully, this simple and seductive formula is highly questionable and misleading.

Related to the amount of service hours, much of the focus has been on an "estimated" 25 hours per week that was part of the National Research Council's (2001) report on early treatment for ASD. Essentially what the report authors did was add up the hours delivered in eight preschool (not infant–toddler) models with varying efficacy data and then divided by the number of models to yield an average of 25 hours. The models in fact ranged in hours from 15–40 and the report clearly states that no clear outcome differences were evident across hours. As was true then, it is still the case that there are no credible studies in which the same intervention has been delivered at different levels of hours. For a variety of ethical and practical reasons, it is doubtful that such research will ever be available.

Similarly, there has been a narrow focus on delivering a singular intervention approach. Some individuals advocate for only Pivotal Response Training, or Discrete Trial Instruction, or Incidental Teaching, and so on. The problem is that these Established Interventions vary greatly in their relative efficacy for certain target behaviors. For example, Peer-Mediated Intervention has been shown to be the strongest evidence approach for target behaviors in the social domain. Incidental Teaching has been used almost exclusively with verbal language behaviors. Schedules are particularly helpful during transition times, and so on. The point is that no one approach can hope to yield the best outcomes across all the likely goals of any child or family.

If a narrow focus on hours or a narrow focus on getting a certain intervention model is not recommended, then what are the relevant factors? **There are five evidence-based factors that are suggested.**

Factor 1.

Intensity. While hours of service may not be a particularly valid measure of intensity, intensity is a highly relevant factor. The alternative view of intensity is based on several decades of research showing that the level of children's active and appropriate engagement in everyday routines is a powerful predictor of developmental growth (McWilliam, et al, 2009; Strain & Schwartz, 2009). That is, when young children are actively and appropriately engaged, one can assume that skill acquisition is occurring. Instead of asking, "How many hours of service are on the IFSP," the alternative question could be, "Are the IFSP outcomes, strategies and corresponding early intervention services sufficient to influence the child's engagement across all daily routines (dressing, eating, play, bedtime, etc.)?" Intensity with infants and toddlers must also be sensitive to the fact that essential interventions can be delivered across many routines by adult family members who have been coached by providers in specific teaching strategies. Moreover, it should also be kept in mind that infants and toddlers with ASD (and any similar age children) require adequate time during the day for rest and sleep. Very young children are simply not "developmentally available" for the same level of intensive intervention as are older children.

Factor 2.

Fidelity of intervention delivery. Selecting an "Established Intervention" does not guarantee that the infant or toddler will receive the intended approach. It is essential to ask what experience providers have with the intervention approach, do they have a protocol for judging that the intervention is correctly implemented and what are the plans if intended outcomes are not forthcoming.

Factor 3.

Social validity of goals. Social validity refers to the degree to which there is an immediate impact on the child's quality of life when a particular goal or objective has been met. For example, teaching a toddler to label colors when presented with 3x5 cards of different colors would have low social validity compared to teaching the same toddler color recognition when a peer at an art table says, "Do you want some red?" or when his or her mom says, "Want your red or blue pajamas?" In the later cases, the child's new color knowledge can directly control his or her environment and meet immediate needs. Therefore, this teaching goal would have high social validity.

Factor 4.

Comprehensiveness of intervention. One of the more clear findings from the last several decades of intervention research on children with ASD is that progress in one domain of performance has a minimal impact on other domains (Lovaas, 1987; National Research Council, 2001; Strain & Hoyson, 2001). This widely replicated finding necessitates an

approach to IFSP design that addresses ***all*** relevant domains of performance for children receiving early intervention services.

Factor 5.

Data-based decision-making. As has been emphasized elsewhere in this guidance document, a key component to effective early intervention is to install a data monitoring system and related decision-making strategies to optimize the delivery of effective services.

In considering all five factors, one might pose that the formula associated with quality outcomes is actually multiplicative. That is, the formula is as follows:

(Intensity) x (Fidelity) x (Social Validity) x (Comprehensiveness) x (Data-Based Decision-Making) = Quality Outcomes

In this formula, the fundamental message is that as any factor approaches a "zero value" then the sum or outcome will approach zero as well! The formula also suggests that for many infants and toddlers with ASD the resulting plan may well involve a large number of hours of direct service. The key difference is that the number of hours should be the product of a carefully designed IFSP and not determined arbitrarily. As mentioned earlier related to Factor 1 (Intensity), the ultimate number of hours must be sensitive to the developmental availability of infants and toddlers in general to engage in instructional episodes. Relatedly, research by Dunst and colleagues suggest that IFSPs that result in families having a narrow and sole focus on getting the maximum amount of intervention may have harmful effects on both family functioning and on ultimate child outcomes (Dunst, Trivette & Hamby, 2007).

Implementation of these guidelines will ensure that more and more infants and toddlers and their families affected by ASD will achieve the quality outcomes they desire and deserve.

■ Principle 12:
The transition from the early intervention program to preschool special education and related services should be well planned.

Toddlers with ASD often have difficulty with change, including change experienced when starting something new and different. During the transition to a school-based program at age three, there are changes in adults, children, settings, and routines. Children with ASD may be so sensitive to change as to notice differences that others do not. There are significant differences between the service delivery model used in the early intervention program and that of a program developed by a local school district for special education services. Planning and flexibility on the part of early intervention providers and preschool programs are necessary to assist families and young children with adjusting to this change.

When planning the transition from an early intervention program at age three years to a preschool educational program, the following are helpful:

1. The earliest possible referral, with parent consent, to the local school district for a preschool (Part B) evaluation;
2. The earliest possible communication, with parent consent, to the school district about the strengths and needs of the child and family;
3. Details of the early intervention service(s) that are in place and strategies that have been successful; and
4. A focus on supporting the family, as well as the child, throughout the transition process.

Unfortunately, many young children with ASD do not present their complex needs until very shortly before their third birthday. If that is the case, early intervention providers must work diligently to help parents understand the need to share information with the school district as soon as possible. Transition and transition activities should be a major focus of IFSPs for all toddlers with ASD, especially for those nearing the age of three. Similarly, cooperation between the early intervention program and the school district is essential for effective transitions. Prior to the transition conference meeting, it may be helpful to identify skills that can be introduced at home but that will be helpful in a school-based program. In addition, community resources for necessary family supports should be identified that may not be available from the school.

Detailed Guidance for Key Practice Issues

The following sections offer a wide variety of both conceptual and practical strategies that providers and families can use to help guide the development, delivery and monitoring of IFSPs for infants and toddlers with ASD.

Strategies For Designing IFSPs

The IFSP is a process that uses a written plan to: a) document current levels of development, b) identify functional learning objectives for the identified child and family, and c) specify early intervention services needed by the eligible child and family. The IFSP process is directed by and developed jointly with the family, other individuals of the family's choice, members of the assessment team, the service coordinator and appropriate early intervention service providers. While the general process for the development of an IFSP is well documented in the Early Intervention Colorado policies and procedures, as well as information for families, (see *A Family Guidebook, Guide II: The Individualized Family Service Plan and Orientation to Early Intervention Services* at **www.eicolorado.org**), the following bullets describe some key ingredients that should characterize all IFSPs:

1. Family information, including their resources, concerns and priorities for their child as identified by the parents through interviews, assessments and informal contacts with the service coordinator, early care and education staff, doctors, nurses and other family members;
2. The child's present physical, cognitive, communication, social emotional, and adaptive development levels and needs, obtained from a multidisciplinary evaluation;
3. Functional outcomes expected to be achieved for the child and family in the following six months and the strategies to meet those outcomes;
4. Specific services the child will be receiving;
5. Where the services will be provided within the child's natural environments (e.g., home, childcare). If the services will not be provided in the natural environment, the IFSP must include a statement justifying why not and strategies for moving the services into the child's natural environment;
6. When services will be scheduled and coordinated to achieve targeted outcomes;
7. Number of visits or sessions the child will receive for each service and how long each will last;
8. Whether the service will be provided one-on-one, in an inclusive community setting or through consultation with a caregiver or provider;
9. Who will pay for the services;
10. Name of the service coordinator overseeing the implementation of the IFSP;
11. Steps to be taken to support the child's transition out of the early intervention program and into another program when the time comes;
12. The IFSP may also identify other services the family needs, but are not required under Part C of IDEA;
13. The IFSP needs to be reviewed, and updated if appropriate, at least every six months and is rewritten annually;
14. The IFSP must be fully explained to the parents, and their suggestions must be considered; and
15. The parent must give written consent before services can start.

Creating an IFSP that meets the needs of infants and toddlers and families affected by ASD is, in many cases, a complex and evolving process. The available research base for early intervention service delivery to infants and toddlers with ASD is quite limited. The evidence-based practices are evolving as early intervention providers and researchers use ongoing data systems to guide the developing body of knowledge about how to determine what services, methodologies, intensities and frequencies yield meaningful behavioral change in young children under the age of three years.

In the absence of definitive research on interventions for children under age three, it is recommended that IFSP teams ask themselves the following questions to guide the IFSP planning process for infants and toddlers with ASD in order

to support the delivery of services that are individualized, evidence-based and comprehensive (this list is also provided in Appendix A for teams to use):

Question 1.
Have assessment strategies been utilized to document the child and family needs identified in the IFSP that are:

a) Specific (observable, measurable, and valued by family members)?

b) Functional (related to specific skills that help the child access everyday life)?

Question 2.
Are there evidence-based strategies in place on the IFSP that:

a) Address each area of need identified by the team?

b) Match functional outcomes that include addressing the defining characteristics of ASD (communication, social skills, and behavioral concerns)?

c) Specifically address the child and family being successful with daily routines (e.g., dressing, feeding, bedtime, community outings, etc.)?

d) Include strategies to equip family members with the information and skills needed to provide consistency in intervention when early intervention providers are not present?

Question 3.
Has the IFSP team carefully considered the following questions, taking into account the child's developmental availability for intervention and the family's dynamics and available resources:

a) What early intervention services are needed to implement the evidence-based practices?

b) Who will deliver the services?

c) Where the services will be provided?

d) When and how frequently the services will occur?

e) What available funding sources will be accessed?

Question 4.
Are the proposed providers fluent with the evidence-based practices to be delivered? If not, what plans are in place to provide training, supervision or coaching for those providers?

Question 5.
Is there a plan in place to use a primary provider service model or, where multiple providers are seeing the child, a plan to meet frequently to communicate, plan logically consistent services and review progress?

Question 6.
Do the planned strategies include ongoing data collection (see section on "Monitoring Progress" pp. 34–36) and clear decision-making guidelines regarding the continuation or modification of the plan that results in progress for meeting child and family outcomes?

Together, the practice principles discussed in the previous section with the straightforward answers to these questions will help to ensure that IFSPs are sufficiently comprehensive, designed to produce functional outcomes in essential real world settings, are utilizing evidence-based practices, and are delivered in a competent, coordinated and data-based fashion. In order to maximize the child's skill generalization across persons, settings and time, it is essential to first consider the child's planned learning opportunities delivered by adult family members and/or adults in other inclusive community settings prior to determining the number of direct service hours on the IFSP.

For children with ASD, we suggest the use of two tools to help parents identify and communicate the current levels of functioning for their children during everyday experiences at home and in the community. One example is the *About Our Child* assessment tool, (Strain, 2002) (see "Appendix B") that aids parents or other caregivers in identifying skills their children currently demonstrate in common everyday activities and routines. Additionally, the tool helps to identify skills that parents would like their children to learn in these areas. The *About Our Child* document starts by asking parents or other caregivers to list what the child can do in the following areas:

a) Play—Skills such as appropriate toy play, sharing, taking turns, playing by themselves (independence) and playing with other children.

b) Language—Includes skills such as communicating wants and needs, following directions, listening skills, understanding concepts (e.g., in, on, up, etc.).

c) Adaptive—Skills such as dressing, hand washing and toileting.

d) Meal Time—Skills such as eating with utensils, eating a variety of foods, using a cup and sitting at the table for meals.

e) Bath Time—Skills such as sitting in the tub, washing body parts, brushing teeth, combing hair.

f) Cognitive—Includes skills such as understanding simple stories, identifying pictures of objects, letters and numbers, shapes, colors, matching and sorting.

g) Motor—Covers gross motor skills like running and jumping, rolling, catching and throwing a ball and fine motor skills including opening containers, turning door knobs, holding crayons and markers, using scissors and playing with material like play dough.

h) Community Activities—Skills such as sitting in a cart at the grocery store, riding in a stroller, playing at a playground and riding in the car.

i) Behavior—Behaviors that interfere with learning, that the parents would like their child to do less often, are aggressive, self injurious or deal with sensory sensitivities.

After parents have a chance to list the skills the child demonstrates across these areas they are asked to list new skills they would like their child to learn in each of these areas. Because parents spend time with their child doing these things on a daily basis it can provide assessment teams valuable information regarding the child's functional skill set throughout the day which can be used alongside any additional formal or informal assessments the team has conducted. Ideas generated through the *About Our Child* can be shaped directly into goals and/or objectives on the IFSP. Moreover, the form is a good starting place for building an intervention that is contextually relevant to the everyday activities that the family experiences. The form may be completed by the parents or other caregivers themselves or the service coordinator or provider may gather this information through an interview process with the family.

A second recommended tool to gather family information is through the use of the *Routines-Based Interview(RBI)* (McWilliam, 1992, 2005, 2008). The RBI is a part of a functional intervention planning process and helps determine what skills or behaviors a child must learn to be successful in daily routines. This protocol is an excellent supplement to *About Our Child* as it more directly pinpoints the daily routines that will serve as the context for service delivery. Further description of the RBI can be found at **www.siskin.org/www/docs/112.190**.

A Tiered Model For Thinking About Specific Needed Early Intervention Services

This section of guidance provides the reader with a general approach for building a set of IFSP services based on a thorough review of needs and preferences. One of the great challenges in the early intervention field is the brief time period available for the delivery of services to infants and toddlers with ASD. Even in the best case, it is likely that IFSPs will be in place for no more than 18 months, and many will be in place for much shorter periods of time. In such a "time-critical" circumstance, it is essential that services are optimized to yield the most functional and powerful outcomes in a context where public resources are scarce. It is in this complex context that the following model is offered as a ***general guide*** for conceptualizing and planning early intervention services.

The tiered model being advanced for infants and toddlers with ASD is based on the three-level model of prevention that has been increasingly common in many arenas of social services, including public health and education (e.g., Fox, Dunlap, Hemmeter, Joseph, & Strain, 2003; Simeonsson, 1991; Sugai et al., 2000; Walker et al., 1996). The model begins by defining target behaviors in need of prevention, such as social isolation, destructive/disruptive behaviors by infants and toddlers with ASD, or high levels of parental stress. Strategies intended to prevent the occurrence or further development of the target behaviors are then categorized along a hierarchy related to the proportion of the population for whom the strategy would be pertinent, the intensity of the strategy and in terms of the stage of the target behavior's development.

Level 1 Strategies:

Building Positive Relationships, Supportive Environments, and Healthy Physiologies

Level 1 strategies are intended for the entire population of infants and toddlers and families

affected by ASD or challenging behaviors. The strategies are geared to an early stage of prevention and are relatively inexpensive and easy to implement. This level is referred to as primary prevention, involving universal applications. For example, a universal strategy for the prevention of disruptive behavior might include establishing a functional system of communication, especially one by which the individual can readily express wants, needs and irritants. A universal strategy to prevent parent stress that interferes with the child's development might include guided opportunities for family members to discuss issues they face with others in similar circumstances. Universal strategies for infants and toddlers with ASD would be implemented for all children and families, as early as possible. Additional examples of Level 1 strategies include building strong parent–child relationships, including a focus on joint attention, environmental organization, the use of visual schedules and ensuring sound physical health for the infant or toddler.

Level 2 Strategies:
Building Social and Communicative Competencies Inconsistent with Problem Behavior

Level 2 is referred to as secondary prevention, and is intended for young children for whom Level 1 is insufficient and who are clearly at risk for, or who are already demonstrating, early indications of the negative target behaviors. For infants and toddlers with ASD, Level 2 might include specific procedures designed to teach appropriate problem solving, self regulation and coping, and to divert them from using problem behavior. An example of a Level 2 strategy for a two year-old who has as an objective to wait for three seconds before accessing a requested item would be the use of a large size visual and auditory timer. Once the timer signals the end of a three-second interval, the mother can grant access to the requested item. This could be done during simple home routines, such as the toddler and another family member (a sibling, the father, and aunt) taking turns to request a favorite snack item and waiting for three seconds for its delivery.

Level 2 strategies to prevent parental stress might include systematic, group-based training in strategies that make daily routines more enjoyable. Level 2 strategies are more focused than Level 1, involve a smaller proportion of the population, and are less intensive and costly than Level 3 strategies. Still, for infants and toddlers with ASD, due to their substantial risk factors, it is likely that a relatively large segment of the population will require and benefit from Level 2 strategies. Level 2 strategies, to a large extent, are based in the science of Applied Behavior Analysis (ABA) (Baer, Wolf & Risley, 1968). Examples of additional Level 2 strategies include using naturalistic teaching strategies like incidental teaching, Pivotal Response Training and modeling to teach appropriate play skills, increasing engagement and motivation, using antecedent prompting to prevent challenging behaviors, discrete trial instruction and the utilization of peer-mediated interventions.

Level 3 Strategies:
Individualized Intensive Interventions

Level 3 is for infants and toddlers and their families who are already displaying the target behaviors and require relatively intensive and individualized interventions. This level is referred to as tertiary prevention, with individualized, intensive intervention procedures. Level 3 involves individualized assessment and assessment-based interventions that are relatively well-represented in the current literature on PBIS and ABA. Level 3 also assumes that providers will work, in part, with an individual infant or toddler and his or her family on a one-to-one basis. These strategies are markedly more expensive in terms of resources and time required than Levels 1 or 2. It is important to clarify that Level 3 is not just one level of intensity. It is actually a set of procedures on a continuum of intensity that is based on the extent to which challenges are severe, long-lasting, and demonstrably resistant to change. For example, if a toddler is beginning to display tantrums at home, but the tantrums are limited to one or two daily occurrences (i.e., seeking attention at mealtimes) and have not been exhibited in the community or other settings, then the procedures need not be as time consuming or especially effortful (though they may still require individualized assessment and an individualized intervention plan) (Dunlap & Fox, 1999; Strain & Schwartz, 2009). On the other hand, if a child has demonstrated severe problem behaviors for several months, and the problems have persisted in many environments despite multiple efforts at remediation, then the Level 3 process is likely to require a considerable investment of time and resources to be effective.

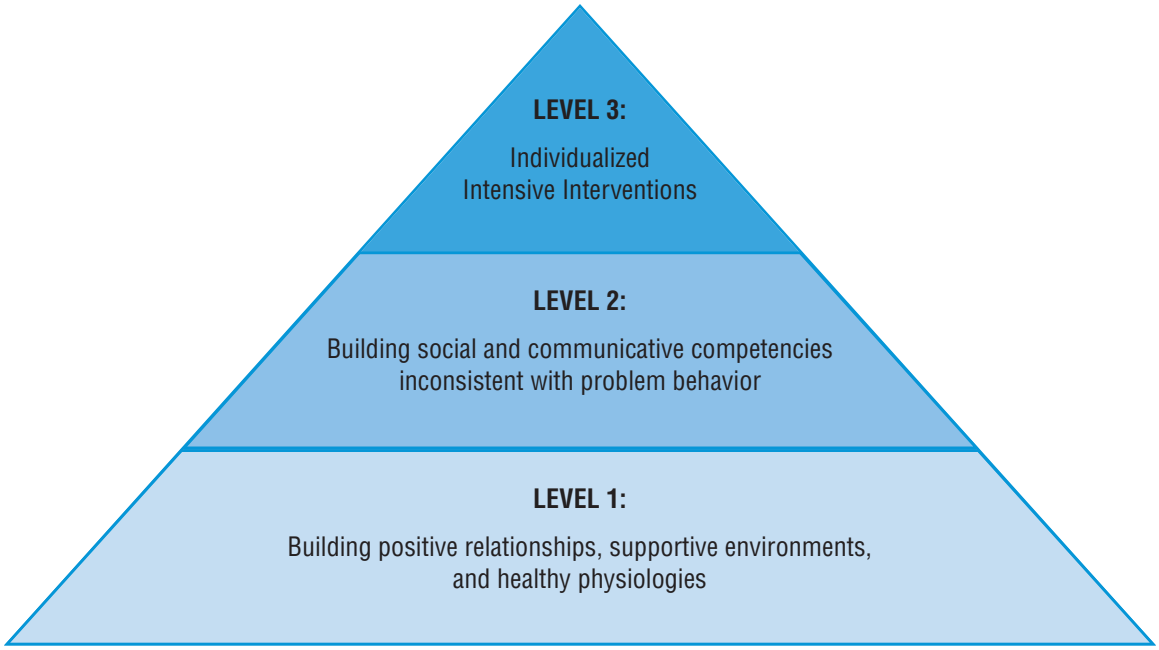


Figure 1. Tiered Intervention Model for Children with Autism Spectrum Disorders

The multi-tiered prevention model is represented in Figure 1. The bottom tier, Level 1, is intended for all infants and toddlers with ASD and other young children with severe communication and/or behavioral delays, while Levels 2 and 3 build increasingly focused and intensive supports for those infants and toddlers who demonstrate high risk factors and needs related to overall development and problem behaviors. The following descriptions provide further details on of the three levels along with examples of intervention strategies. Much greater detail on evidence-based strategies is contained in the "Evidence-Based Interventions and Measuring Outcomes" section of these guidelines.

Level 1:
Strategies for infants and toddlers with Autism Spectrum Disorders.

It is understood that infants and toddlers with ASD have more difficulties interacting with and managing their environments than young children who are typically developing. As a result, there are undoubtedly more events and circumstances in the environment (including the child's physiological environment) that can be irritants to the child, and which cannot be resolved as efficiently as with a typically developing child. Therefore, it is important to take concerted measures to reduce potential irritants and to teach the child, from a very early age, that interacting with the social environment is pleasurable and satisfying. Level 1 strategies are geared to all children with a diagnosis or likely classification of ASD and they should be implemented as soon as possible.

One category of Level 1 strategies involves the development of positive relationships between parents (and other family members and caregivers) and the infant or toddler. The intent is to teach the child that parents and caregivers can be relied on as stable, secure, and safe figures that provide nurturance, comfort, pleasure and guidance. Developing attachments is a challenge for an infant or toddler with ASD, so special efforts are required, even when signs of a child's interest are not apparent. This might require that a parent or caregiver identify the activities, objects, settings, and interactions that the child finds pleasurable and provide those events and items to the child contingent on a social interaction behavior (rather than non-contingently in a manner meant to keep a child satisfied without social interaction). For example, a tickle game might be initiated with a child

and then interrupted by the caregiver with the expectation that the child look at the adult or repeat a gesture to continue. A key objective of efforts to form positive relationships is to ensure that the interactions are pleasurable and that they are associated with the child receiving input that is consistent with needs and interests. Importantly, successful efforts to form strong, positive bonds when a child is very young result in a subsequent relationship in which an adult has considerable influence over a child's behavior, and this influence can be essential for the guidance and instruction that the adult (parent or other caregiver) must provide on an ongoing basis.

A second category of Level 1 strategies involves the provision of a safe, comprehensible, stimulating and responsive environment. As a young child with ASD often has difficulty navigating their surroundings, it is useful to be sure that clear physical cues are consistently available to help a child locate desired items and to make appropriate requests. The understanding of the environment, schedule, and requests is often enhanced through the use of visual supports or object cues that provide the child with additional information on what is expected (e.g., Dettmer, Simpson, Myles, & Ganz, 2000; Olley & Reeve, 1997). Similarly, toys and other objects of interest should be available, especially of the type that occasion social interaction. For example, books provide an excellent opportunity for turn-taking exchanges and exposure to print language. Other toys, such as balls, blocks, and art materials are easily used to support the child's motor, cognitive, and social development. In addition, the environment should be set up so that a child's initiations are met with appropriate responses, along with guidance and support to sustain interactions and help insure that the child's motivations are fulfilled. A correlate of this category is that a child with ASD should be exposed to a variety of community and social contexts, while being supported by assistance and positive guidance to insure that these experiences are enjoyable and successful for the child. The active engagement of the child within meaningful activities and social interactions is pivotal to the child's overall development and ability to navigate social environments (Kohler & Strain, 1992). Thus, the pervasive use of passive activities (e.g., watching videos, playing alone repetitively) that do not require that the child communicate or socially interact can be detrimental to the child's potential for developing a repertoire of social and communication skills.

Third, a key category of Level 1 strategies involves procedures to insure that the child's physical health is sound, that somatic complaints are understood and addressed, that the child has daily opportunities for vigorous exercise (e.g., Kern, Koegel, & Dunlap, 1984), and that the child consumes food and beverages that are nutritious. A child's physiological well being is an important factor in preventing the emergence of problem behaviors as it is likely that some problem behaviors begin as simple expressions of internal discomfort (e.g., crying elicited by a stomachache) which are then inadvertently shaped by external contingencies (e.g., provision of attention) into full-fledged problem behaviors (e.g., violent tantrums). The relationship between physiological circumstances and problem behavior has not been studied extensively, however there is no doubt the link is a powerful one and that improved medical assessment and care can be a powerful Level 1 strategy of prevention (Carr & Owen-DeSchryver, 2007).

And, finally, Level 1 also includes intentional instruction to help infants and toddlers acquire functional communication skills needed to effectively and conventionally control aspects of the environment. For example, even when a child has no other distinguishable language, parents can help a toddler with ASD to use vocalizations or gestures to request or reject objects and activities, and they can help build communication exchanges by responding to the child's nonverbal expressions as comments or requests for information. A young child's communicative competence is one of the most salient factors related to the extent that the child with ASD develop social relationships and achieve desired lifestyle outcomes (Woods & Wetherby, 2003). A focus on the development of communication and language skills should include an emphasis on the forms of communication (e.g., from using gestures to words) as well as the pragmatics of communication (e.g., the social process of communication) including initiating interactions, establishing joint attention, and maintaining a conversation. For the child with ASD, it is necessary to pursue this kind of instruction intentionally and

deliberately and, always, with awareness of what the instruction does to help the child be an active participant and, to some extent, manager of his or her surroundings.

In addition to the instruction of communication skills, the toddler with ASD most likely needs explicit instruction and support to meet other developmental milestones, including self-care skills (e.g., assisting with dressing or toileting), play skills, independence, and some motor skills (e.g., using a crayon or a spoon). The promotion of the toddler's overall skill development often requires repeated, intentional, instructional episodes and the provision of systematic prompting and encouragement to assist the child in achieving independence.

Level 2:
Strategies for infants and toddlers with Autism Spectrum Disorders.

While Level 1 strategies involve the provision of experiences and supports that are reasonable for any infant or toddler, regardless of the child's abilities and challenges (though strategies for infants and toddlers with ASD may require more intentional effort on the part of the parents or caregivers), Level 2 strategies involve specific procedures designed to enhance a young child's behavioral competencies and, indirectly, help prevent the development or display of problem behaviors. Level 2 is for infants and toddlers with ASD for whom Level 1 is insufficient and who have risk factors that indicate a need for more deliberate strategies. Such risk factors include obvious delays in language development, notable avoidance of social interactions, and a failure to acquire functional skills. These criteria suggest that a large proportion of infants and toddlers with ASD may require Level 2 supports, and that is indeed the case, though the actual proportions are unknown and must await the completion of considerable research.

Strain and Schwartz (2009) provide examples of Level 2 strategies for preventing the development of problem behaviors in the repertoires of infants and toddlers with ASD. These authors note, first of all, that a primary consideration of programs for young children with ASD is to provide an environment that is designed to prevent problem behaviors, promote engagement and participation, and facilitate successful interactions with typically developing peers. They illustrate such environments with reference to two model programs: LEAP (Learning Experiences: An Alternative Program), developed by Strain, and Project DATA, developed by Schwartz. Embedded within the programs' structure and curricula are Level 2 strategies designed to build skills and simultaneously reduce the probability of problem behaviors. One strategy is an "appropriate engagement strategy" in which the procedural focus is on increasing children's appropriate engagement with materials and activities. Although not designed explicitly as an intervention for problem behaviors, increases in engagement tend to be related to reduced occurrences of problem behavior and, thus, the engagement serves as a strategy for preventing problems without an intensive behavior intervention plan (Kohler & Strain, 1992; Dunlap & Strain, 2009). For example, for a child who wanders around the home, climbs on furniture or dumps out baskets of toys, teaching simple play skills like building with blocks, pushing cars or doing puzzles not only increases appropriate engagement, but also likely decreases the amount of time the child spends in the inappropriate behaviors listed above.

Level 2 strategies are also found in many comprehensive programs for helping young children with ASD (e.g., Koegel & Koegel, 2006; Mahoney & Perales, 2003). Such strategies are often components of the larger program that can be implemented in home and community contexts, whether or not the comprehensive program is available. For instance, Pivotal Response Treatments (PRT) (Koegel & Koegel, 2006) is a unified and comprehensive approach to intervention for children with ASD. Included within the program are numerous procedures that are useful for increasing the motivation and engagement of children with ASD, and such variables serve not only to enhance children's cognitive, communicative and social development, they also serve to prevent problem behaviors. Examples of such procedures include following the child's lead, using preferred items or activities, providing clear instructions, teaching within natural contexts, providing choices, discrete trial instruction, reinforcing the child's attempts, varying and interspersing tasks, and using naturally occurring reinforcers (Koegel & Koegel, 2006). In addition to PRT, other related evidence-based strategies include incidental teaching (McGee, Daly &

Morrier, 1999), modeling, various antecedent prompting tactics, and peer-mediated intervention (see modeling on page 22). Such procedures involve less effort and intensity than Level 3 strategies, yet they can be extremely useful for promoting communication, social and cognitive development and preventing the development of problem behaviors. Please see "Evidence-Based Interventions and Measuring Outcomes" section of these guidelines for more detailed descriptions of Level 2 interventions.

Level 3:
Strategies for infants and toddlers with Autism Spectrum Disorders.

Level 3 strategies are comprised of procedures that are most readily associated with problem behavior interventions because these are the strategies that are implemented after problem behaviors have developed to the point that they have become acknowledged obstacles to early learning and healthy social emotional development, and when they present threats to the physical and emotional safety of the infant or toddler with ASD, peers or others in the vicinity.

At one time the predominant approach for problem behaviors was based almost entirely on contingency management, in which interventions consisted of manipulations of reinforcers and punishers. While contingency management is still important, Level 3 strategies have broadened considerably over the past two decades and now include a focus on rearrangements of the antecedent environment and instruction on functional alternatives to the problem behaviors. Level 3 strategies now place a strong emphasis on prevention rather than suppression. In addition, Level 3 interventions are generally preceded by a process of functional assessment, designed to identify intervention components that address the individualized functions of the particular child's problem behaviors. The overall process of assessment and intervention is commonly referred to as "positive behavioral interventions and supports" (PBIS) (Carr et al., 2002).

Implications for Implementation

The 3-tiered model carries two major implications for practice. The first is that an early and concerted emphasis on preventive strategies has the potential to influence a child's development in the direction of more pro-social behaviors and a lower likelihood of severe problem behaviors. It is reasonable to assume that a proportion of infants and toddlers with ASD who eventually come to develop problem behaviors might be diverted from this negative trajectory if Level 1 and Level 2 strategies are implemented early enough and with sufficient intensity and consistency (Dunlap, Johnson, & Robbins, 1990; Strain & Schwartz, 2009). Therefore, a major implication of the model is that much greater consideration should be given to Level 1 strategies such as healthcare, the provision of stimulating and enjoyable environments, and supported participation in complex social contexts. Supporting families to gain knowledge and skills of Level 1 strategies is critical to the ongoing support they can provide to their children throughout their early childhood development and beyond.

A second important implication of the model is that, even for infants and toddlers with very severe disabilities and prominent risk factors (e.g., an absence of functional, conventional communication skills), a solid foundation of Level 1 and Level 2 strategies should reduce the need for more labor intensive interventions at the tertiary level. **For infants and toddlers with ASD and their families, the fundamental issue is that implementing Level 1 and Level 2 strategies does not simply lessen the need for more intensive supports, it often prevents the onset of challenging behaviors, prevents adult stress, and improves developmental functioning in key areas of communication and social skills.** The significance of this cannot be overstated. That is, even if Level 3 strategies are needed, the presence of Level 1 and Level 2 procedures will reduce the effort associated with the Level 3 interventions that are required to effectively address existing needs.

Evidence-Based Interventions and Measuring Outcomes

While the Tiered Intervention Model for Children with Autism Spectrum Disorders offers teams a way of conceptualizing services in general, this section provides an overview of very specific, evidence-based practices that can fit within the conceptual model.

There are literally hundreds of intervention methods that have been used to improve the core symptoms of ASD. Some methods are highly effective, some less so, still others are ineffective. **What seems certain is that regardless of demonstrated effectiveness, many methods are vigorously marketed to providers and families.** The guiding principle that children and families should be provided with evidence-based practices has led directly to the following set of recommendations based upon the National Autism Center's National Standards Project (NSP) (2009). Moreover, these practices are also in line with those recommended by the National Professional Development Center on ASD (2009).

The NSP, by far the most comprehensive and rigorous review of the scientific literature on children with ASD to date, was designed with three purposes in mind:

1. To identify the level of research support currently available for educational and behavioral interventions used with persons with ASD. Knowing levels of research support is an important component in selecting interventions that are appropriate for individuals on the autism spectrum.
2. To help parents, caregivers, educators, and service providers understand how to integrate critical information in making intervention decisions. Specifically, evidence-based practice involves the integration of research findings with a) professional judgment and data-based clinical decision-making, b) values and preferences of families, and c) assessing and improving the capacity of the system to implement the intervention with a high degree of accuracy.
3. To identify limitations of the existing treatment research involving persons with ASD.

Established Interventions in the National Standards Project

Details regarding the NSP methodology for identifying interventions and rating them can be found online through the National Autism Center's website at **www.nationalautismcenter.org/affiliates/**. Eleven interventions were identified as "Established" (i.e., they were established as effective) for individuals with ASD. Established Interventions are those for which several well-controlled studies showed the intervention to produce beneficial effects. There is compelling scientific evidence to show these interventions are effective; however, even among Established Interventions, universal improvements cannot be expected to occur for all individual children with ASD. The NSP also categorized other interventions as "emerging" (i.e., some tentative evidence of effectiveness) or "un-established" (i.e., no data upon which to recommend use).

The eleven Established Interventions identified by NSP include:

1. Antecedent Package (Prompting)
2. Behavior Package (Discrete Trial Training and Positive Behavioral Interventions and Supports)
3. Comprehensive Behavioral Treatment for Young Children with Autism
4. Joint Attention Intervention
5. Modeling
6. Naturalistic Teaching Strategies (e.g., Incidental Teaching)
7. Peer Training Package
8. Pivotal Response Treatments
9. Schedules
10. Self-management
11. Story-based Intervention Package

For information on other levels of effectiveness see the full NSP report at **www.nationalautismcenter.org/affiliates/model.php**.

Self-management and Story-based interventions, which rely on complex language and cognitive skills

are not included in these guidelines, as they will likely not be used for many children under the age of three years. However, given the heterogeneity of ASD, practitioners may reasonably consider these intervention methods for toddlers who are high-functioning. Comprehensive Behavioral Treatment was also excluded from the detailed interventions that follow. The literature from which this category was derived is based solely upon enrollment of children with ASD in research-based behavioral intervention programs that are not generally available. Additionally, among all these comprehensive programs there are no unique individual interventions that are not covered by the remaining discrete interventions that are recommended herein.

One "emerging" strategy is included—Augmentative and Alternative Communication. Since many children with ASD in this age range do not yet have functional speech, it is very likely that these non-verbal communication systems will be needed.

Nine Recommended Strategies for Infants and Toddlers

While the wide diversity and unique needs of infants and toddlers with ASD must always be considered, the nine recommended interventions detailed below represent a wide range of strategies sufficient to address all the core symptoms of autism in young children. Importantly, these interventions have been implemented successfully by a broad range of providers, families and in some cases, other children. The recommendation is that teams become proficient at delivering these interventions, plan on delivering these interventions first, and then examine "emerging intervention options" only after data indicate less than desired outcomes using these interventions.

The Nine Recommended Interventions: Description and Application

Below is a general description of the nine recommended interventions, their implementation for infants and toddlers with ASD and readings that offer more procedural detail. Following this general description are examples of intervention use with three case studies of infants and toddlers and their families.

1. Antecedent Package (Prompting).

Antecedent (before) prompting (cues, support, or hints) is a group of strategies in which the adult gives verbal or physical prompts to the child to help him or her engage in desired behaviors. It is important to give the correct amount of prompting to ensure a correct response, ensuring the child does not learn and practice errors. Three of these widely used strategies are most-to-least prompting, least-to-most prompting, and using time-delays during prompting.

A. Most-to-Least Prompting

This involves the adult initially using the most amount of prompting necessary for the child to perform a correct response. The prompts themselves can be full physical prompts, such as hand-on-hand guidance (such as pointing to a picture), or physically moving body parts (such as opening the kitchen cupboard). As the child demonstrates proficiency in the behavior/response, the prompts are faded and the physical guidance is reduced. For instance, instead of hand-on-hand prompting, the child may, over time, only require a light touch on the arm. Typically, most-to-least prompts begin with physical guidance, move to visual prompts, such as showing a child a picture of the kitchen cupboard as a prompt to open it, to verbal instructions, such as, "open the cupboard," to natural cues in the environment, such as the child opening the cupboard when the parent tells the child, *"breakfast time!"*

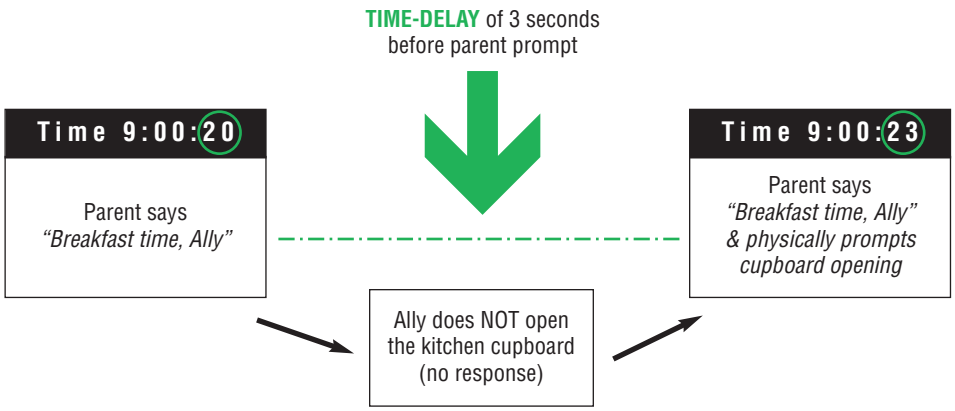
B. Least-to-Most Prompting

This procedure is the opposite of most-to-least, and begins with the adult giving the child the opportunity to respond with the least amount of prompting. The amount of prompting by the adult increases with each behavior/response that the child fails to perform or performs incorrectly. For instance, if the child does not open the kitchen cupboard three seconds after the parent says *"breakfast time!"* she can start prompting by saying *"breakfast time!"* again, and then verbally ask the child to open the cupboard. Least-to-most prompting begins with using natural environmental cues, then proceeds to using verbal instructions, possibly with an additional visual cue (picture, gesture or modeling), and then to partial physical and full physical prompting.

C. Time-Delay

Time-delays can be used as part of these antecedent prompting procedures by varying the time interval between the initial prompt for the child to give a response/behavior and the subsequent prompting given by the parent if the child does not respond correctly. See figure 2:

Figure 2



Where to Get More Information on Antecedent Package

Cooper, J. O., Heron, T. E., & Heward, W. L. (2007). *Applied Behavior Analysis*. New Jersey: Prentice Hall.

Fein, D., & Dunn, M. A. (2007). *Autism In Your Classroom.* Bethesda: Woodbine House.

Dunlap, G., Iovannone, R., Kincaid, D., Wilson, K., Christiansen, K., Strain, P., & English, C. (2010). Prevent—teach—reinforce: the school-based model of individualized positive behavior support. Baltimore: Paul Brooks.

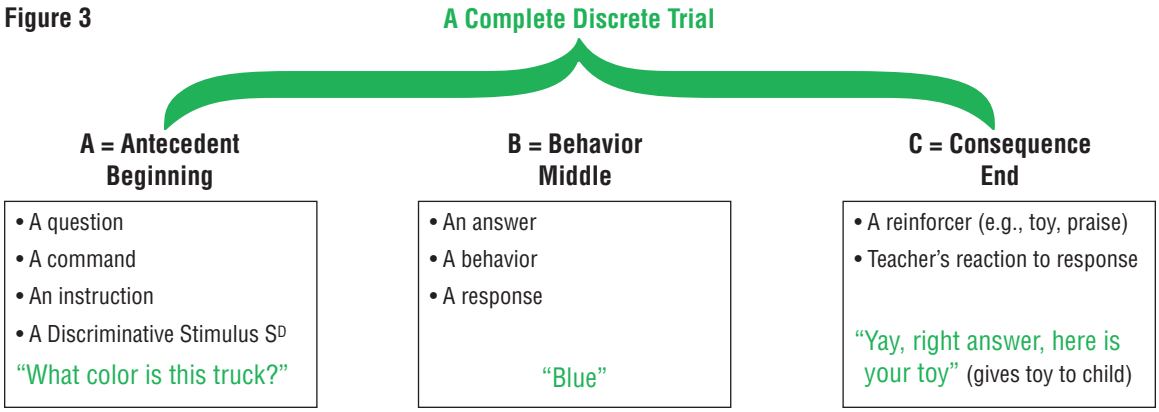
2. Behavioral Intervention Package:

A. Discrete Trial Training

Discrete Trial Training (DTT) is a structured teaching strategy that involves distinct and repetitive responses following a specific stimulus, and resulting in reinforcement. Each trial is typically defined as (A) Antecedent, (B) Behavior, and (C) Consequence, and has a definitive beginning and end, thereby, being 'discrete' and is depicted in figure 3: (Cooper, Heron, & Heward, 2007).

Key elements of using DTT to teach young children with ASD include breaking skills into small chunks (behaviors) so each chunk can be taught directly and learned to mastery before chaining the behaviors together (De Boer, 2007; Fein & Dunn, 2007). In addition, teaching typically involves the use of prompting and fading (dependent on child's needs) and there needs to be a rich supply of child-specific reinforcers given (e.g., toys, objects, games) contingent on the child's responses. Behaviors can be shaped dependent on the speed and value of the reinforcers after a response (Alberto & Troutman, 1999; Cooper et al., 2007). For instance, an easy or mastered response can be reinforced with a low-preferred reinforcer such as a "high five!" whereas a new and difficult response can be reinforced with a high-preference reinforcer such as jumping on a trampoline or swinging on a swing.

Figure 3



The prompting procedures used in DTT can be physical and/or verbal, such as holding and manipulating a child's hands to demonstrate clapping, or saying "it's red" after being shown a red car and asked "what color?" (De Boer, 2007; Fein & Dunn, 2007; Vargas, 2009). Prompting procedures are very important in DTT as the child should always be prompted to give the correct response, also known as errorless learning. Errorless learning contributes to a positive learning environment, prevents the child from performing and practicing errors, and may reduce a child's frustration (De Boer, 2007; Vargas, 2009). As DTT is highly structured and some young children with ASD may display avoidance or escape behaviors to this type of learning environment, the adult should use positive pairing, so he or she is viewed by the child as a reinforcer. Positive pairing can be achieved by engaging in preferred activities with the child or being the source of obtaining what the child wants or enjoys (reinforcer) (De Boer, 2007).

Where to Get More Information on Discrete Trial Training

Alberto, P. A., & Troutman, A. C. (1999). *Applied Behavior Analysis for Teachers*. New Jersey: Prentice Hall.

Cooper, J. O., Heron, T. E., & Heward, W. L. (2007). *Applied Behavior Analysis*. New Jersey: Prentice Hall.

De Boer, S. R. (2007). *How To Do Discrete Trial Training.* Austin, TX: PRO-ED.

Fein, D., & Dunn, M. A. (2007). *Autism In Your Classroom.* Bethesda: Woodbine House.

Vargas, J. S. (2009). *Behavior Analysis for Effective Teaching*. New York: Routledge.

B. Positive Behavioral Interventions and Supports (PBIS).

The five essential elements of PBIS are described below.

1. *Establishing a PBIS team (which may be some or all of the IFSP team members) and gaining a unified understanding of the child and an agreement on the short and long-term goals of intervention*. For Level 3 interventions, more than one person is generally required for purposes of planning, assessment and implementation. For infants and toddlers, one member of this team must be a parent, guardian or key family member, and other team members also include childcare providers, early intervention providers from a variety of disciplines, developmental intervention assistants, advocates, close friends and, as needed, administrators. It is generally a good idea to include at least one member with knowledge and experience with ABA and PBIS.

An initial responsibility of the team is to gain consensus on the child's strengths and challenges and to form agreement on immediate goals for intervention, as well as a vision for the child's accomplishments over the coming one to three years. Routines-based interviewing is a process that has proven to be very useful for achieving this kind of unified vision (McWilliam, 2009).

2. *Conducting a functional assessment of problem behavior.* The next step is to use procedures of functional assessment to gain an understanding of how the targeted problem behavior(s) are governed by events and circumstances in the environment. There are numerous books and manuals that specify the particulars of the functional assessment process (e.g., O'Neill et al., 1997), but they generally boil down to direct observational and indirect interview methods for answering core questions, such as:

a) What is the function or purpose of the problem behavior?

b) Under what specific circumstances is the problem behavior most likely to occur; and

c) Under what specific circumstances is the problem behavior least likely to occur?

Answers to these questions should help team members identify effective and efficient components for a PBIS plan. These answers, as well as information gleaned from the goal setting and person centered planning processes, are used to construct the plan. Team members provide vital input related to their willingness and ability to carry out potential intervention components. Components are generally selected from procedures that have been demonstrated previously to be effective in similar situations.

3. *Designing the PBIS Plan.* The plan often includes components from several categories of strategies. One of those strategies is antecedent manipulations that include changes in the stimuli that are found to precede or evoke problem behavior. Such stimuli can be removed or ameliorated, while stimuli associated with desirable behavior can be inserted. Teaching strategies involve identifying functional alternatives to the problem behavior and arranging for such alternatives to be systematically prompted for and

reinforced at times that problem behaviors might otherwise occur. Functional communication training is a well-established procedure for accomplishing this useful, instructional approach. For example, for a child that goes to the refrigerator or to a parent and cries when they are hungry, the child is taught a functional replacement behavior like requesting to eat by giving a picture card to the parent. Reinforcement strategies involve changes in the contingencies that govern the child's problem behavior; in particular, removing reinforcers that maintain the problem and increasing reinforcers for other behaviors. For example, using the scenario above, if the parent previously responded to the crying by giving the child something to eat, a reinforcement strategy the parent could use is to instead ignore the crying and physically redirect the child to get the picture card and give it to them. This behavior, giving the picture card to the parent, is then reinforced by the parent giving the child something to eat. The PBIS plan should also include specific instructions for the adults who will be implementing the plan, including guidance for what to do if the problem behavior occurs.

4. *Implementing the PBIS Plan*. A key aspect of implementation is incorporating procedures to help insure that the PBIS plan is implemented as intended. Intervention agents (siblings, parents, childcare provider) often benefit from scripts or other prompts to cue them about what to do and when. It is also useful to monitor implementation to be sure that procedures are executed with fidelity, which can be defined as implementing the PBIS plan or procedures exactly as intended. Then, if data indicate that anticipated improvements are not occurring, the team can analyze fidelity as one possible reason for inadequate outcomes. Strategies can be included to heighten fidelity or the PBIS plan can be adjusted to include components that will be easier to implement. For example, a child's team is using a specific prompting strategy to get the child to follow a direction. The procedure involves three basic steps: 1) giving the direction, 2) giving the direction a second time with an additional visual cue or gesture and then, if necessary, 3) giving the direction a third time while providing physical assistance to fully complete the task, and data indicate improvements are not occurring related to this behavior. The team may look more closely at each step of the procedure to see if they are being implemented correctly or if there is some variation in how the child is being prompted.

5. *Evaluating the effects of the intervention.* The document also needs to include a means for evaluating whether the plan is achieving its intended effects. Data collection should be:

a) simple, so that all relevant parties can record data without difficulty, and

b) valid, so that the data truly reflect the changes that are the purpose of the intervention.

Simple evaluation tools include rating scales to indicate how a session (e.g., a community outing, a regular home routine) rated on a five-point scale ranging from, for example, "very difficult" to "excellent." The point is that some kind of useful evaluation data needs to be collected in order for the team to know if the PBIS plan is producing benefits as expected, or if adjustments to the plan are required. Using the example above, the child's overall compliance with following directions could be rated from one to five with a "1" indicating no directions were followed to a "5" indicating all directions were followed.

The strategies described are examples of PBIS which have been demonstrated in numerous studies, literature reviews and syntheses to be effective in building desirable skills and reducing or eliminating problem behaviors (Carr et al., 1999; Dunlap & Carr, 2007). As testimony to its effectiveness, the methods and outcomes of PBIS have been described in an immense number of websites, articles, manuals, and books, and the vast majority of these resources offer information and guidance that is evidence-based, credible and useful.

Where to get more information on Positive Behavioral Interventions and Supports

Carr, E.G., & Carlson, J.I. (1993). Reduction of severe behavior problems in the community using a multicomponent treatment approach. *Journal of Applied Behavior Analysis*, 26(2), 157–172.

Dunlap, G., & Fox, L. (1999). A demonstration of behavioral support for young children with autism. *Journal of Positive Behavior Interventions, 1*(2), 77–87.

Durand, V.M., & Carr, E.G. (1991). Functional communication training to reduce challenging behavior: maintenance and application in new settings. *Journal of Applied Behavior Analysis, 24*(2), 251–264.

3. Joint Attention.

Joint attention is a strategy in which a child and a parent or another individual engage in mutual interest or show attention to the same object, activity or experience. Joint attention includes a range of behaviors such as eye gaze and gestures. The majority of infants and toddlers with ASD do not have good joint attention skills. Infants and toddlers with ASD may demonstrate some form of joint attention if they are trying to get something they want, such as a cookie, but they typically do not seek out another person for social attention. Generally, a toddler with ASD will not run up to their dad and show him a picture he or she just drew or want a hug, acts typically seen in children without ASD (Adamson & Bakeman, 1985, 1991; Adamson & Chance, 1998; Brooks & Meltzoff, 2002; Bruner, 1983; Butterworth & Jarrett, 1991; Carpenter, Nagell, & Tomasello 1998; Morales, Mundy, & Rojas, 1998; Toth, Munson, Meltzoff, & Dawson,, 2006).

Joint attention skills are very important as research has shown they are linked to positive outcomes in later communication and social skills, therefore it is important to teach joint attention skills during early intervention (Rollins, 1994: Rollins & Snow, 1998). Joint attention includes the following types of behaviors:

a) A parent and child looking at an object together,

b) A parent and child making eye contact,

c) A child pointing to an object to show their interest to his or her parent,

d) Playing with or sharing the focus on a toy together,

e) Trying to gain a child/parent's attention by "catching his or her eye" or gesturing to him or her, and

f) A child sharing facial expressions with a parent, such as smiling or winking.

Where to get more information on Joint Attention

Adamson, L., & Bakeman, R. (1991). The development of shared attention during infancy. In R. Vasta (Ed.), *Annals of child development* (Vol. 8, pp1–41). London: Jessica Kingsley Publishers, Ltd.

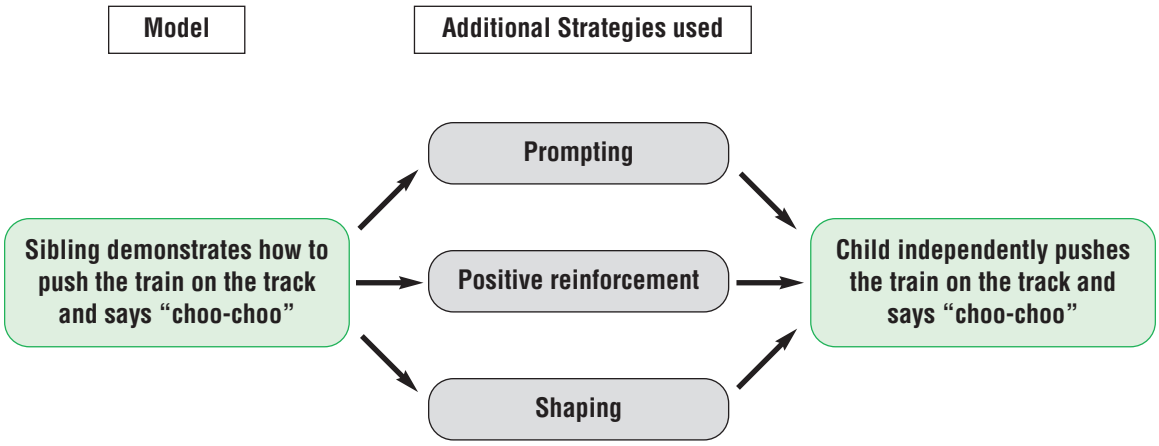
Adamson, L., & Chance, S. E. (1998). Coordinating attention to people, items, and language. In A. M. Wetherby, S. F. Warren, & J. Reichle (Eds.), *Transitions in prelinguistic communication* (Vol. 7, pp.15–37). Baltimore: Paul H. Brookes.

Rollins, P. R., & Snow, C. E. (1998). Shared attention and grammatical skills in typical children and children with autism. *Journal of Child Language, 25*, 653–673.

4. Modeling.

These interventions rely on an adult or peer providing a demonstration of the target behavior by the infant or toddler with ASD. Modeling can include simple and complex behaviors. This intervention is often combined with other strategies such as prompting and reinforcement. In figure 4, the team is using a sibling to model how to push a train (functional toy-play skill on the IFSP).

Figure 4



Where to get more information on Modeling

Bellini, S., Akullian, J., & Hopf, A. (2007). Increasing social engagement in young children with autism spectrum disorders using video self-modeling. *School Psychology Review, 36*(1), 80–90.

Hine, J.F., & Wolery, M. (2006). Using point-of-view video modeling to teach play to preschoolers with autism. *Topics in Early Childhood Special Education, 26*(2), 83–93.

LeBlanc, L.A., Coates, A.M., Daneshvar, S., Charlop-Christy, M.H., Morris, C., & Lancaster, B.M. (2003). Using video modeling and reinforcement to teach perspective-taking skills to children with autism. *Journal of Applied Behavior Analysis, 36*(2), 253–257.

5. Naturalistic Teaching Strategies.

Naturalistic teaching is a structured form of presenting learning opportunities in the child's natural environment utilizing the child's natural motivation and reinforcers, such as using a child's interest in trains to ask for and play with the train set. For children with ASD, naturalistic teaching is implemented to increase generalized language and social skills, and differs from other teaching methods as it is child-oriented rather than adult-oriented (Fenske, Krantz, & McClannahan, 2001; Hart & Risley, 1968, 1975, 1982). For instance, the child takes the lead on selecting an activity, and the adult uses this selected activity as a *'teachable moment;'* an opportunity to be intentional in working with the child on a teaching goal. Naturalistic teaching involves an intentional plan to include opportunities throughout a child's typical daily schedule. By incorporating teachable moments through the day, any activity or routine can become a teaching opportunity, such as brushing teeth, eating, playing ball, or looking at a book. The key to successful naturalistic teaching is to plan the child's goals and objectives and then identify the activities that can offer teachable moments (Fenske, et al, 2001; Hart & Risley, 1968, 1975, 1982).

Once a learning opportunity has been identified, it is important to reinforce the child's communication (attempts) and encourage him or her to elaborate on the response(s). The teaching moment should remain brief and reinforcing so the child does not avoid future interactions and all adults in the child's life should be trained to identify similar teachable moments so the child can generalize among settings, people and activities (Schreck & Foxx, 2005). If a child does not respond in a teachable moment, such as reaching for a favorite doll, the parent can implement verbal prompts, saying, "What do you want?" "What is this?" or "doll," with time-delays to allow the child to respond. Prompting within naturalistic teaching is individualized by the child's specific communication needs. An example of how naturalistic teaching in the home can be used is as follows:

> Jane knows that playing with clay is her daughter Amanda's favorite activity, so she gets down the container from the cabinet in the family room where the modeling clay is kept. Immediately, Amanda runs over to her mom and pulls at the clay box. Jane blocks Amanda's hand and looks at her expectantly for a request for the clay box. Amanda does not respond, so Jane asks, "What do you want Amanda?" and Amanda says, "Want clay." Jane then replies, "That's great asking, here is the clay box." One of Amanda's IFSP outcomes is to identify primary colors, so after Amanda has been playing with the clay for a few minutes, Jane sits next to Amanda and starts to play with a green ball of clay. Jane says, "My clay is green, I will make a tree. What color is your clay?" Amanda thinks for a moment and then replies, "yellow."

This example used a preferred activity, planned by the parent, but selected by Amanda, to teach her how to ask for items, and work on her predetermined goal of identifying colors.

Where to get more information on Naturalistic Teaching

Fenske, E. C., Krantz, P. J., & McClannahan, L. E.(2001) Incidental teaching: A non-discrete style teaching approach. In C. Maurice, G. Green, & R. M. Foxx (Eds.), *Making A Difference: Behavioral Intervention for autism* (pp.75–82). Austin, TX: PRO-ED.

McGee, G.G., Krantz, P.J., & McClannahan, L.E. (1985). The facilitative effects of incidental teaching on preposition use by autistic children. *Journal of Applied Behavior Analysis, 18*(1), 17–31.

McGee, G.G., Almeida, M.C., Sulzer-Azaroff, B., & Feldman, R.S. (1992). Promoting reciprocal interactions via peer incidental teaching. *Journal of Applied Behavior Analysis, 25*(1), 117–126.

Strain, P.S., Danko, C.D., & Kohler, F. (1995). Activity engagement and social interaction development in young children with autism: An examination of "free" intervention effects. *Journal of Emotional and Behavioral Disorders, 3*(2), 108–123.

6. Peer Training Package.

With early and intensive intervention, the seemingly pervasive social skill deficits of many children with ASD can be remediated (Lovaas, 1987; McGee et al., 1993; Strain, 1987). If there is such a thing as a "recipe for success," it must include regular access to typical peers, thoughtful planning of social situations, the use of "social" toys and multiple-setting opportunities to practice emerging social skills. The Peer Training Package involves providing instruction to typical peers to engage the targeted child in frequent and successful social response opportunities. Peers, such as siblings or other young children at a childcare or other community setting, are initially taught strategies to successfully gain the attention of the infant or toddler with ASD (the target child) followed by strategies to share materials that are highly preferred by the target child and later extend to requesting items from the target child and giving directions around play. Figure 5 describes a planned play sequence.

Where to get more information on Peer Training Package

Kohler, F.W., Strain, P.S., Hoyson, M., & Jamieson, B. (1997). Merging naturalistic teaching and peer-based strategies to address the IEP objectives of preschoolers with autism: An examination of structural and child behavior outcomes. *Focus on Autism and Other Developmental Disabilities, 12*(4), 196–206.

Odom, S.L., & Strain, P.S. (1986). A comparison of peer-initiated and teacher antecedent interventions for promoting reciprocal social interaction of autistic preschoolers. *Journal of Applied Behavior Analysis, 19*(1), 59–71.

Strain, P.S., Kerr, M.M., & Ragland, E.U. (1979). Effects of peer-mediated social initiations and prompting/reinforcement procedures on the social behavior of autistic children. *Journal of Autism and Developmental Disorders, 9*(1), 41–54.

Figure 5

Peer or Sibling: taught to engage child with ASD in typical social scenarios	Child with ASD: may need prompting to respond appropriately
"Hello, want to play kitchen?"	"Yes, play"
"It's your turn in the game" or "Whose turn?"	"My turn," or "Your turn"
"Can I share that toy please?"	"Yes" or "No" or "Soon"
"Do you want to play ball with me?"	"Play ball"

7. Pivotal Response Treatments.

Pivotal Response Training (PRT) is a teaching approach based on the premise that by providing intervention to infants and toddlers with ASD in pivotal areas, positive collateral effects will occur in related behavior. Teaching fundamental behaviors will have far-reaching effects on the child acquiring other behaviors beyond those that were taught. For instance, teaching in the area of functional communication may produce a decrease in self-injurious behavior, and teaching social skills can have collateral effects on language development.

Areas that are targeted as pivotal include:

a) **Multiple cues—**teaching responses to a variety of cues and reducing stimulus over-selectivity (in which children with ASD typically over generalize and have a small responding repertoire, such as saying "dog" to every animal they see). Although this generalization is common in all young children, for those with ASD this deficit continues whereas other infants and toddlers without ASD learn to distinguish different characteristics and adapt their response repertories.

b) **Motivation—**(measured as the child's responding) is targeted as a pivotal area as increases in motivation can lead to better social skills, higher responses in completing tasks and activities and also increase speed of responding. For instance, if Stacie is motivated to color her picture she will finish it faster than if she was unmotivated.

c) **Self-management—**teaching in the area of self-management has demonstrated greater independence outcomes as the focus of responsibility is shifted from the parent to the child. The child will learn to make choices and monitor behavior so he or she can learn to function in different environments and learn that his or her behaviors cause environmental change.

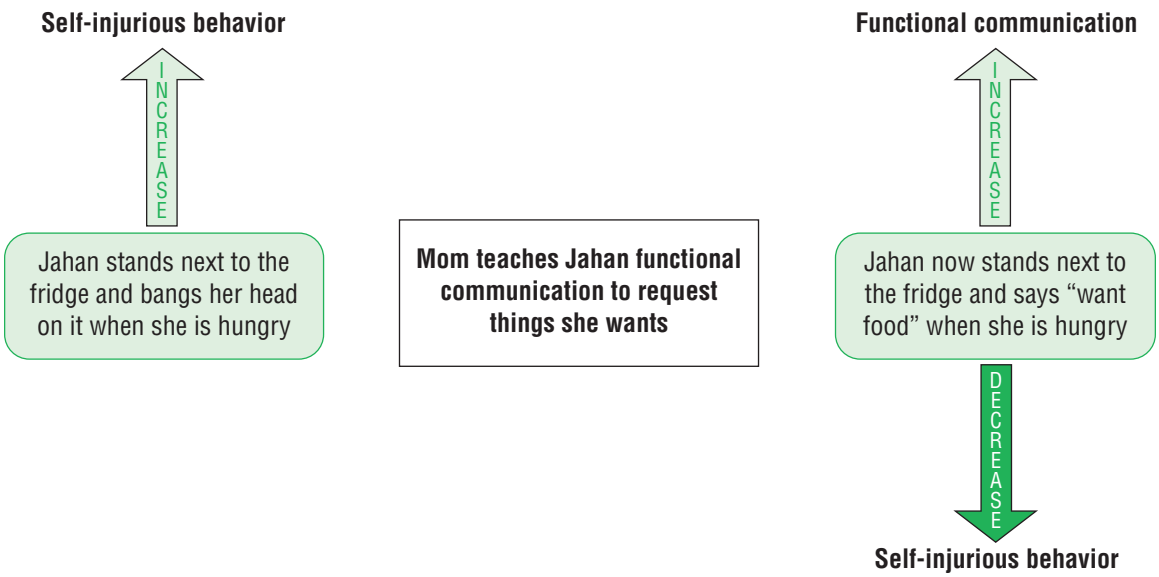
PRT involves using ABA procedures, including functional communication, shaping and chaining behaviors, reinforcement, and discrimination. Training typically occurs in the child's natural environment and often involves parents as teachers. In figure 6, Jahan's mother uses functional communication to reduce her 30 month-old daughter's self-injurious behavior.

Where to get more information on Pivotal Response Training

Carr, E. G., & Durand, V. M. (1985). Reducing behavior problems through functional communication training. *Journal of Applied Behavior Analysis, 18*, 111–126.

Koegel, L. K., Koegel, R. L., Harrower, J. K., & Carter, C. M. (1999). Pivotal response intervention I: Overview of Approach. *The Association for Persons with Severe Handicaps, 24*(3), 174–185.

Figure 6



8. Schedules (Use of Visuals).

Pictures can serve the function of visual schedules in which children are "shown" what to do, or what comes next in their day. Using visuals are very successful with children with ASD as they are generally visual learners. For an infant or toddler, these visual schedules can be adapted to simply using one or two pictures so the child knows what he or she has to do, such as holding a picture of a *car* when a car ride is the next activity (perhaps a non-preferred activity). These pictures may help to smooth transitions from one activity to the next so the child feels safe when their environment changes, as many children with ASD do not like change and find transitions very difficult. For instance, 32 month-old Lily spends several days a week at her grandmother's house while her mother is working. As a shift worker, her mom's schedule changes frequently each week, making it very important to help Lily transition from one house to the other successfully. In order to help Lily, she has two visual schedule books: one called *Home with Mom* and the other called *Home with Grandma*. Inside the books there are photographs of Lily in the car in front of each house, and lots of photographs of the different activities and tasks for her to do in each of the houses. For instance, in her book *Home with Mom*, there is a photograph of her brushing her teeth with her yellow toothbrush and sleeping in her bedroom with pink hearts on the walls, and in *Home with Grandma,* there is a photograph of her brushing her teeth with her blue toothbrush and sleeping in her bedroom with flowery curtains. Lily's mom and grandmother look at the photographs with Lily before she has to go to the other house to make sure she knows where she is going and what she is going to do when she gets there, thereby helping her to achieve smooth transitions during her busy days.

Where to get more information on Schedules

Krantz, P.J., MacDuff, M.T., & McClannahan, L.E. (1993). Programming participation in family activities for children with autism: parents' use of photographic activity schedules. *Journal of Applied Behavior Analysis, 26*(1), 89–97.

Massey, N., & Wheeler, J.J. (2000). Acquisition and generalization of activity schedules and their effects on task engagement in a young child with autism in an inclusive pre-school classroom. *Education & Training in Mental Retardation & Developmental Disabilities, 35*(3), 326–335.

O'Reilly, M., Sigafoos, J., Lancioni, G., Edrisinha, C., Andrews, A. (2005). An examination of the effects of classroom activity schedule on levels of self-injury and engagement for a child with severe autism. *Journal of Autism and Developmental Disorders, 35*, 305–311.

9. Augmentative and Alternative Communication.

Augmentative and Alternative Communication (AAC) is the term for a variety of tools and strategies that support individuals with communication impairments or little functional speech. AAC either enhances or "augments" the speaker's communication or offers an "alternative" to vocal speech. AAC is divided into two main categories, (a) aided, and (b) unaided. Aided AAC involves using an external object for communication (Zangari, 2000). Various forms of aided AAC include communication devices, such as electronic communication boards in which the child presses a button to elicit an electronic voice output (also known as assistive technology). These range from simple devices with a few communication outputs, to highly advanced computers and personal digital assistants (PDAs). It is also possible to have a same-age, same-sex peer to record the vocals for the output. Less technical forms of AAC include using pictures as communications, for instance, the child exchanges a picture of a cup for some juice, or points to a graphic symbol of a slide to communicate a want to go outside and play. For children who use aided AAC systems, it is important that the communicative partners understand how the system works, ensures the system is reachable to the child at all times, and any high technology devices must be fully charged or have spare batteries on hand (Cafiero, 2005; Mirenda, 2009; Ogletree & Oren, 2006; Zangari, 2000). Some high-tech devices may be too advanced for very young children which may contribute to frustration and inappropriate behaviors. Therefore, it is probably best to begin with simple pictures on cards, or simple single pictures on electronic devices for this young population.

Unaided AAC systems do not require an external object in order for the child to communicate. An example of an unaided system is sign language, in which a child uses his or her hands, or other symbols, signs, and gestures. Again, the consideration is that the communicative partner understands the system used, especially if the signs or gestures are child-specific (Cafiero, 2005; Mirenda, 2009; Ogletree & Oren, 2006; Zangari, 2000).

The use of AAC with infants and toddlers with ASD is a complex area as the unique needs and communication impairments among this population vary. Not all children with ASD will require AAC, but, for some, the use of an AAC system can temporarily (until speech develops) or permanently aid their functional communication (Mirenda, 2009). However, the decision to implement a system presents a multitude of challenges and considerations in order to select the most useful system to meet a child's individualized needs (Drager, Light, & Finke, 2009).

Where to get more information on Augmentative and Alternative Communication

Assistive Technology Partners. University of Colorado Denver School of Medicine. 303-315-1280

Cafiero, J. M. (2005). *Meaningful exchanges for people with autism*. Bethesda, MD: Woodbine House.

Drager, K.D. R., Light, J. C., & Finke, E. H. (2009). Using AAC technologies to build social interaction with young children with Autism Spectrum Disorders. In P. Mirenda & T. Iacono (Eds.), *Autism Spectrum Disorders and AAC* (pp.247). Baltimore: Paul H. Brookes.

Light, J., Roberts, B., DiMarco, R., & Greiner, N. (1998). Augmentative and alternative communication to support receptive and expressive communication for people with autism. *Journal of Communication Disorders, 31,* 153–180.

Ostryn, C., Wolfe, P.S., & Rusch, F. R. (2008). A review and analysis of the picture exchange communication system (PECS) for individuals with Autism Spectrum Disorders using a paradigm of communication competence. *Research & Practice for Persons with Severe Disabilities, 33,* (1–2), 13–24.

Case Studies

In order to provide the reader with examples of the Established Interventions in action, the following material reviews three case studies. For each case, a brief set of descriptive information is offered along with a tabled subset of individualized intervention plans that were developed by the IFSP team using the aforementioned *"About Our Child"* protocol and the RBI. Carlos' team used the content of Table 1 to complete the assessment, outcomes and services and support sections of his IFSP.

Case Study 1:

Carlos. Carlos is a 24 month-old little boy who lives with his mother, father and three sisters (two older and one infant). Carlos is not using any spontaneous functional language, although his parents report hearing him say a few words. He occasionally imitates a sound, usually after his parents have repeated a sound he has just made. Carlos does not indicate his wants or needs or ask for things. If he needs something he often whines and his parents try to figure out what he wants. He also walks to the refrigerator and stands next to it when he wants something to eat or drink. Carlos drinks from a sippy cup and feeds himself with his fingers, but is not using utensils yet.

Carlos does not make consistent eye contact with his parents or siblings and, while he occasionally approaches his parents, he generally ignores his sisters unless they initiate with him. They are most successful in engaging him in rough and tumble play. Carlos has limited play skills and interest in toys. He plays, briefly, with some cause and effect toys that make noise or light up but generally spends his time wandering around, taking toys off the shelf, looking at them and then dropping them and moving on. He also shows some interest in shiny toys and mirrors. When wandering, Carlos frequently flaps his hands and occasionally engages in other self-stimulatory behaviors, such as staring at his fingers and/or looking at things out of the corners of his eyes.

Based on this information gathered from the RBI and the *"About Our Child"* protocol, the following priorities were identified by Carlos' family: a) help with dressing in the mornings and evenings; b) asking (either using words or with pictures) for what he wants; c) interacting with others (play with children and (saying "hi" and "bye" to people), and d) playing with toys like other kids his age.

Table 1: Carlos' "Established Interventions"

	Priority	Outcomes	Setting and Participants	Methodologies and Strategies
Dressing/Diaper Changes	**Carlos will help dress himself.**	Carlos will assist with dressing by pulling his pants up and down.	Home with mom or dad.	**Antecedent Package**: Most-to-least prompting (use physical prompting initially, then fade to partial physical, then to verbal cues). Providing choices of what to wear.
Snacks and Meals	**Carlos will ask for what he wants.**	Carlos will request a snack by using pictures or words.	home and childcare parents, childcare providers, siblings, peers and therapists	**Visuals**: Have pictures of his favorite food and drink items velcroed to the refrigerator door. **Naturalistic Teaching & Visuals:** When Carlos stands by the refrigerator, prompt him to look at the pictures and select what he wants. Once Carlos selects a picture, model the verbal response "I want cheerios" and immediately follow-up with the delivery of the requested item. Provide small snack portions to allow for multiple requesting opportunities.

Table 1: Carlos' "Established Interventions" (continued)

	Priority	Outcomes	Setting and Participants	Methodologies and Strategies
Greetings and Farewells	**Carlos will say "hi" and "bye" to people.**	Carlos will respond to adult and peer greetings by waving.	home and childcare parents, childcare providers siblings, peers and therapists	**Antecedent Package**: Provide least-to-most prompting to respond (if Carlos does not respond to the greeting then verbally cue him to wave, if he does not respond provide physical assistance with the verbal cue). Before entering childcare, remind Carlos that he is going to "wave hi" to the teacher and his friends. **Peer Mediated:** Childcare providers will remind two or three peers to come and greet Carlos each day.
Play Time	**Carlos will play with toys like other kids his age.** **Carlos will play with other children.**	Carlos will play appropriately with cause and effect toys, such as his "See and Say," for 10 minutes. Carlos will accept toys from peers.	home and childcare parents, childcare providers siblings, peers and therapists	**Naturalistic Teaching & Pivotal Response Treatments:** Provide multiple, desired toys for Carlos to play with. Follow cues to determine his favorite toy. **Modeling:** Adults and peers will model how to use the toy Carlos has selected. **Peer Mediated:** Have peers play with the chosen toys along with Carlos. Peers will provide assistance to Carlos to use toys appropriately. Peers will offer (share) play materials with Carlos
Clean Up	**Carlos will play with toys (including cleaning up).**	Carlos will help clean up toys after playing with them.	home and childcare parents, childcare providers, siblings, peers and therapists	**Antecedent Package:** Have clear plastic containers for each toy clearly labeled with pictures of the item. Provide least-to-most prompting to participate in cleaning up (adults will start with a verbal prompt and proceed to partial physical and full physical prompting only as needed).
TV Time	**Carlos will ask for what he wants.**	Carlos will request one of his favorite videos.	Home with mom, dad, sisters.	**Antecedent Package:** Carlos' family has pictures of five of Carlos' favorite videos. **Peer-Mediated:** One of Carlos' older sisters will present him with two video choices. **Naturalistic Teaching:** When appropriate, parents will follow Carlos' lead, prompting him to request a video when he shows interest.

Case Study 2:

Nick. Nick is a 32 month-old boy of recently divorced parents who have joint custody. He lives at home with his mother, but spends Friday, Saturday and Wednesday nights with his father. Nick communicates effectively using three and four word phrases to request and comment. Nick also has some preservative language and at times he recites scenes from favorite TV shows and movies. When he is doing this he is very hard to distract and redirect to something appropriate.

Nick appears to show interest in other children and watches them play, although he seems to have trouble interacting with them. His parents report that he likes to play "his way" and attempts to redirect him generally result in Nick getting frustrated. When other children have toys or materials he wants, he generally tries to take them by force, but doesn't usually use aggression. He simply tries to take the toy out of their hand and say things like "My Thomas!"

Nick's parents also report a good deal of frustration with his ability to follow routines. Because of the recent separation, Nick's routine is constantly changing and they report he has a difficult time with this. Bed time is especially difficult and his mom reports getting Nick to stay in his room and go to sleep is a nightly battle.

Based on this information gathered from the RBI and the *"About Our Child"* protocol, the following priorities were identified by Nick's family: a) using sentences when asking for things; b) playing with other children and sharing toys; c) following routines; and d) staying in his room at bedtime.

Table 2. Nick's "Established Interventions"

	Priority	Outcomes	Setting and Participants	Strategies and Methodologies
Meals and Snacks	**Nick will use sentences to ask for what he wants.**	Nick will ask for the food that he wants using complete sentences.	home and childcare	**Naturalistic Teaching**: Allow Nick to choose and request what he wants for breakfast. Prompt Nick to verbally ask for the desired food, "I want yogurt, please," when given choice of foods.
	Nick will follow a routine.	Nick will help clean up his dish(es) after eating.	parents and childcare providers	**Schedules**: Use picture cues (sink) to remind Nick to bring his dish(es) to the sink.
Play Time	**Nick will play cooperatively with other children.**	Nick will request a turn with a toy during each playtime with others. Nick will give a toy to a peer when requested during each playtime with others.	Home or community with peers.	**Naturalistic Teaching:** Give peers one of Nick's favorite toys. Prompt Nick to request the toy, "I want truck, please," while putting out his hand or pointing to the toy. **Peer-Mediated:** Adults will cue one or two peers to request toys from Nick. **Antecedent Prompting:** Adult will provide Nick with least-to-most prompting (use verbal prompting initially then partial physical assistance, then full physical assistance only if necessary) to give toys to peers and wait for another turn.
Throughout the Day	**Nick will participate in activities throughout the day.**	Nick will be engaged in at least two activities during the day without reciting scenes.	home or childcare	**Antecedent Prompt:** Interrupt Nick, redirect to current task using most-to-least prompting. Praise after completion. **Peer-Mediated:** Use peer to cue Nick to look at the toy.
	Nick will participate in daily tasks.	Nick will take off his coat and shoes and wash his hands after he comes inside from playing outside.	Home with mom or dad.	**Schedules:** Use pictures of the three tasks that Nick has to perform: 1) take off coat, 2) take off shoes, 3) wash hands. Provide most to least assistance.

Table 2. Nick's "Established Interventions" (continued)

	Priority	Outcomes	Setting and Participants	Strategies and Methodologies
Bed Time	**Nick will follow the bedtime routine.**	Nick will complete his bedtime routine each night.	Home with mom or dad.	**Positive Behavioral Interventions and Supports Package—PBIS** **Antecedent prompt:** Provide countdown to bedtime, 10 minutes, 5 minutes, 2 minutes. Provide least-to-most prompting to complete each step of the bedtime routine. **Schedules:** Show Nick his bedtime schedule and review the bedtime routine: 1) PJs picture, "we are going upstairs to put on PJs." 2) Toothbrush picture, "then we are going to brush your teeth so they stay nice and healthy and shiny." 3) Book picture, "then you get to pick a book." 4) Sleep picture, "then it will be time to turnout the light." **Consequence Strategy (Reinforcement):** Provide praise for getting through each step of the routine. Once Nick is in bed he can pick which story he wants to hear. Use these books only for bedtime routine.
	Nick will sleep in and stay in his own bed.	Nick will sleep in his bed throughout the night.		**Consequence Strategy (Redirection):** If Nick leaves his room, matter-of-factly redirect him back to bed. Limit attention (eye contact, talking to him) to only what is necessary. Use positive language, (i.e., "you need to stay in bed.").

Case Study 3:

Hannah. Hannah is a 30 month-old girl who lives with her mother and father. She was just diagnosed with ASD, although her parents had expressed concerns to their pediatrician starting at around 18 months. Hannah has good use of nouns to label and request objects, can use some verbs in two to three word combinations and also has a variety or rote phrases that she uses mostly out of context or to calm herself (e.g., "We don't bite," "I know what you mean" or "Don't poke eyes"). Hannah demonstrates what her parents call selective hearing, at times responding well to their requests and at other times appearing to not hear them at all.

Hannah seeks out sensory input and likes to play with items like play dough and shaving cream and also likes activities like swings and jumping on the trampoline, but she demonstrates little functional play with traditional age appropriate toys like dolls or blocks. In social situations, Hannah, at times, approaches other adults, although she seems more hesitant with men than women. She generally shows little interest in other children her age, however, when peers initiate an interaction with her she often is aggressive trying to scratch or bite them. Hannah's parents are hesitant to bring her to play with other children or take her to places other children go because of the likelihood of her biting another child.

Hannah gets very upset when her routine changes or she is asked to stop doing something she enjoys. At these times she generally falls to the ground, screaming or crying. In these situations when she is frustrated Hannah occasionally demonstrates self-injurious behavior, including biting or scratching her arm and poking her eyes with her thumbs.

Based on this information gathered from the RBI and the *"About Our Child"* protocol, the following priorities were identified by Hannah's family: a) using sentences when asking for things and expressing herself when upset; b) playing with toys and other children; c) transitioning from one activity to another; d) completing everyday routines and e) decreasing self-injurious behavior.

Table 3. Hannah's "Established Interventions"

	Priority	Outcomes	Setting and Participants	Strategies and Methodologies
Dressing and Diaper Changes	**Hannah will calmly transition to diaper changes.**	Hannah will remain calm while transitioning from the previous activity to diaper changing.	Home with mom or dad.	**Antecedent Package**: Give Hannah a two minute warning before the diaper change. Use least-to-most prompting for diaper changes and dressing.
	Hannah will complete an everyday routine.	Hannah will help dress herself each morning.		**Schedules**: Use pictures of each article of clothing and a visual schedule for what Hannah needs to put on for dressing.
Transitions	**Hannah will move from activity to activity without getting upset.**	Hannah will successfully end one activity and move on to the next throughout the day.	home or community	**Schedules:** Use pictures of daily activities/routines as a visual schedule. If Hannah protests during a transition, use least-to-most prompting to have her check her schedule and review what she needs to do next.
Meal Time	**Hannah will be able to tell us what she wants to eat.**	Hannah will request foods using 3+ word sentences during meal time.	Home or community with parents or other adults.	**Naturalistic Teaching**: When Hannah requests food or drink, prompt her for a sentence by saying "I…" and using wait time. After 2 prompts, accept her 1 or 2 word request.
Play Time	**Hannah will play cooperatively with others.**	Hannah will take turns in play with a friend or adult at home or playgroup.	Home or community with parents, peers and teachers.	**Modeling:** Adults and peers will model appropriate play for Hannah. Give play direction and use least-to-most prompting. Use preferred materials (sensory) and commenting to encourage joint attention around play materials.

Table 3. Hannah's "Established Interventions" (continued)

	Priority	Outcomes	Setting and Participants	Strategies and Methodologies
Play Group	**Hannah will interact with other children.**	Hannah will independently say "hi" to a peer in response to the peer's initiation when arriving at playgroup.	community center playgroup with mom, teacher, and five peers.	**Peer Mediated:** Peers at the playgroup will be prompted to say "hi" to Hannah. Hannah will be verbally prompted by the teacher to respond by saying "hi" to the peer.
		Hannah will accept an item from a peer.		In response to Hannah's "Hi," peers will give Hannah a small play dough container or other preferred sensory materials.
	Hannah will show that she has the skills that other children her age have.	Hannah will identify 5 colors while at the playgroup.		**Naturalistic Teaching:** Once Hannah has 2 or 3 play dough containers, the classroom teacher will use them to teach Hannah colors.
	Hannah will have awareness of her environment.	Hannah will identify where things are at playgroup through the understanding of 10 prepositions, such as beneath, over, under, etc.		**Discrete Trial Training:** One of Hannah's therapist's (speech pathologist) will meet her at the playgroup on a daily basis. The therapist will join Hannah in her routine and will work on expanding vocabulary by asking Hannah and her peers to expressively identify prepositions in the environment.
	Hannah will participate in playgroup activities without screaming or injuring herself or others.	Hannah will follow simple one-step directions during activities at the playgroup.		**Positive Behavioral Interventions and Supports:** Give Hannah short, one-step directions, and to allow at least 5 seconds for her to respond.
				Teach peers to approach Hannah slowly, making sure that she sees them coming toward her. Peers will give Hannah preferred sensory materials.
		Hannah will remain calm when approached by a peer.		If Hannah attempts to bite, an adult will interrupt her, show her a picture of a stop sign and redirect her to a different activity (such as completing a puzzle).
				Once calm, she will be offered to engage in a preferred activity with the peer or adult that triggered the aggressive behaviors.
Bed Time	**Hannah will successfully follow her bedtime routine.**	Hannah will willingly transition from after dinner activities to bedtime activities.	Hannah and dad at home.	**Antecedent Prompts:** Around 7:30, Hannah's dad will give her a 5 minute warning that it will be time for bed soon.
		Hannah will brush her teeth with adult support.		**Schedules and Antecedent Prompts:** Use pictures of bedtime activities/routines as a visual schedule. If Hannah protests during a routine use least-to-most prompting to have her check her schedule and review what she needs to do next.

While choosing from a set of evidence-based interventions is essential, this act alone does not ensure good outcomes for specific infants or toddlers. It is equally important to have monitoring systems in place to track child progress. The following section provides several examples of effective ***and*** efficient progress monitoring systems.

Monitoring Progress

The link between achieving good outcomes for infants and toddlers with ASD and their families and the use of ongoing data collection is clear and undeniable. Every Established Intervention described within this *Guidelines* document has only been used in conjunction with ongoing data collection. Within the context of early intervention for infants and toddlers with ASD, careful progress monitoring is essential because:

1. No practice is universally effective, and thus, there is a professional and ethical imperative to detect less than desired effects and change methods in a timely manner.
2. Many of the behaviors targeted for change (e.g., tantrums, self-injury, repetitive speech) with this population engender strong emotions in both families and providers by their presence or absence. Thus, it is essential to have methods for the ***objective*** measurement of behavior over time.
3. Many Established Interventions rely on incoming data to make individualized modifications and accommodations to reach maximum effectiveness. That is, the best version of Incidental Teaching, for example, to teach language to Aaron is slightly different than the best version to teach language to Karen. Only by using ongoing data systems can providers hope to make these small but incredibly important variations for each child and family.

The challenge is to select measurement methods that yield meaningful data, while at the same time not being too burdensome to all involved. In recent years, a variety of relatively simple behavior rating scales have been utilized by parents and providers to achieve these dual purposes (Dunlap et al., 2010; Strain & Schwartz, 2009).

The following is an overview of sample rating scales that have been used to track a wide variety of behavioral outcomes.

For use with **general cognitive, adaptive,** and **self-help skills** a "Prompting Hierarchy Scale" is recommended.

The categories in the hierarchy are:

4 = Child can complete the skill independently or when given a group direction.

3 = Adult points/gestures/models/or verbally directs the child to perform skill.

2 = Adult provides partial physical assistance to complete skill, but child can do some independently.

1 = Adult provides 100% physical (hand over hand) assistance to complete skill.

0 = Child refuses to perform skill; walks away; ignores adult; says "No"; tantrums.

ND = No data for that session.

Objective	Date	9/15	9/16	9/17	9/18	9/19	9/20	9/21	9/22	9/23	9/24	9/25	9/26	9/27	9/28	9/29	9/30	10/1	10/2	10/3	10/4
Carlos will remove socks and shoes. Level: 3 Criteria: 5 sessions		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

4 = Child performs skill independently or when given a group direction. No adult intervention is needed

3 = Adult points/gestures/models/ or verbally directs child to perform skill

2 = Adult provides partial physical assistance to complete skill but child can do some independently

1 = Adult provides 100% physical (hand over hand) assistance to complete skill

0 = Child refuses to perform skill, walks away, ignores adult, says "No," tantrums

ND = No data for that session

The contemporary level or criterion for each objective is set one level above the child's current capability. For example, if the objective is to "remove socks and shoes," and the child can currently take off his socks and shoes with partial assistance, then the level to be achieved is set at Level 3. Each time the child attempts the task a tick mark is placed by the level at which the task was performed. At the end of the day, providers or parents circle the level at which more tick marks were placed. If two levels receive the same number of tick marks, then the lower level is circled because the goal is for mastery. Once the child is at Level 3 for several (3–5) consecutive days the Team should shift the criterion to Level 4—independent performance.

For use with objectives where the basic goal is to have the child comply with a necessary routine, such as diapering, the following type of hierarchy scale is recommended. Just like the previous scale, an initial performance level is set one step above the child's baseline performance and work continues until "independent" performance is achieved.

Objective	Date	9/15	9/16	9/17	9/18	9/19	9/20	9/21	9/22	9/23	9/24	9/25	9/26	9/27	9/28
Hannah will collaborate with diaper changing routine. Level: 3 Criteria: 5 sessions		4	4	4	4	4	4	4	4	4	4	4	4	4	4
		3	3	3	3	3	3	3	3	3	3	3	3	3	3
		2	2	2	2	2	2	2	2	2	2	2	2	2	2
		1	1	1	1	1	1	1	1	1	1	1	1	1	1
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

4 = Hannah independently stays on changing table while being changed.

3 = Hannah wiggles 2 or 3 times during changing routine, but adults are able to complete the routine while providing Hannah with verbal prompts.

2 = Hannah sits on changing table, kicks her legs. Adults have to interrupt the routine more than one time.

1 = Adult physically prompts Hannah to stay on changing table. Two adults are needed to complete the routine.

0 = Hannah refuses to stay on changing table, tantrums, bites, scratches.

ND = No data for that session

For use with objectives that involve verbal language production, the following type of hierarchy scale is recommended. This is, of course, a version of a prompting hierarchy, but one specific to verbal behaviors where physical prompting is not possible.

Objective	Date	9/15	9/16	9/17	9/18	9/19	9/20	9/21	9/22	9/23	9/24	9/25	9/26	9/27	9/28
Nick will request breakfast items using 2–3 words sentences. Level: 3 Criteria: 5 sessions		4	4	4	4	4	4	4	4	4	4	4	4	4	4
		3	3	3	3	3	3	3	3	3	3	3	3	3	3
		2	2	2	2	2	2	2	2	2	2	2	2	2	2
		1	1	1	1	1	1	1	1	1	1	1	1	1	1
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

4 = Nick requests items using 2–3 word sentences independently. No adult support is necessary.

3 = Adult points to wanted items to remind Nick to request them verbally. Adult may point to "I want" card.

2 = Adult takes Nick to the area where wanted items are and holds one of the items up for Nick to request it.

1 = Adult takes Nick to area where desired items are, shows him the items, their pictures, and asks for verbal imitation of the request.

0 = Nick refuses to request any of his favorite items, walks away, tantrums.

ND = No data for that session

For peer social behavior objectives, the recommended hierarchy focuses on varying levels of complex peer play.

Objective	Date	9/15	9/16	9/17	9/18	9/21	9/22	9/23	9/24	9/25	9/28	9/29	9/30	10/1	10/2
Hannah will stay in proximity and plays with peers for 3 minutes. Level: 2 Criteria: 5 sessions		5	5	5	5	5	5	5	5	5	5	5	5	5	5
		4	4	4	4	4	4	4	4	4	4	4	4	4	4
		3	3	3	3	3	3	3	3	3	3	3	3	3	3
		2	2	2	2	2	2	2	2	2	2	2	2	2	2
		1	1	1	1	1	1	1	1	1	1	1	1	1	1

5 = Stayed in proximity to peers and played for >3 minutes.

4 = Stayed in proximity and briefly joined in play with peers 1–3 minutes

3 = Stayed in proximity to peers and engaged in parallel play

2 = Stayed in proximity and watched others

1 = Actively avoided peers

Making Smart Decisions About Data Systems

There are two sets of decisions that are crucial in using data. The first has to do with the frequency or intensity of data collection. While it is imprudent to offer fixed, theoretical guidance, we can suggest the following considerations. First, if target behaviors are considered crucial to safety and well being (e.g., self-injury, running into street, hurting others), then the team should consider maximizing data collection resources accordingly. Second, anytime a new skill is targeted or a new tactic is implemented, the team should consider these events as occasions for more intensive data collection.

A second set of decisions center on the adoption of guidelines under which decisions are made regarding ***changes*** to intervention approaches. The goal here is to have a reliable system of data review in place such that infants and toddlers and their families are not needlessly exposed to ineffective or less than optimal interventions. Many of the most widely researched and replicated models of early autism services (e.g., LEAP; Project Data, Walden Preschool, Princeton Child Development Center, etc.) employ a very similar decision-making system. Specifically, the operational rule is that the IFSP team must meet to discuss potential modifications to any intervention after two weeks (10 successive data-days) of data indicating no progress or regression. In many cases, the outcome is not to abandon an approach but to see if it is being implemented faithfully, or if it needs to be fine-tuned to address some unique child need or preference.

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Appendix A. Questions to Guide the Individualized Family Service Plan Planning Process for Children with Autism Spectrum Disorders

The following checklist is provided for early intervention teams to guide the IFSP planning process for children with ASD in order to support the delivery of services that are comprehensive, individualized, evidenced-based and of sufficient intensity:

Question	Response
1. Have assessment strategies been utilized to document the child and family needs identified in the IFSP that are:	
a) Specific (observable, measurable, and valued by adult family members)?	☐ Yes ☐ No
b) Functional (related to specific skills that help the child access everyday life)?	☐ Yes ☐ No
2. Are there evidence-based strategies in place that:	
a) address each area of need identified by the team?	☐ Yes ☐ No
b) include functional outcomes addressing the defining characteristics of ASD (communication, social skills, and behavioral concerns)?	☐ Yes ☐ No
c) specifically addresses the child and family being successful with daily routines (e.g., dressing, feeding, bedtime, community outings, etc.)?	☐ Yes ☐ No
d) include strategies to equip family members with the information and skills needed to provide consistency in intervention when early intervention providers are not present?	☐ Yes ☐ No
3. Has the IFSP team carefully considered the following taking into account the child's developmental availability for intervention and the families dynamics and available resources:	
a) What early intervention services are needed to implement the evidence-based practices?	☐ Yes ☐ No
b) Who will deliver the services?	☐ Yes ☐ No
c) Where the services will be provided?	☐ Yes ☐ No
d) When and how frequently the services will occur?	☐ Yes ☐ No
e) What available funding sources will be accessed?	☐ Yes ☐ No
4. Are the proposed providers fluent with the evidence-based practices to be delivered? If not, what plans are in place to provide training, supervision or coaching for those providers?	☐ Yes ☐ No
5. Is there a plan in place whereby multiple providers, if utilized, meet frequently to communicate, plan logically consistent services and review progress?	☐ Yes ☐ No
6. Do the planned strategies include an ongoing data collection system and clear decision-making guidelines regarding the continuation or modification of the plan that results in progress for meeting child and family outcomes?	☐ Yes ☐ No

Appendix B. About Our Child

Child's Name: _____ Date: _____

Area	What our child knows or already does in this area:	Skills we would like our child to learn in this area:	Priority Level (low, medium or high)	We would like information about this	We would like to work on this at home	We would like strategies for teaching this
Play Skills (skills such as appropriate toy play, sharing, taking turns, playing by self, playing with other children...)						
Language & Communication (skills such as communicating needs, following directions, listening skills, concepts such as in, on, up, down...)						
Adaptive / Self Help (skills such as dressing, undressing, zipping, buttoning, toilet training, sitting or standing at potty, toileting schedule...)						
Meal Time (skills such as eating with utensils, eating more of a variety of foods, pouring juice, eating more slowly, table manners...)						
Bath time (skills such as sitting (staying) in the tub, washing self, combing hair, brushing teeth....)						
Community Activities (skills such as shopping with family members, eating out in restaurants, riding in the car...)						
Cognitive (skills such as understanding cause and effect, identifying numbers, letters, colors, shapes; sorting objects...)						
Motor (skills such as running, jumping, playing ball, coloring, building with blocks...)						
Behavior (Behaviors that interfere with learning or that you would like your child to do less often...)						