Treatment Efficacy Summary

American Speech-Language Hearing Association

Autistic Spectrum Disorders

Autism is a complex neurobiological disorder that impairs an individual's ability to process and integrate ordinary information. It is characterized by speech, language, and communication impairments. Autism and autism spectrum disorders (ASD)—including Asperger disorder, pervasive developmental disorder, Rett disorder, and childhood disintegrative disorder—affect an individual's social interaction, verbal and nonverbal communication, and cognitive abilities. The incidence rate is approximately 1 out of every 250 births (National Institutes of Health, 2001).

Autism is treatable, with speech-language pathology services used to improve communication. Clinical evidence indicates that children and adults with ASD benefit from assessment and intervention services provided by speech-language pathologists. Effective interventions for children with ASD are characterized by early intervention, intensive instruction, and individualized objectives.[i] Empirical studies evaluating speech and language intervention procedures have documented the effectiveness of behavioral and naturalistic teaching strategies to target specific language outcomes, replace challenging behavior, and promote social interactions.[ii] Comprehensive programs for individuals with ASD draw on the expertise of speech-language pathologists to prioritize intervention objectives and coordinate planning for communicative success.

According to data from ASHA's National Outcomes Measurement System (NOMS), two thirds of preschoolers with ASD showed gains of one or more levels on the Spoken Language Production Functional Communication Measure (FCM) following speech-language pathology intervention. FCMs are a series of seven-point rating scales ranging from least functional (Level 1) to most functional (Level 7) designed to measure improvement in a variety of clinical areas. Similar gains were also seen in two other frequently treated areas–spoken language comprehension and pragmatics with 72% and 63% of children achieving one or more levels of progress respectively. Furthermore, NOMS data reveal that children who made functional gains in these areas received approximately 2–5 times more intervention (depending on the disorder being treated) than children who did not.

Speech-language pathologists assist in the assessment and management of clients with ASD via a number of avenues. They serve on interdisciplinary teams to conduct evaluations. They work with individuals with ASD to treat specific speech and language deficits, notably impairments in motor speech, semantics, and pragmatics (a person's use and interpretation of verbal and nonverbal language in social interactions). For non-speaking individuals, speech-language pathologists design augmentative and alternative communication systems.

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Treatment Efficacy Summary

American Speech-Language Hearing Association

Child Language Disorders

Language disorders in children are characterized by deficiencies in the comprehension (understanding) and/or production (use) of spoken and written language. Deficiencies in language can have a profound impact on a child's academic, social, and emotional development.[i] Seven percent of preschool and school-age children exhibit significant limitations in language ability.[ii] Language disorders in children can result from congenital syndromes (e.g., Down Syndrome or fragile X syndrome), diseases (e.g., cytomegalovirus or meningitis), toxins (e.g., fetal alcohol syndrome), reduction of sensory input (e.g., hearing loss), or head injury. Often, a specific etiology for the language disorder cannot be determined.

Clinical evidence has documented that children with language disorders benefit from treatment provided by speech-language pathologists. More than 200 studies report the effectiveness of language intervention for an overwhelming majority of participants.[iii] In addition, studies have demonstrated the advantage of beginning intervention as early as possible.[iv] Language treatment has been shown to improve functional communication skills, thereby enhancing the quality of life, social, academic, and vocational opportunities of the child.

According to data from ASHA's National Outcomes Measurement System (NOMS), approximately 70% of preschoolers with language disorders showed gains of one or more levels on the Spoken Language Production and/or Spoken Language Comprehension Functional Communication Measure (FCM) following speech-language pathology intervention. FCMs are a series of seven-point rating scales ranging from least functional (Level 1) to most functional (Level 7) designed to measure improvement in a variety of clinical areas. For example, Level 1 on the Spoken Language Expression FCM indicates that a patient attempts to speak but does not make any meaningful verbalizations. At Level 4, the patient is able to produce simple sentences and initiate communication in structured conversations. At Level 7, the patient can participate successfully and independently in vocational and social activities, and is not limited by his/her spoken language skills. NOMS data reveal that children who made one level of gain on either of these FCMs received about twice as much treatment as those children who did not show similar functional improvements.

The role of the speech-language pathologist is to assess and treat spoken and written language skills. The objective of language treatment is to increase the frequency and quality of language to age-appropriate levels. Speech-language pathologists play a critical and direct role in helping children with language disorders learn to speak, listen, read, and write.[v] Treatment may also include the use of augmentative/alternative communication systems.

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Treatment Efficacy Summary

American Speech-Language-Hearing Association

Audiologic (Re)habilitation For Children With Cochlear Implants

The goal of technology for children with hearing loss is to enable them to access sufficient auditory information to learn speech and language through the auditory channel. Children with severe and profound hearing loss use a variety of sensory aids to access sound. Hearing aids may provide sufficient auditory access for children with mild to fairly severe hearing loss, but children with severe and profound hearing loss may not receive sufficient auditory information when using hearing aids alone. Cochlear implants are able to provide significantly more auditory access to children with severe and profound hearing loss then is available to them through hearing aids.

Although cochlear implants provide significantly more auditory access then is available through hearing aids and FM systems, they do not provide normal hearing. Cochlear implant users must learn a new way of processing sound and maximizing the effectiveness of the device. In addition, even if children receive implants by 12 months of age, as per current FDA guidelines, they will have had a significant period of time prior to implantation during which they will not have had sufficient auditory access, even if they used hearing aids. As a result, they will be delayed in use of audition and in speech and language. Therefore, all children with cochlear implants are in need of intensive audiologic (re)habilitation services.

Audiologic (re)habilitation may encourage the use of audition alone (auditory-verbal) or combine audition with visual cues (auditory-oral). Therapy should begin as soon as hearing loss is identified and the child is fit with amplification, ideally prior to six months of age.[i] Therapy initially focuses on teaching the child to attend to sound, alerting when sound is present, then moves through discrimination of suprasegmental aspects of speech, through discriminating speech sounds, and moving into using audition to learn language.[ii, iii]

Both audiologists and speech-language pathologists are uniquely qualified to provide audiologic (re)habilitation services to children with hearing loss. Therapy may be provided in a clinic, school, or private practice setting. In addition to working with the child, the therapist works with families to teach them how to provide auditory, speech and language stimulation to their children so that children will have exposure to auditory learning throughout the day.

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Treatment Efficacy Summary

American Speech-Language Hearing Association

Hearing Loss in Children

The early detection of infants and children with hearing loss is an important public health objective in the United States.[i] Hearing loss is one of the most common major abnormalities present at birth affecting approximately 4 infants per 1,000 births. If undetected, hearing loss will negatively impact cognitive development, communication competency, optimal child development, literacy, and subsequently academic achievement. Additionally, the prevalence of hearing loss in school age children is between 11% and 15%.[ii, iii]

Hearing loss can be congenital (present at birth) or acquired. As such, universal detection requires screening in hospital nurseries, birthing centers, medical and audiology facilities, early childhood education/intervention programs, and schools. Additionally, there should be ongoing surveillance of children at risk for hearing loss. Infants and children who do not pass their initial hearing screen and any re-screening should begin appropriate audiological evaluations to confirm the presence of hearing loss. Regardless of prior hearing screening outcomes, infants and children who demonstrate risk indicators for delayed onset or progressive hearing loss should receive ongoing audiologic monitoring. Moreover, those children who may not be acquiring developmental communication, cognitive, social-emotional, and/or academic milestones also need immediate evaluation.

For infants, early detection of hearing loss and enrollment in intervention services within the child's first year of life is an evolving standard of care that reduces the consequences of hearing loss. Evidence demonstrates that early intervention programs are effective in reducing the extent of delay a child experiences and in easing familial stress reactions. Moreover, as a result of early intervention by audiologists and speech-language pathologists, many children have demonstrated the ability to overcome the effects of hearing loss on language and literacy development and compete successfully in school with their hearing peers.[iv]

As experts in identification, evaluation, and auditory habilitation/rehabilitation of infants and children who are hard of hearing and deaf, audiologists are involved in the hearing screening, follow-up evaluation, and early intervention components. For the early intervention component, audiologists provide timely fitting and monitoring of amplification (hearing aids and hearing assistive listening technology) systems or the selection and monitoring of tactile aids or cochlear implants. In addition, audiologists provide direct audiologic habilitation/rehabilitation services. Long-term monitoring also includes continual validation of communication, social-emotional, cognitive, and academic development to assure that progress is commensurate with the child's abilities.

Cognitive, social, and emotional developments depend on the acquisition of language. A complete language evaluation should be performed by a speech-language pathologist for infants and children with hearing loss. In addition, the speech-language pathologist is involved with all aspects of communication including oral and/or sign language development, speech production, voice characteristics, lipreading, and aural habilitation/rehabilitation.

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Treatment Efficacy Summary

American Speech-Language Hearing Association

Pediatric Feeding and Swallowing Disorders

Difficulties in sucking, swallowing, and breathing can severely compromise nutrition and hydration status in infants who get their nutrition needs met via breast or bottle. Difficulty in swallowing in infants and children, as in older children and adults, can cause food or liquid to enter the airway resulting in some or all of the following: coughing, choking, pulmonary problems, or inadequate nutrition and/or hydration with lack of weight gain—which is like a weight loss in adults and older children. Clinical evidence has documented that children with swallowing and feeding problems benefit from the services of a speech-language pathologist, who may function as part of a team of professionals.

Feeding and swallowing disorders in infants and children are usually caused by multiple factors. They can result from congenital or acquired neurologic damage (e.g., encephalopathies), anatomic and structural problems (e.g., craniofacial anomalies, tracheoesophageal fistula), genetic conditions (chromosomal, syndromic, or inborn errors of metabolism), systemic illness (bronchopulmonary dysplasia, gastrointestinal dysmotility), and psychosocial and behavioral issues. Incidence estimates for children with cerebral palsy (CP) range from 85–90% at some time in life. During the first year of life, 57% of all children with CP are estimated to have problems with sucking, 38% with swallowing, and 33% with malnutrition.[i] As the severity of CP increases, the severity of swallowing problems also increases.

A meta-analysis of randomized controlled trials in 19 studies revealed that the development of nonnutritive sucking is found to significantly decrease the length of hospital stay in preterm infants.[ii] Examples of oral sensorimotor treatment with children with CP point out that success typically occurs when "total child" focuses are implemented.[iii, iv] Another example showed that intraoral appliance (ISMAR) therapy for one year resulted in significant improvements in jaw stability in some children who demonstrated better lip closure, chewing, and oral manipulation of food.[v, vi] Functional feeding skills in children with moderate dysphagia improved with this type of therapy.[vii] Efficacy studies indicate improvements in swallowing safety (reduced aspiration), improved nutrition, and efficiency as a result of both compensatory and direct treatment procedures in adults.

Speech-language pathologists have extensive knowledge and skills in analyzing, interpreting, and facilitating communication. These skills are critical when evaluating and making management plans related to feeding and swallowing, safety and efficacy.

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Treatment Efficacy Summary

American Speech-Language Hearing Association

Phonological Disorders in Children

A phonological disorder is a deficit in the production of speech sounds. It may reflect an inability to articulate speech sounds correctly or to understand differences among speech sounds. Phonological disorders in children can result from physical or organic causes or may be functional in nature. Phonological disorders are among the most prevalent communication disabilities diagnosed in preschool and school-aged children, affecting 10% of this population. Children with phonological disorders are also at risk for reading and writing disabilities. If left unresolved, phonological disorders have long-term consequences that may interfere with an individual's future social, academic, and vocational well-being, largely resulting from persistent, reduced intelligibility of speech.

Clinical evidence has shown that children with phonological disorders benefit from treatment provided by speech-language pathologists. The benefits of effective phonological treatments have been widely documented in clinical and experimental studies dating from the 1960s.[i] According to data collected from ASHA's National Outcomes Measurement System (NOMS), 70% of preschool-aged children who received phonological treatment exhibited improved intelligibility and communication functioning.[ii] Moreover, approximately one half of the children who were unintelligible to familiar and/or unfamiliar people at the beginning of treatment progressed to a level where they were understandable to all listeners. The amount of treatment had a significant impact on outcome. The preschoolers who achieved intelligible speech received roughly twice as much treatment as those children who remained unintelligible.

The speech-language pathologist assesses the phonological disorder and develops a treatment plan to correct speech sound production. The goal of treatment is to improve accuracy and use of speech sounds to achieve maximum intelligibility in both single words and connected speech, as well as across all settings in which children communicate. There are a number of acceptable treatment approaches. A single treatment approach is not endorsed over others. Each clinically accepted method has been shown to result in improved accuracy and use of speech sounds.

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Treatment Efficacy Summary

American Speech-Language Hearing Association

Stuttering

Stuttering is a communication disorder characterized by disruptions in the flow of speech or disfluencies. Disfluencies can be part and whole word repetitions, prolongations of sounds, or hesitations. The frequency, duration, type, and severity of disfluencies vary greatly from person to person and from situation to situation. Approximately 2% of adults stutter and 5% of children exhibit stuttering. People who stutter are often subjected to discrimination due to public misconceptions about the disorder. Employers believe that stuttering decreases employability and interferes with promotion opportunities. School children who stutter exhibit poorer educational and social adjustment than their normally fluent peers. The speech-language pathologist diagnoses and treats people who stutter.

Clinical evidence shows that individuals who stutter can benefit from treatment provided by speech-language pathologists at any time in their life span. Treatment can be scheduled on an intensive (several hours per day for several weeks) or extended (1–2 hours per week for several months or longer) basis. Techniques that appear to have the greatest efficacy for reducing the frequency of stuttering in adults and older children include those that change the *timing* of speech (e.g., slowing down, stretching out sounds) or reduce physical *tension* during speaking (e.g., gentle onsets of speech movement). Comprehensive treatment approaches focus on improving the speaker's attitudes toward communication and minimizing the negative impact of stuttering on the speaker's life. Many speakers report greater benefits from comprehensive approaches than from those that focus only on changes in speech fluency.[i] More than 100 studies on adults who stutter concluded that significant improvement typically occurs as a result of treatment in 60 to 80% of cases.[ii] Studies of school-age children reveal an average reduction in stuttering frequency of approximately 61%.[iii]

According to data from ASHA's National Outcomes Measurement System (NOMS), 79% of adults who stutter showed gains of one or more levels on the Fluency Functional Communication Measure (FCM) following speech-language pathology intervention. FCMs are a series of seven-point rating scales ranging from least functional (Level 1) to most functional (Level 7) designed to measure improvement in a variety of clinical areas. Nearly one half of these individuals made multiple levels of FCM progress resulting in increased communicative competence.

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Treatment Efficacy Summary

American Speech-Language Hearing Association

Cognitive-Communication Disorders Resulting From Traumatic Brain Injury

Communication requires a complex interplay between cognition, language, and speech across the lifespan. Cognitive processes range from basic to complex, including attention, memory, abstract reasoning, awareness, and executive functions (e.g. self-monitoring, planning, and solving problems). Broadly understood, communication involves listening, reading, writing, speaking, and gesturing at all levels of language.[i, ii] Cognitive-communication disorders are the result of disruption of cognition. Adults and children who have experienced a traumatic brain injury (TBI) frequently exhibit cognitive-communication disorders.

Results from group and single-subject studies indicate that cognitive-communication disorders improve after intervention that is tailored to both the unique needs of the individual and contextual factors.[iii] Recently published reviews of the efficacy literature provide evidence-based practice guidelines for speech-language clinicians.[iv] Gains in cognitive-communication impairments, activities, and participation in society have been noted after speech and language intervention.[v] Patients who receive rehabilitation have better than average cost outcomes, according to outcome data provided by five well-established inpatient rehabilitation programs. Additionally, TBI patients receiving early intervention services were shown to be discharged at higher levels of cognitive functioning and had higher percentage of discharge to home versus long-term care facilities.

Data gathered from ASHA's National Outcomes Measurement System (NOMS) show that a large percentage of patients with TBI who received speech-language pathology services made significant gains on the Functional Communication Measures (FCMs) in 3 key areas of cognitive-communication skills—attention, memory, and pragmatics. FCMs are a series of seven-point rating scales ranging from least functional (Level 1) to most functional (Level 7) designed to measure improvement in a variety of clinical areas. Functional gains were demonstrated by 81% of the patients treated for memory, 82% of the patients treated for attention, 83% of the patients treated for pragmatics, and 80% of those treated for problem solving. Moreover, in all three of these areas, the majority of patients achieved multiple levels of FCM progress.

Additionally, cognitive rehabilitation has been endorsed by the National Institute of Health (NIH) consensus panel (1998), which notes existing studies that support this treatment.

Speech-language pathologists provide services to persons with TBI by:

- evaluating cognitive-communication disorders in various contexts
- determining the appropriate combination of intervention approaches (e.g., behavioral approaches, skill training, counseling, process-specific training, metacognitive approaches) while taking into account other individuals who provide support (e.g., family, employers, educators); and
- implementing the intervention plan in collaboration with other professionals

Early in recovery, intervention goals focus on providing sufficient environmental support and structure to facilitate re-emergence of communication. Later in recovery, intervention goals focus on generalizing cognitive-communication skills across activities in various contexts. Ultimately, the goal of cognitive-communication intervention is for the person to achieve the highest level of communicative participation in daily living.

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