CLINICAL GUIDELINES

Speech Therapy

Version 1.0.2019

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eviCore healthcare
innovative solutions

Clinical guidelines for medical necessity review of speech therapy services.

Please note the following:

Dear Provider,

This document provides detailed descriptions of eviCore's basic criteria for musculoskeletal management services. They have been carefully researched and are continually updated in order to be consistent with the most current evidence-based guidelines and recommendations for the provision of musculoskeletal management services from national and international medical societies and evidence-based medicine research centers. In addition, the criteria are supplemented by information published in peer reviewed literature.

Our health plan clients review the development and application of these criteria. Every eviCore health plan client develops a unique list of CPT codes or diagnoses that are part of their musculoskeletal management program. Health Plan medical policy supersedes the eviCore criteria when there is conflict with the eviCore criteria and the health plan medical policy. If you are unsure of whether or not a specific health plan has made modifications to these basic criteria in their medical policy for musculoskeletal management services, please contact the plan or access the plan's website for additional information.

eviCore healthcare works hard to make your clinical review experience a pleasant one. For that reason, we have peer reviewers available to assist you should you have specific questions about a procedure.

For your convenience, eviCore's Customer Service support is available from 7 a.m. to 7 p.m. Our toll free number is (800) 918-8924.

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EVP and Chief Medical Officer

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Speech Therapy Guidelines

Utilization Management Policy	5
Speech Language Pathology	5
Adult Spoken Language Evaluation	17
Aphasia	27
Acquired Apraxia of Speech	36
Apraxia: Pediatrics	42
Augmentative and Alternative Communication (AAC)	49
Autism Spectrum Disorder	61
Bilingual Service Criteria	77
(Central) Auditory Processing Disorder (C)APD	86
Cognitive Communication Disorders and Dementia	98
Dysarthria	113
Dysphagia (Swallowing Disorder): Adults	119
Dysphagia (Swallowing Disorder): Pediatrics	131
Feeding Aversion	138
Fluency Disorder	150
Hearing Loss and Aural Rehabilitation	160
Hearing Screening	172
Pediatric Spoken Language Evaluation	178
Orofacial Myofunctional Disorders	189
Selective Mutism	194
Speech Sound Disorders: Articulation and Phonology	200
Spoken Language Disorders: Pediatrics	211
Voice Disorders	219
Written Language Disorders: Pediatrics	229

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Utilization Management Policy Speech Language Pathology

Purpose:

This policy outlines the process for determining medically necessary, appropriate and reasonable speech therapy services.

Definitions:

Utilization Management

The Institute of Medicine (IOM) Committee on Utilization Management by Third Parties recognizes UM as "a set of techniques used by or on behalf of purchasers of health care benefits to manage health care costs by influencing patient care decision-making through case-by-case assessments of the appropriateness of care prior to its provision."

- There are 3 types of Utilization Management:
  - *Precertification/prior authorization* is conducted before a service or treatment and is rendered in order to eliminate or reduce unnecessary services.
  - *Concurrent review*s performed during the episode of care. Periodic review occurs at varied intervals and may encompass case management activities such as care coordination, discharge planning, and care transitioning.
  - *Retrospective review* is conducted after the service has been completed and assesses the appropriateness of care provided.

Speech Therapy

Speech therapy is the treatment of speech/language production, voice production, swallowing function, cognitive-linguistic skills, and/or general communication abilities that have been impaired as a result of a disease, injury, developmental delay or surgical procedure. The purpose of speech therapy is to provide necessary services for the diagnosis and treatment of impairments, functional limitations, disabilities or changes in speech/language production, voice production, swallowing function, cognitive-linguistic skills, general communication deficits, and compensatory communication abilities. Speech therapy is medically necessary to help restore functional speech, swallowing and language following the onset of their impairment.

Medically Necessary Services

- To be considered reasonable and necessary the following conditions must each be met:
  - Services are for the treatment of a covered injury, illness or disease, and are appropriate treatment for the condition
  - Treatments are expected to result in significant, functional improvement in a reasonable and generally predictable period of time, or are necessary for the establishment of a safe and effective maintenance program. Treatment should be directed toward restoration or compensation for lost function. The

improvement potential must be significant in relation to the extent and duration of the therapy required
- The services must be currently accepted standards of medical practice, and be specific and effective treatments for the patient's existing condition
- The complexity of the therapy and the patient's condition must require the judgment and knowledge of a licensed qualified clinician practicing within the scope of practice for that service. Services that do not require the performance or supervision of a qualified clinician are not skilled and are not considered reasonable or necessary therapy services, even if they are performed or supervised by a qualified professional.
- The amount, frequency, and duration of the services must be reasonable under accepted standards of practice.
- Services shall be of such a level of complexity and sophistication or the condition of the patient shall be such that the services required can be safely and effectively performed only by a therapist, or in the case of physical therapy and occupational therapy by or under the supervision of a therapist. Services that do not require the performance or supervision of a therapist are not skilled and are not considered reasonable or necessary therapy services, even if they are performed or supervised by a qualified professional.

For these purposes, "generally acceptable standards of practice" means standards that are based on credible scientific evidence published in the peer-reviewed literature generally recognized by the relevant healthcare community, specialty society evidence-based guidelines or recommendation, or expert clinical consensus in the relevant clinical areas.

Care Classifications

Therapeutic Care

- Therapeutic care is care provided to relieve the functional loss associated with an injury or condition and is necessary to return the patients to the functioning level required to perform their daily needs and work activities. Speech and language disorders and swallowing problems (dysphagia) tend to have periods of plateau followed by functional improvements.
- In addition, the symptoms will change over time. Therefore, discharge planning will consider when further treatment is expected to provide little or no measurable improvement for the condition being treated, or when symptoms have resolved or maximum potential has been met and/or a plateau has been reached maximum potential achieved and the individual patient/family circumstances. Therapeutic care generally occurs within a reasonable period of time and is guided by evidence based practice of speech therapy.
- Early Stage Treatment
  - Explore factors that could impact outcomes now and in the future.
  - Explore strengths and weaknesses, and other components for best treatment outcomes.

- Explore patient and family understanding, challenges and capabilities to develop education and training programs.
- Develop a treatment program based on findings and best practices.
- Develop an individualized supplemental home program to monitor and change as needed.

- Ongoing Treatment
  - Provide patient/family ongoing education and training
  - Assess response to and feedback from home program to modify, and update as needed
  - Assess ongoing response to treatment, gains, lack of progress, and other factors; modify program as needed
  - Determine other factors impacting condition requiring intervention or referral.
- Later Stage of Treatment/Discharge Planning
  - Provide suggestions and resources for follow-up.
  - Provide home program to maintain gains.
  - If discharge is due to medical issues, and or a plateau in progress, indicate under what future conditions a new referral would be warranted.

Palliative Care (Non-covered Service)

- Palliative care is typically given to alleviate symptoms and does not provide corrective benefit to the condition treated. A patient receiving palliative care, in most instances, demonstrates varying lapses between treatments. If an exacerbation of a condition occurs, care becomes therapeutic rather than palliative, and documentation of the necessity for care (e.g., etiology of exacerbation, objective findings, and desired outcomes) must be obtained.

Preventive Care Examinations (Non-covered Service)

- Preventive care includes management of the asymptomatic patient. Preventive care examinations may include speech, language and cognitive screenings or swallowing screenings.

Skilled Maintenance Care

- Maintenance care is defined as services required to maintain the member's current condition or to prevent or slow deterioration of the member's condition.
- Services are covered for maintenance care if the specialized skill, knowledge and judgment of a qualified therapist are required:
  - To establish or design a maintenance program appropriate to the capacity and tolerance of the member
  - To educate/instruct the member or appropriate caregiver regarding the maintenance program
  - For periodic re-evaluations of the maintenance program
  - When skilled services are required in order to provide reasonable and necessary care to prevent or slow further deterioration, coverage will not be denied based

on the absence of potential for improvement or restoration as long as skilled care is required.

Habilitation

Speech therapy services provided in order for a person to attain and maintain a skill or function for daily living, that was never learned or acquired and is due to a disabling condition such as developmental delay, developmental disability, developmental speech or language disorder, developmental coordination disorder and mixed developmental disorder.

Criteria/Guidelines for Provision of Speech Therapy (ST)

Indications for Coverage

- Contract limitations for speech therapy (ST) services will determine the available benefit if such therapy is determined to be medically necessary.
- Speech therapy services must be ordered by a physician.
  - Each member should be provided with a treatment plan at their start of care describing appropriate treatment approach.
  - The member's treatment plan must contain objective data, reasonable expectations, and measurable goals for a specific diagnosis.
  - Re-assessments of member progress should be undertaken as part of every ongoing ST session; assessments of this nature should be included in the treatment session and should not be performed in a separate treatment session.
    - The assessment is a part of ongoing care and should occur throughout each treatment session so that therapy continues to be patient-focused to meet the changing needs of the member.
    - A formal and or informal reassessment with objective measures and updated goals should occur at least every 30 to 60 days for adults and every 6 to 9 months for children (birth to 21 years).
    - Lack of measureable and significant change at reassessments should result in a change in the program or discharge to a home management program.
- Speech therapy services are reviewed and evaluated by eviCore Healthcare periodically during a member's episode of care.
  - At each review, the clinical reviewer will evaluate the key objective and subjective measures of the member's clinical status, with a focused review on function.
  - This information, in the context of the generally accepted natural history of the condition(s) under care, will be used to determine the medical necessity of the care provided to date, and/or the care that is proposed.
  - Refer to the Clinical Practice Guidelines, Patient History and Presentation for information on specific conditions.

Reasonable and Necessary Services

- Speech therapy (ST) services are considered medically necessary when all of the following criteria are met:

- Therapy requires the judgment, knowledge and skills of a qualified provider of speech therapy services due to the complexity and sophistication of the therapy and the condition of the patient.
- A qualified provider (speech-language pathologist) of speech services is one who is licensed where required and performs within the scope of licensure.
- Services provided by ST aides or other non-qualified professionals are not covered.
- ST services meet the functional needs of the member who suffers from impairment due to illness, disease, injury and are appropriate treatment for the condition.
- The patient must have functional deficits that interfere with Activities of Daily Living
- Refer to the Clinical Practice Guidelines, Symptomatology, for information on specific functional losses for specific conditions.

- ST services achieve a specific diagnosis-related goal for a member, who has a reasonable expectation of achieving measurable improvement, in a reasonable and predictable period of time.
  - Significant is defined as a measureable and meaningful increase (as documented in the patient's record) in the patient's level of functional improvement in communication, speech production, cognitive, or swallowing abilities that can be attained (with short-term therapy, usually within 30 to 60 days for adults and 6 months for children (birth to 21 years). (Contract limitations will determine the available benefit.)
- ST services inherently include the introduction and provision of, and education about a home (self) management program, appropriate for the condition(s) under treatment. In keeping with professional standards, this home management program should be introduced into the course of treatment at the earliest appropriate time. (This may also be applicable to parents, guardians, or caregivers of pediatric patients and adult patients needing assistance.)
- ST services provide specific, effective, and reasonable treatment for the member's diagnosis and physical/ cognitive condition. Refer to the Clinical Practice Guidelines for a review of specific conditions and their clinical course.
- ST services must be described using standard and generally accepted medical/speech therapy/rehabilitation terminology. Such terminology includes objective measurements for speech/language production, voice production, swallowing function, cognitive-linguistic skills, general communication deficits, and/or compensatory communication abilities.
- Group therapy programs defined as the simultaneous treatment of two patients for the treatment of speech and/or language delays/disorders are a covered benefit for some insurance providers.
  - Group therapy is effective for improving functional speech and communication skills with peers. The size of the group should not exceed four.
  - ASHA's Group Treatment Model medical review guidelines for speech-language pathology services[8]) indicate that group treatment is generally a covered service

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if: group therapy services are rendered under an individualized plan of treatment and are integral to the achievement of the patient's individualized goals, the skills of a speech-language pathologist are required to safely and/or effectively carry out the group services, the group consists of four or fewer group members (Medicare recommendations), and the group therapy satisfies all of the "reasonable and necessary criteria" listed under Indications and Limitations of Coverage.

Speech Therapy Services Are Not Medically Necessary Under Any Of The Following Circumstances:

- ST services are only considered medically necessary for the restoration of basic functional activities of daily living. Providing services to modify or enhance communication performance (e.g., accent modification, , care and improvement of the professional voice, personal/professional communication effectiveness) is not a covered benefit.
- Also excluded is therapy to address accent reduction, developmental speech or language delays/disorders 1 SD or less below the norm in the areas of receptive, expressive, pragmatic or total language when documented with a global spoken language test instrument or informal clinical observations with interpretation compared against normative data; and in absences of a documented language learning disorder, education learning services such as reading, writing, and spelling, studying.
- Ongoing or prolonged treatment for chronic conditions is not considered medically necessary in the absence of measurable improvement that is sustained from treatment visit to treatment visit. Therapy is also not covered when the condition is not expected to improve significantly within a reasonable time period. However, maintenance therapy is covered for holding at a steady state or preventing deterioration of basic functional activities of daily living, including treatment and periodic monitoring in order to provide adaptive strategies and equipment for communication, swallowing and voice in members with progressive neurological disorders such as but not inclusive to amyotrophic lateral sclerosis, cerebral palsy, myasthenia gravis, multiple dystrophy, multiple sclerosis, Parkinson's disease, etc.
- ST treatment must include active, skilled therapy (i.e. that requires a speech-language pathologist or physician) during each session, at intensity and of duration necessary to the condition(s) under treatment.
  - Non-skilled therapy includes but is not limited to routine, repetitive and reinforced procedures that do not require one-to-one intervention such as repetitive articulation drills, repetitive non-skilled feeding trials, repetitive oral motor exercises to maintain current functional level. These procedures do not generally require the skills of a qualified provider of ST services and are therefore not covered.
- The intensity or frequency of care should not exceed the number of visits necessary for a clinician to provide skilled care.

- Repetitive care is not considered skilled and can be transitioned to a home management program. (For example a member who is receiving treatment for oral motor exercises to maintain range of motion, strength, and control for intelligible speech production and/or oral management of liquids and solids following a neurological event such as a stroke or head injury will require initial visits for instruction and periodic visits to provide additional training and update the member's home program. This normally does not exceed one to 2 visits weekly.) Refer to the Clinical Practice Guidelines for examples of treatment progression based on the nature and severity of clinical findings.
- Treatment of specific developmental delay or speech and language delays, unless specifically covered under the member contract; e.g. attention deficit disorders, behavior problems, conceptual handicap, intellectual disability, psychosocial speech delay.
- Duplicate therapy is not covered:
  - When a patient receives both speech and occupational or physical therapy, the therapies should provide different interventions and not duplicate the same treatment. They must have separate treatment plans and goals with treatment occurring in separate treatment sessions and visits. If co-treatment is provided, only one provider will be paid for the treatment time.
- Treatment of psychoneurotic or psychotic conditions
- Treatment of self-correcting conditions such as hoarseness when secondary to Acute Rhinitis, Allergy Rhinitis, Gastro-Esophageal/Gastro-Pharyngeal Reflux, Smoking, etc;, developmental articulation errors
- Language therapy for young children with developmental period of dysfluency
- Treatment of functional dysphonia unless demonstrating traumatic vocal fold thickening that does not resolve following successful treatment for laryngitis, GERD or the consistent abstinence from vocally abusive behaviors for an appropriate length of time.
- Instruction of other professional personnel in the patient's speech therapy program
- Collaboration with other professional personnel or with other community resources

Discharge Criteria

- Criteria utilized for determining whether a member is eligible for discharge from ST is determined based on the following (objective data) and is available in the Clinical Practice Guidelines under Discharge Criteria:
  - The speech, language, communication, voice or swallowing disorder is now defined within normal limits or is now consistent with the individual's premorbid status
  - The goals and objectives of treatment have been met.
  - The individual is unwilling to participate in treatment; treatment attendance has been inconsistent or poor and efforts to address these factors have not been successful.
  - The individual, family, and/or guardian requests to be discharged

- Treatment no longer results in measurable benefits. There does not appear to be any reasonable prognosis for improvement with continued treatment.
- The individual is unable to tolerate treatment because of a serious medical, psychological, or other condition.
- The individual demonstrates behavior that interferes with improvement or participation in treatment (e.g., noncompliance, malingering), providing that efforts to address the interfering behavior have been unsuccessful.
- Certain modalities or interventions employed by speech-language pathologists also may not be covered. Coverage may also be limited due to the lack of supporting scientific evidence. eviCore continually researches new and existing technologies used by speech-language pathologists. eviCore has also developed copyrighted Clinical Practice Guidelines that use evidence-based research to address various conditions.

Authorization of Services

Management Rules

1. Place of Service requiring authorization
   - Outpatient therapy as defined by the Health Plan or Centers for Medicare & Medicaid Services (CMS)
   - Home health care.
2. Time-frame for submission
   - Initial authorization: a request for prior authorization for the first request is typically submitted within 7 days of the initial evaluation (Time-frames may change based on health plan rules).
   - Ongoing care: the request may be submitted within 7 days prior to the expiration date of the last authorization (Time-frames may change based on health plan rules). A request submitted greater than 7 days must have clinical information that supports ongoing care.
   - Some health plans may not require prior-authorization; therefore this suggested time-frame will not apply.
3. Clinical Information
   - Acute and Subacute Conditions – It is recommended that clinical information may be collected within 14 days of the submission date (unless otherwise dictated by State Medicaid Laws or Health Plan Rules).
   - Chronic Conditions –It is recommended that clinical information may be collected within 20 days of the date of submission (unless otherwise dictated by State Medicaid Laws or Health Plan Rules).
4. Authorizations
   - Authorizations of visits and units over a specific period of time are based on a set of clinical data for the condition.
     - Some health plans allow dynamic waivers. A dynamic waiver allows a range of visits from 6-12 visits based on the complexity of the condition.
     - Some health plans allow a set number of visits to be completed before prior authorization are required.
     - Updated clinical information is required for ongoing care.

5. Benefit limit
   - The member's benefit limit and remaining benefits are checked at the time of case build. Authorizations are based on medical necessity. Every effort is made to authorize within the benefit limit, however, it is the responsibility of the member and provider to monitor the use of the member's benefits.
6. State or Federal Mandates
   - eviCore makes every effort to authorize care according to state and federal mandates.
7. Duplicate care (the same or similar treatment plan for the same condition)
   - Request for care for the same condition by more than one provider is considered duplicate care. Duplicate care is not medically necessary, as the member's condition can improve with care provided under one treatment plan and by one provider. eviCore will authorize additional care when specialized care is needed such as swallowing or feeding therapy.
8. Retrospective review
   - Is conducted after the services are completed
     In order to determine if services were medically necessary and required the skills of a therapist, documentation must be reviewed. The provider
   - must submit all case notes such as: initial evaluation, progress notes, daily treatment notes, modality/exercise logs and discharge summary
9. Reconsideration
   - The provider may ask for a reconsideration of an authorization decision when the case is denied or when a portion of the visits, units or dates of service is approved (partial approval).
   - Reconsideration can be requested in writing or by requesting a peer to peer call.
   - The provider must follow the specific rules as outlined by Centers for Medicare Medicaid or the Health Plan.
10. Appeals
    - eviCore is delegated for first level appeals for some health plans.
    - Appeals for Medicare members must be filed through the Health Plan unless delegated to eviCore.
    - To appeal an authorization decision, the provider can submit new information in writing for review or the provider may request a peer to peer call and provide new information for review on behalf of the member.
    - Appeal instructions are outlined in the provider/member denial letters

Applicable Federal and State Mandates

The Federal Government and many state insurance mandates require health insurance companies to pay for medically necessary and evidence-based treatments for certain population groups or conditions. eviCore takes into consideration these applicable federal and state mandates when authorizing care.

Early and Periodic Screening Diagnostic and Treatment (EPSDT) Mandate

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In 1967, Congress introduced the Medicaid benefit for children and adolescents, known as Early and Periodic Screening, Diagnostic and Treatment (EPSDT). The goal of this benefit is to ensure that children under the age of 21 who are enrolled in Medicaid receive age-appropriate screening, preventive services, and treatment services that are medically necessary to correct or ameliorate any identified conditions – the right care to the right child at the right time in the right setting. This broad scope supports a comprehensive, high-quality health benefit. States share responsibility for implementing the EPSDT benefit with the Centers for Medicare & Medicaid Services (https://www.medicaid.gov/medicaid/benefits/epsdt/index.html). eviCore will adhere to the applicable federal and state guidelines when authorizing therapy for children covered by the EPSDT mandate.

eviCore's Evidence Based Guidelines

eviCore bases clinical guidelines on published national guidelines and research from evidence-based, peer-reviewed literature. In addition, eviCore's Medical Advisory Committee continually evaluates the clinical guidelines based on new evidence in peer-reviewed literature.

Purpose of the Guideline

- Describe appropriate care based on the best available scientific evidence and broad consensus;
- To reduce inappropriate variation in practice;
- To promote efficient use of resources;
- To act as focus for quality control
- Criteria used by clinical reviewers to make authorization decisions

Process for developing new guidelines and updating current guidelines:

- New Guidelines are created by a Speech-Language Pathologist
- Current guidelines are updated annually
- New guidelines are reviewed by external subject matter experts
- The recommendations from the external subject matter expert may be incorporated into the guideline
- The eviCore Medical Advisory Committee will review the new guidelines and updates to the current guidelines annually
- The guideline is then sent to the Health Plan for review
- Accepted changes will be incorporated into the guideline before publication on the eviCore website.

Intended Audience:

- Utilization Management Clinical Reviewers

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- Providers of speech-language therapy services

Health Plans that contract with eviCore

Medicare Coverage Policies

- The coverage policies of CMS (Centers for Medicare and Medicaid Services) take precedence over eviCore's guidelines for Medicare and Medicare Advantage enrollees.

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References

1. American Speech-Language-Hearing Association. Admission/discharge Criteria in Speech-Language Pathology. http://www.asha.org/policy/GL2004-00046/ Accessed September 5, 2018.
2. American Speech-Language-Hearing Association. Evidence-based Practice in Communication Disorders [position statement]. http://www.asha.org/policy/PS2005-00221/ Accessed September 5, 2018.
3. American Speech-Language-Hearing Association. Preferred Practice Patterns for the Profession of Speech-Language Pathology http://www.asha.org/policy/PP2004-00191/. Accessed September 5, 2018.
4. American Speech-Language-Hearing Association. Quality Indicators for Professional Service Programs in Audiology and Speech-Language Pathology http://www.asha.org/policy/ST2005-00186/. Accessed September 5, 2018.
5. American Speech-Language-Hearing Association. Scope of Practice in Speech-Language Pathology http://www.asha.org/policy/SP2016-00343/. Accessed September 5, 2018.
6. American Speech-Language Hearing Association. Speech Language Pathology Medical Review Guidelines. https://www.asha.org/practice/reimbursement/SLP-medical-review-guidelines/ Accessed September 5, 2018.
7. Centers for Medicare & Medicaid Services. Early and Periodic Screening, Diagnostic, and Treatment. https://www.medicaid.gov/medicaid/benefits/epsdt/index.html. Accessed September 5, 2018.
8. Jimmo vs. Sebelius Settlement http://www.medicareadvocacy.org/jimmo-v-sebelius/. Accessed September 5, 2018.
9. Medicare Benefit Policy Manual, Sections 220.2 B, 220.2 D, and Chapter 7, Section 40.2.1

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Adult Spoken Language Evaluation

Definition

A comprehensive spoken language evaluation assesses speech, language, cognitive-communication in adults, including identification of impairments, associated activity and participation limitations, and context barriers and facilitators.

- Cerebral Vascular Accident
- Traumatic Brain Injury
- Progressive Neurological Disease
- Brain Infection/Meningitis
- Dementia.

Criteria for Evaluation

"Adults of all ages are eligible for speech-language pathology assessment when their ability to communicate effectively is reduced or impaired or when there is reason to believe (e.g., risk factors) that treatment would prevent the development of a speech, language, or communication, reduce the degree of impairment; lead to improved functional communication or prevent the decline of communication."

- Eligibility for evaluation is indicated if one or more of these factors are present:
  - Referral from the individual, family member, audiologist, physician, other speech-language pathologist, or interdisciplinary team because of a suspected speech, language, or communication, disorder.
  - Failure to pass a screening assessment for communication and/or swallowing function.
  - The individual is unable to communicate functionally across environments and communication partners.
  - The individual's communication abilities are not comparable to those of others of the same chronological age, gender, ethnicity, or cultural and linguistic background.
  - The individual's communication skills negatively affect health, safety, social or vocational status.
  - The individual, family, and/or guardian seek services to achieve and/or maintain functional communication (including alternative and augmentative means of communication).

Provider Requirements

- A speech-language pathologist (SLP) has a master's or doctoral degree and is licensed, if applicable, as a speech-language pathologist by the state in which he or she is practicing. The SLP possesses a Certificate of Clinical Competence (CCC) from ASHA or has met all the educational requirements leading to the CCC, and is in the clinical fellowship (CF) year or is otherwise eligible for the CCC.
  - Licensed and provisionally licensed speech-language pathologists; and

- Home health agencies that employ or contract with licensed speech-language pathologists.

- Speech-Language evaluations may not be performed by speech language therapy assistants

Evaluation Tests

- Standardized for a specific disorder identified; or
- Consist of a standardized caregiver report format; or
- Composed of professionally acceptable therapeutic observational techniques utilizing a formalized
- Checklist or observational tools

Aphasia	
Western Aphasia Battery-Revised (WAB-R) Kertesz, 2006	Ages: 18:0-89:11; Research-based criterion-referenced score: aphasia quotient, language quotient, cortical quotient
Boston Diagnostic Aphasia Examination Third Edition (BDAE-3) Goodglass, Kaplan, and Barresi, 2000	Ages: Adults; Assesses conversational and expository speech, auditory comprehension, oral expression (including the Boston Naming Test), reading, writing, apraxia assessment, supplemental nonlanguage tests; Severity Rating, Profile of Speech Characteristics
The Minnesota Test for the Differential Diagnosis of Aphasia Second Edition (MTDDA-2) Schuell and Sefer, 1992	Ages: Adults; 5 sections, auditory disturbances, visual and reading disturbances, speech and language disturbances, visuomotor and writing disturbances, and disturbances of numerical relations and arithmetic processes
Porch Index of Communicative Ability (PICA) Porch, Revised 2001	Ages: Adults; Measures degree of deficit and amount of recovery, 18 subtests of 4 language modalities.
Communication Abilities in Daily Living-2 (CADL-2) Holland, Frattali, and Fromm, 1999	Ages: Adults; Assesses communication activities in seven areas: reading, writing, using numbers, social interaction, divergent communication, contextual communication, nonverbal communication, sequential relationships, and humor/metaphor/absurdity
American Speech and Hearing Association Functional Assessment of Communication Skills –Revised (ASHA FACS), Frattali, Thompson, Holland, Wohl, Wenck, Slater, and Paul, 2017	Ages: Adults; 43 items across four domains: social communication, communication of basic needs, reading/writing/number concepts, and daily planning.
Communication Effectiveness Index (CETI), Pickard, Bester, Elbard, Finlayson, and Zoghaib, 1989	Ages: Adults; Caregiver rating communication abilities in situations important in day-to-day life
Frenchay Aphasia Screening Test (FAST), Zeltzer, 1987	Ages: Adults; Assesses language in four major areas: comprehension, verbal expression, reading, and writing.
The Stroke Impact Scale (SIS) Zeltzer and Salter, 2011	Ages: Adults; Assess multidimensional stroke outcomes, including strength, hand function, activities of daily living/instrumental activities of daily living (ADL/IADL), mobility, communication, emotion, memory and thinking, and participation.
Bedside Evaluation Screening Test-2 (BEST-2), Fitch-West and Sands, 1998	Ages: Adults; Assess and qualify aphasia includes, auditory comprehension, speaking and reading
Quick Assessment for Aphasia, Tanner and Colbertson, 1999	Ages: Adolescents and Adults; Assesses auditory comprehension, verbal expression, reading, writing, and

	math skills. Basic skills such as verbal labeling, answering questions, giving basic information, and general conversation are assessed.
Aphasia Diagnostic Profiles, Helm-Estabrooks, 1992	Ages: Adults; Assessment of language and communication impairment associated with aphasia
Comprehensive Aphasia Test, Swinburn, Porter, and Howard, 2004.	Ages: Adult; Assesses cognition, language. Language battery provides a profile of performance across all modalities of language production and comprehension
Mississippi Aphasia Screening Test (MAST), Nakase-Thompson, 2002 Mississippi Aphasia Screening Test-Spanish (MASTsp)	Ages: 18 +; Repeatable screening measure for individuals with severely impaired communication/language skills.
Multilingual Aphasia Examination 3rd Edition (MAE-3), Benton, Hamsher, and Sivon Spanish version, Rey, Sivon, and Benton, 1994	Ages: 6-69; Assesses for presence, severity, and qualitative aspects of aphasic disorder. Areas: oral verbal understanding, reading comprehension and oral, written, and block spelling. Speech articulation and fluency-nonfluency of expressive speech are rated. Writing is evaluated through spelling.
Apraxia	
Apraxia Battery for Adults-2 (ABA-2), Dabul, 2000	Ages: Adolescents-adults; Assesses presence and severity of apraxia. Six subtests: diadochokinetic rate, increasing word length, limb and oral apraxia, latency and utterance time for polysyllabic words, repeated trials test, and inventory of articulation characteristics.
Quick Assessment for Apraxia of Speech, Tanner and Colbertson, 1999.	Ages: Adolescents-Adults; an organized, step-by-step method for quickly assessing the presence or absence of the motor speech programming disorders.
Comprehensive Apraxia Test, Di Simoni, 1989	Ages: All; To detect and quantify all known effects for oral-verbal apraxia. Assesses oral non-speech movements, oral postures, oral movements
Test of Oral and Limb Apraxia (TOLA), Helm-Estabrooks, 1992	Ages: Adults; Assesses the presence of oral and limb apraxia with developmental or acquired neurologic disorders
Dysarthria	
Frenchay Dysarthria Assessment-2 (FDA-2), Enderby and Palmer, 2008.	Ages: 12-97; Divided into 8 sections: reflexes, respiration, lips, palate, laryngeal, tongue, intelligibility, influencing factors
Dysarthria Examination Battery, Drummond, 1993	Ages: Children-Adult; Evaluates respiration, phonation, resonation, articulation, and prosody
Assessment of Intelligibility of Dysarthric Speakers (AIDS), Yorkston and Beukelman, 1984 Sentence Intelligibility Test- updated computerized version of the sentence portion	Ages: Adolescents-Adults; Assesses single word and sentence intelligibility and speaking rates of dysarthric speakers.
Quick Assessment for Dysarthria, Tanner and Culbertson, 1999	Ages: Adolescents-Adults; *Assesses* respiration, phonation, articulation, resonance, and prosody;
Tikofsky's 50-Word Intelligibility Test, Tikofsky, 1970	Ages: Adolescent-Adult: Assesses degree of dysarthria based on intelligibility
The Dysarthria Profile, Robertson, 1987	Ages: Adults; Assesses respiration, phonation, facial musculature, diadochokinesis
Cognitive-Communication	
Cognitive Communication Checklist for Acquired Brain Injury (CCCAIB), MacDonald, 2015	Ages: Adolescents-Adults; Assesses communication difficulties in: functional daily living, auditory comprehension & information, expression, discourse &

	social communication, reading comprehension, written Expression and thinking, reasoning, problem solving, executive functions, self-regulation
SCCAN Scales of Cognitive and Communicative Ability for Neurorehabilitation Set, Holland, 2012	Ages: 18-95; 8 scales to assess patients with neurocognitive and communicative impairment including: oral expression, orientation, memory, speech comprehension, reading comprehension, writing, attention, problem solving
Burns Brief Inventory of Cognition and Communication, Burns, 1997	Ages; 18-80; Assesses the right hemisphere, left hemisphere, and complex neuropathology skills to determine areas of impairment and appropriateness for intervention
Test of Everyday Attention (TEA), Ward, Ridgeway, and Nimmo-Smith, 1994	Ages: 18-80; a measure clinical and theoretical aspects of attention
Brief Test of Head Injury (BTHI), Helm-Estabrooks and Hotz, 1991	Ages: Adolescents-Adults; Measures a variety of early manifested deficits in adult patients with TBI. Specific areas of testing: orientation/attention, following commands, linguistic organization, reading comprehension, naming, memory, visual-spatial skills.
Cognitive Linguistic Quick Test Plus (CLQT+), Helm-Estabrooks, 2017	Ages: 18-89; Assesses cognitive and linguistic strengths and weaknesses in attention, memory, executive function, language, and visuospatial skills
Functional Linguistic Communication Inventory (FLCI), Bayles and Tomoeda, 1994	Ages: Adults; Evaluates functional communication skills in the areas of greeting and naming, answering questions, writing, sign comprehension, object-to picture matching, word reading and comprehension, following comprehension, following commands, pantomime, gesture, and conversation.
Measure of Cognitive-Linguistic Abilities (MCLA), Ellmo, Graser, Krchnavak, Hauck, and Calabrese, 1995	Ages: 16-50; Purposes: to assess linguistic abilities, to help identify cognitive deficits that have an impact on linguistic performance, and to recognize the important interrelationship between cognition and language
Scales of Cognitive Ability for Traumatic Brain Injury (SCATBI), Adamovich and Henderson, 1992	Ages: Adolescents-Adults; Assesses cognitive and linguistic abilities in perception/discrimination, orientation, organization, recall, and reasoning
Rehabilitation Institute of Chicago Evaluation of Communication Problems in Right Hemisphere Dysfunction-3 (RICE-3), Halper, Cherney, and Burns, 2010	Ages: Adult; 5 subtests evaluating right hemisphere cognitive-communication deficits that have clinical relevance to rehabilitation
Mini Inventory of Right Brain Injury-2 (MRIBI-2), Duval, Jose, and Joseph, 2000	Ages: 20-90; Quick screening for neurocognitive deficits associated with right hemisphere lesions
Ross Inventory Processing Assessment-2 (RIPA-2), Ross-Swain, 1996	Assesses 10 areas of communicative and cognitive functioning: immediate memory, recent memory, temporal orientation (recent), temporal orientation (remote), spatial orientation, orientation to environment, recall of general information, problem solving and abstract reasoning, organization, and auditory processing and retention
Repeatable Battery for Assessment of Neuropsychological Status (RBANS), Randolph, 2012 Spanish edition available	Ages: 12-89; Assesses cognition, attention, immediate and delayed memory, language and visuospatial/constructional skills.

Dysphagia	
Swallow Ability and Function Evaluation (SAFE), Ross-Swain, Kipping, and Yee, 2003	Ages: Adolescents-Adults; Purposes: to identify specific problems occurring during the oral pharyngeal stages of swallowing, to develop recommendations regarding treatment plans, to make periodic reevaluations and assessments of progress in therapy
Bedside Swallowing Evaluation, Scott and White, 2008	Ages: Adults; Assesses mental status, oral-motor, and swallowing for food and liquid
Bedside Evaluation of Dysphagia (BED) Revised, Hardy, 1999	Ages: Adults; Includes prescreening to identify non-physiological factors; oral motor assessment to evaluate structure, function, touch sensitivity and suspected damage to sensory or motor nerves; and oral-pharyngeal dysphagia symptoms assessment by administering foods and liquids. Includes bedside screening one-page form.
Adult Assessments Clinical Swallowing Exam- ASHA	Ages: Adults; Includes subjective information, current diet, feeding method, endurance during meals, mental status, objective assessment including oral motor, voice quality, respiratory, food and liquid trials, contributing factors, NOMS, and prognosis.
Massey Bedside Swallowing Screen, Massey, 2009	Ages: 21+ Preliminary screening of swallowing abilities
Voice	
Consensus Auditory-Perceptual Evaluation of Voice (CAPE-V), Kempster, ASHA, 2002	Ages: Children-Adults; Purpose is to describe the severity of auditory-perceptual attributes of a voice problem
Clinical Voice Evaluation-2 (CVE-2), Williamson, 2003	Ages: Children-Adults; Assesses quality, pitch, pitch range, loudness, nasal resonance, oral resonance, rate, prosody, aerodynamics, related observations, and client perceptions.
GRBAS Scale, Japan Society of Logopedics and Phoniatrics, 1981	Ages: Assesses grade, roughness, breathiness, asthenia, and strain.

Goal of Speech Language Evaluation

These evaluations determine the adult's level of function and competencies through therapeutic observation and standardized testing measures appropriate to speech and language limitation and specific to the therapeutic services required.

- Comprehensive spoken language assessment is conducted to identify and describe:
  - Differential diagnosis based on clinical findings.
  - Changes from premorbid abilities, the extent to which the disorder has impacted daily life, and current level of functioning
  - Underlying strengths and weaknesses related to speech, language, and cognitive factors that affect communication performance.
  - Concurrent conditions with complexities and their impact on prognosis
  - If no meaningful verbal communication is seen, the prognosis for a nonverbal means of communicating simple wants and needs.
  - Indicate if treatment is necessary and degree of potential for functional gains.
- Comprehensive speech-language may result in the following:
  - Diagnosis of a speech, language, cognitive-communication delay or disorder.

- Clinical description of the characteristics of speech, language, cognitive-communication delay or. disorder
- Identification of a communication difference, possibly co-occurring with a speech, language, and cognitive-communication disorder or delay.
- Prognosis for change (in the individual or relevant contexts).
- Recommendations for intervention and support.
- Identification of the effectiveness of intervention and supports.
- Referral for other assessments or services.

Clinical Process

- Assessment may be static (i.e., using procedures designed to describe current levels of functioning within relevant domains) and/or dynamic (i.e., using hypothesis testing procedures to identify potentially successful intervention and support procedures) and includes the following:
  - Relevant case history, including past and current medical status, cause and onset of disorder, past treatment for a speech and language impairment and linguistic backgrounds.
  - Review of auditory, visual, motor, and cognitive status.
  - Patient/client and family/caregiver interview.
  - Standardized and/or nonstandardized measures of specific aspects of speech, spoken and nonspoken language, and cognitive-communication.
  - Analysis of associated medical, behavioral, environmental, educational, social factors and cultural factors.
  - Identification of potential for effective intervention strategies and compensations;
  - Selection of standardized measures for speech, language, and/or cognitive-communication with consideration for documented ecological validity.
  - Follow-up services to monitor communication status and ensure appropriate intervention and support for individuals with identified speech, language and cognitive-communication disorders.

Scope of Spoken Language Evaluation

- Assessment typically includes the following:
  - Relevant case history, including
    - Past and current medical history;
    - Cause and onset of disorder,
    - The level of functioning prior to the onset of the condition and any areas being treated must be clearly described in objective, measurable terminology
    - Past treatment for a speech and language impairment. If prior treatment was provided in the past for the same condition, the level of functioning following discharge from that treatment must be clearly described using objective, measureable terminology
    - family's/caregiver's concerns about the adult's language (and speech),
    - languages and/or dialects used in the home
  - **Hearing screening**, if audiology evaluation dated within six months following the event is not available;

- Oral mechanism examination;
  - Muscle development of the jaw, lips and tongue and the integrity of the oral structures (hard and soft palate, jaw, maxilla, lips and tongue).
  - Purposeful movement through imitation of non-speech actions.
  - Diadokokinetic rate: muscle movement for coordination and sequencing a repetitive string of sounds rapidly (i.e., puh, tuh, kuh or buttercup).
- Respiratory examination;
  - Duration and control of inhalation and exhalation,
  - Coordination of expiration with speaking.
- Subjective judgment of function for voice and fluency
  - Voice pitch, quality, resonance and volume,
  - Fluency of speech production.
- Subjective judgment of function for voice and fluency
  - Voice pitch, quality, resonance and volume,
  - Fluency of speech production.

- Administer spoken language testing using standardized tests and/or professionally acceptable therapeutic observational techniques utilizing a formalized checklist or observational tools.
  - Phonology at word level through conversation, including identification of apraxia or dysarthria and phonological awareness,
  - Receptive language skills, including
    - Comprehension of spoken language from single words through to conversational level
    - If minimal to no comprehension of spoken language, understanding symbols, signs and gestures
    - Cognition, including attention, memory, organization and executive functioning
    - Understanding pragmatics of communicative partners
    - Reading from recognition of individual letters through to comprehension of paragraphs.
  - Expressive language skills, including
    - Use of spoken language from single words through to conversational level
    - Word retrieval skills
    - Nonverbal communication abilities
    - Pragmatics of language
    - Spoken discourse skills (conversation, narrative, expository).
    - Use of written language from letter formation through to paragraph formation.

Outcomes

- Analysis of Results
  - Interpret the clinical findings of the spoken language evaluation. If the performance measure falls more than 1 standard deviation below the mean language skills are impaired.
  - Determine the needs and abilities of the client/patient, family/caregiver concerns and the potential for functional improvement within a reasonable time frame,
  - Determine an appropriate plan of care based upon the adult's medical history, cultural and linguistic differences, analysis of test results and functional impact on activities of daily living,
- Plan of Care development
  - Develop an individual program designed to address the adult's immediate communication needs so they may participate in a variety of communication situations within home or current place of residence and community. Utilize the communication strengths of the adult and the expectations of the adult and family/caregiver when developing this program.
    - State the types of therapy to be provided (articulation, receptive language, expressive language, cognition, pragmatics, etc.)
    - Develop objective, achievable and measureable long and short term goals targeting impaired skills identified through analysis of test results.
    - Provide a baseline measure for each short term goal presented.
    - Emphasize practice and repetition to ensure re-acquisition of sounds, syllables and words which can be enhanced with tactile, kinesthetic, auditory and visual prompts.
  - Develop a home program to facilitate carry-over of skills learned in treatment to all environments in the adult's world
  - Provide family members/ caregivers and training in communication techniques and strategies to facilitate effective communication.
  - Provide family/caregiver with information regarding community support groups and/or programs.
  - Continue to dynamically assess the adult each session because symptoms will change over time.
  - Select and implement appropriate Augmentative or Alternative Communication system for those adults with significant speech and/or language difficulties.
  - Referrals, including
    - Physician or neurologist for medical concerns
    - Social worker for patient or family concerns
    - Audiology for suspected hearing loss
    - Specialist for providing hi-tech AAC, if recommended
    - Occupational therapy for limb

Documentation

The initial assessment establishes the baseline data necessary for evaluating expected habilitation or rehabilitation potential, setting realistic goals, and measuring

communication status at periodic intervals. It should include objective or subjective baseline diagnostic testing (standardized or non-standardized), interpretation of test results, and clinical findings. If baseline testing cannot be accomplished for any reason, this should be noted in the initial assessment or progress notes, along with the reason(s). Reassessments are appropriate when the patient exhibits a change in functional speech and language communication skills.

Documentation includes pertinent background information, assessment results and interpretation, prognosis, and recommendations, and indicates the need for further assessment, follow-up, or referral. When intervention services are recommended, information is provided concerning estimated duration, and type of service (e.g., individual, group, home program).

Documentation addresses the type and severity of the communication impairment, or risks of impaired communication development, and associated conditions (e.g., medical diagnoses).

Documentation includes summaries of previous services in accordance with all relevant legal and agency guidelines.

Speech-language pathologists prepare, sign, and maintain documentation that describes the professional service. Pertinent background information, results and interpretation, prognosis, and recommendations should be included. Recommendations may include the need for further assessment, follow-up, or referral. When intervention is recommended estimated duration and type of service (e.g., individual, group) must be specified.

- Documentation should include:
  - Findings of the speech-language evaluation
  - Objective and subjective measurements of functioning
  - Short-term and long-term measurable goals, with expectations for progress
  - Reasonable estimate of the time needed to reach the goals.

References

1. American Speech-Language-Hearing Association. Admission/discharge Criteria in Speech-Language Pathology. http://www.asha.org/policy/GL2004-00046/ Accessed September 5, 2018.
2. American Speech-Language and Hearing Association Assessment Tools, Techniques, and Data Sources (Practice Portal). https://www.asha.org/Practice-Portal/Clinical-Topics/Late-Language-Emergence/Assessment-Tools-Techniques-and-Data-Sources/. Accessed September 5, 2018.
3. American Speech-Language-Hearing Association. Preferred Practice Patterns for the Profession of Speech-Language Pathology http://www.asha.org/policy/PP2004-00191/. Accessed September 5, 2018.
4. American Speech-Language-Hearing Association. Scope of Practice in Speech-Language Pathology http://www.asha.org/policy/SP2016-00343/. Accessed September 5, 2018.
   American Speech-Language Hearing Association. Speech Language Pathology Medical Review Guidelines. https://www.asha.org/practice/reimbursement/SLP-medical-review-guidelines/ Accessed September 5, 2018.
5. Freed DB. Motor Speech Disorders: Diagnosis and Treatment, 1st ed. San Diego, CA. Singular Publishing Group; 1999
6. Mauszycki SC, Wambaugh, JL. Acquired apraxia of speech: A yreatment overview. ASHA Leader. 2011;16:16-19.
7. McNeil MR, Clinical Management of Sensorimotor Speech Disorders. 2nd ed. New York, NY.Thieme Medical Publishers Inc; 2008.

Wambaugh J, Duffy J, McNeil M, Robin D, Rogers M. Treatment guidelines for acquired apraxia of speech: Treatment descriptions and recommendations. Journal of Medical Speech-Language Pathology. 2006;14(2):35-6.

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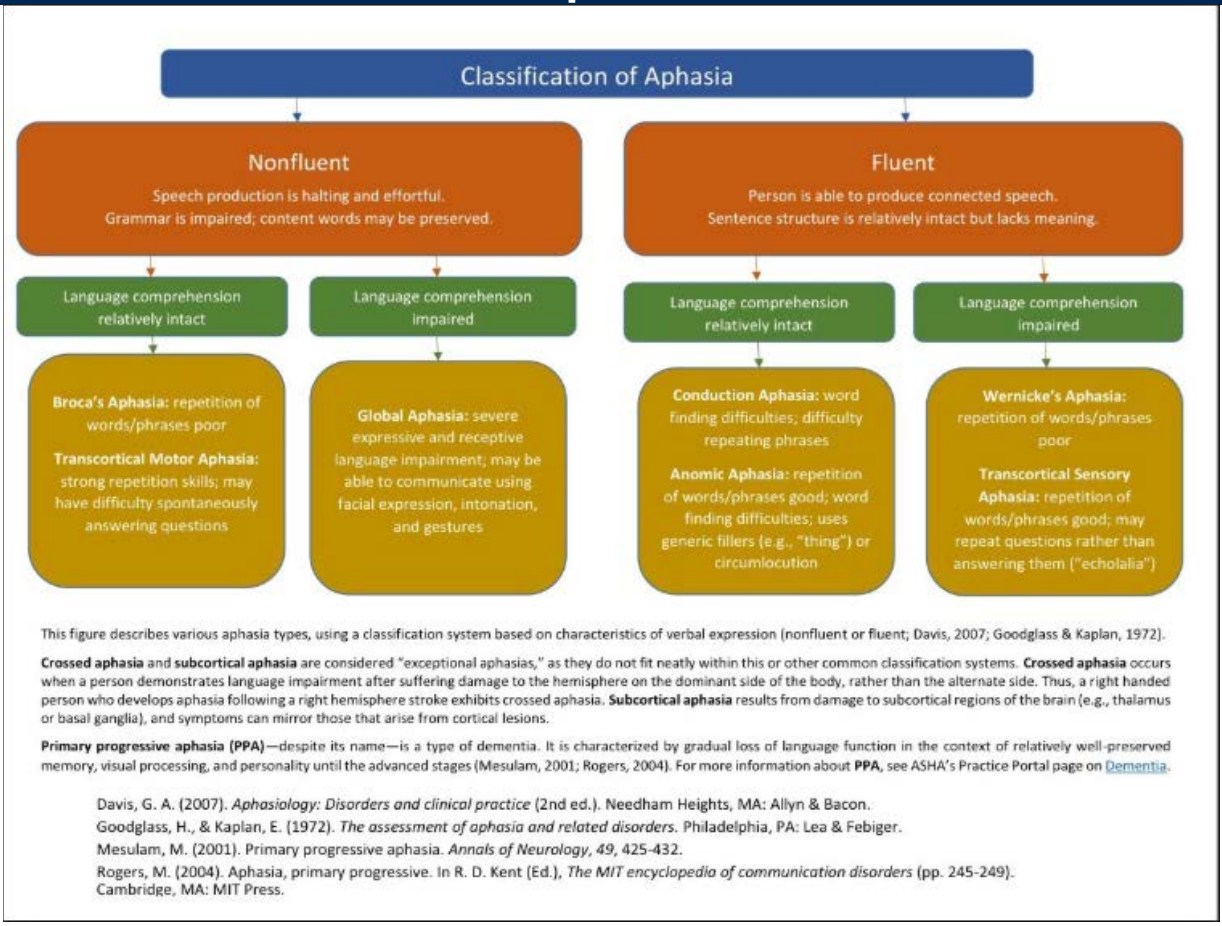
Aphasia



https://www.asha.org/uploadedFiles/ASHA/Practice_Portal/Clinical_Topics/Aphasia/Common-Classifications-of-Aphasia.pdf[1]

Definition

- Aphasia is defined as an acquired neurogenic language disorder resulting from an injury to the brain, usually, the left hemisphere. Aphasia involves varying degrees of impairment. Depending on an individual's unique set of symptoms, impairments may result in loss of ability to use functional communication skills. A person with aphasia often has relatively intact nonlinguistic cognitive skills.
- Symptoms may not fit neatly into a single aphasia type, and classification may change over time as communication improves with recovery.
- The outcome of aphasia varies significantly from person to person and is determined by the initial severity level, lesion site and size, patient age, gender and education level, patient motivation in treatment, comorbidities, and the amount of spontaneous recovery that occurs over time.

Presentation

- Aphasia is caused by damage to the language centers of the brain. Damage may involve both the right and left hemispheres. One of the most common causes of aphasia is stroke/CVA. Other causes include Traumatic Brain Injury (TBI), Brain Tumor, Brain Infection, and Progressive Neurological Diseases.
- Aphasia may be masked by the motor speech disorders of apraxia and/or dysarthria.
- Severity ranges vary. Deficits may affect one, multiple, or all areas of language functioning.
- Dysphagia may be a co-morbidity.
- Cognitive impairments may negatively impact recovery of language skills.

Differential Diagnosis Considerations

- The pattern of impaired language abilities is one of the most common classification systems utilized to determine the various presentations of Aphasia. The system labels the aphasia as either fluent or nonfluent, depending on the presented characteristics. (refer to ASHA's classification of aphasia[5]).
- An individual's symptoms may not fit precisely into one aphasia type. Communication improves with recovery, therefore the classification of aphasia may change over time. Other speech and language impairments such as dysarthria and apraxia of speech can co-occur with aphasia.
- The diagnosis of aphasia depends on impairment of all language modalities (spoken language comprehension, reading comprehension, written expression, and spoken language expression) to some degree. In different types of aphasia, comprehension may be much better than expression, for example. When some level of impairment exists in each language modality, then the diagnosis of aphasia is appropriate. Therefore, the language in which the treatment is provided should be carefully considered. It should depend on maximizing the client's abilities, based on which language is most well-preserved, as well as which language will be most beneficial for communication in the situation in which the client is living.
- Communication partner training should be included in the treatment of all types and severities of aphasia, and can have direct impact on communication in activities and life participation.
- Bilingual individuals may exhibit aphasia in diverse ways for each language spoken, depending on proficiency, when language was learned, and how often each language is used.
- Symptoms vary depending on demands of communicative interactions, location of infarct and degree of brain damage.

Specific Treatment Issues

- Bilingual individuals may exhibit aphasia in diverse ways for each language spoken, depending on proficiency, when language was learned, and how often each language is used.
- Symptoms vary depending on demands of communicative interactions, location of infarct and degree of brain damage.
- Varying degrees of aphasia may present in receptive and expressive language.

Symptomatology

Functional effects on an individual's communication will vary in regards to number, intensity and level of severity of symptoms.

Clinical Symptoms	Functional Effects
➢ Impaired language comprehension skills	➢ Difficulty finding words (anomia) ➢ Difficultly understanding what is heard ➢ Needing extra time to process what is heard ➢ Following simple/complex directions ➢ Answering yes/no questions ➢ Single word utterances ➢ Difficulty repeating what is heard ➢ Figurative speech misinterpreted
➢ Impaired verbal language skills	➢ Expressing basic automatic speech or social greetings ➢ Single word utterances ➢ Fragmented, short phrases ➢ Grammatical errors ➢ Words in wrong order phrases/sentences ➢ Sound substitutions ➢ Jargon ➢ Formulating questions, thoughts, responses, and other types of verbal communication ➢ Producing cohesive language in all situations up to previous ability ➢ Halting or effortful speech ➢ Unaware of errors
➢ Impairment in Reading Comprehension (Alexia)	➢ Tracking, recognizing or attaching meaning to printed material ➢ Difficulty understanding words by sight ➢ Difficulty sounding out words ➢ Associated word substitutions (fork for spoon) ➢ Reading and understanding sentences, instructions, and questions from increasingly longer, more complex materials
➢ Impairment in Written Expression (Agraphia)	➢ Difficulty copying or tracing letters, numbers, words, sentences ➢ Spelling ➢ May write single words only ➢ May write nonsense syllables or words ➢ Nonsense run on sentences ➢ Incorrect grammar

SLP Management

Requirements for Speech Therapy Visits

- In order to establish medical necessity for speech therapy services, the following criteria must be met:
  - The treatment must be considered specific and effective for the patient's condition under evidence based practice guidelines.
  - Frequency and Duration must be considered acceptable under established standards of practice.
  - The complexity of the condition must be such that the skills of a speech therapist are required for the frequency requested.
  - Habilitative and Rehabilitative services- A positive prognosis must established that the patient's condition is expected to improve from the services provided.
  - Maintenance-Services are required to maintain the member's current condition or to prevent or slow deterioration of the member's condition. Coverage of maintenance service is health plan specific.
  - Continuation of care is supported by functional progress resulting from a positive response to skilled treatment.

Frequency and Duration

- Treatment frequency and duration must be based on:
  - Severity of objective clinical findings,
  - Presence of and number of complicating factors and comorbidities,
  - Natural history and chronicity of condition,
  - Expectation for functional improvement with skilled intervention,
  - Response to treatment provided
  - Patient's level of independence

  Goal of the evaluation
- Establish a differential diagnosis based on clinical findings.
- Document changes from premorbid abilities, the extent to which the disorder has impacted daily life, and current level of functioning.
- Determine if treatment is necessary and potential for functional gains.

Assessments and Measurement Tools

- Stroke and Aphasia Quality of Life Scale (SAQOL) - Spanish version available as well
- Western Aphasia Battery-Revised (WAB-R)
- Boston Diagnostic Aphasia Examination Third Edition (BDAE-3)
- Communication Abilities in Daily Living-3 (CADL-3)
- American Speech and Hearing Association Functional Assessment of Communication Skills –Revised (ASHA FACS)

- Communication Effectiveness Index (CETI)
- The Stroke Impact Scale (SIS)
- Bedside Evaluation Screening Test-2 (BEST-2)
- Mississippi Aphasia Screening Test (MAST)
- Multilingual Aphasia Examination 3rd Edition (MAE-3)
- The Frenchay Aphasia Screening Test (FAST)
- ASHAs Person-Centered Aphasia Evaluation

Evaluation Should Identify

- Relevant past medical history with cause and onset date of disorder
- Education
- Occupation
- Cultural and linguistic backgrounds
- The patient's preferences and goals
- The patient's perceived communication deficits and their impact on social interactions
- Level of functioning prior to the onset of the current condition. Areas being treated should be clearly described in objective, measurable terminology.
- Past treatment for aphasia. The level of functioning following discharge from prior treatment should be clearly documented using objective, measureable terminology.
- Diagnosis of current condition, including impact on daily life and barriers to success
- Description of the communication impairments including extent and severity and the impact of communication impairments on the quality of life
- Concurrent conditions such as motor speech impairments, hearing loss, cognitive impairment, visual acuity, visual agnosia, visual field cuts, pain, endurance/fatigue, depression, upper extremity hemiparesis and the impact these deficits may have on prognosis.
- Treatment recommendations and description of participation limitations and impact on communicative activities of daily living
- Prognosis for improvement and rationale

Plan of Care

- Long-term/short term goals with estimated completion time frames
- Frequency and intensity of treatment
- Justification for intensive or long-term treatment
- Prognosis for functional improvements and rationale

- Referrals to other professionals and services as appropriate

Treatment Approaches

Community Support	Provide community support to assist patient to function in individual life communicative activities of daily living: Community Aphasia Groups Life Participation Approach to Aphasia (LPAA) Digitally Based Therapy (Computers, Tablets, Smart Phones, etc.)
Multimodal Treatment	Augmentative and Alternative Communication (AAC) Promoting Aphasics' Communication Effectiveness (PACE) Visual Action Therapy (VAT)
Melodic Intonation Therapy (MIT)	Intoning single words and short phrases to improve verbal production
Partner Approaches	Conversational coaching Supported Communication Intervention (SCI) Constraint Induces Therapy (CILT)
Reading	Multiple Oral Reading (MOR) Oral Reading for Language in Aphasia (ORLA) Supported reading comprehension
Reciprocal Scaffolding Treatment	Group treatment in meaningful social setting. Utilizes reciprocal teaching interactions between aphasics in group.
Script Training	Uses script knowledge/training to facilitate dialogue until speech becomes automatic.
Syntax Treatment	Implemented to improve grammatical structure with sentence level deficits. Sentence Production Program for Aphasia (SPPA) Treatment of Underlying Forms (TUF)
Word Finding Treatment	Intended to improve word finding in spontaneous speech. Gestural Facilitation of Naming (GES) Response Elaboration Training (RET) Semantic Feature Analysis Verb Network Strengthening Treatment (VNeST) Word Retrieval Cueing (semantic and phonological cueing)

Treatment Interventions: Clinical Process

- Short-term functional, measurable goals targeting restoring or improving impairments or targeting compensation when deficits cannot be improved
- Home exercise program
- Caregiver training and education
- Continual skilled assessment, monitoring, modeling, evaluating responses, providing meaningful feedback, adjusting treatment and updating plans as needed
- Train/teach compensatory strategies, self-cueing techniques, etc. and provide guidance and suggestions

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- Ongoing training for patient and caregivers in preparation for discharge via education and community resources

Documentation to Support Medical Necessity

- Document why the service require the skills and knowledge of an SLP
- Daily notes and progress notes should include type of treatment and patient's response to treatment
- Document how treatment supports a functional change in the patient's communication
- Document measurable progress toward goals or reasons not attained such as: fluctuations in abilities and/or alertness, reason for decreased participation , caregiver or home programming concerns
- Document evidence that patient/caregiver education was provided and response to the education, including need for re-education
- Document update/changes to short/long-term goals and/or rationale for changes in intensity or type of treatment

Discharge Criteria

- Patient has reached highest functional level of ability
- The tasks are repetitive in nature and no longer skilled, or the patient requires ongoing cueing to complete tasks
- The patient's condition has stabilized. The skills of a therapist are no longer needed.
- Caregivers, family members, and support personnel have been trained to use communicative strategies and other approaches to improve or maintain skills, decrease the risk for decline, and/or decrease adverse behaviors while enhancing the person's quality of life.
- Patient is able to continue with a home management or maintenance program
- Patient's response/non-response to treatment justifies discharge
- Medical reasons dictate break from/or termination of sessions

Possible Referrals to

- Physician or neurologist for medical concerns
- Social worker for patient or family concerns
- Audiologist for suspected hearing loss
- Physical or occupational therapy for evaluation
- Vision specialist for checking vision or field cuts
- Neuropsychologist for depression and behavior concerns

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Skilled Maintenance Care

- Maintenance care is defined as services required to maintain the patient's current condition or to prevent or slow deterioration of the patient's condition.
- Services are covered for maintenance care if the specialized skill, knowledge and judgment of a qualified therapist are required:
  - To establish or design a maintenance program appropriate to the capacity and tolerance of the patient
  - To educate/instruct the patient or appropriate caregiver regarding the maintenance program
  - For periodic re-evaluations of the maintenance program

References

1. American Speech-Language and Hearing Association Aphasia (Practice Portal). https://www.asha.org/Practice-Portal/Clinical-Topics/aphasia/. Accessed September 5, 2018.
2. American Speech-Language-Hearing Association. Admission/discharge Criteria in Speech-Language Pathology. http://www.asha.org/policy/GL2004-00046/ Accessed September 5, 2018.
3. American Speech-Language-Hearing Association. Preferred Practice Patterns for the Profession of Speech-Language Pathology http://www.asha.org/policy/PP2004-00191/. Accessed September 5, 2018.
4. American Speech-Language-Hearing Association. Scope of Practice in Speech-Language Pathology http://www.asha.org/policy/SP2016-00343/. Accessed September 5, 2018.
5. American Speech-Language Hearing Association. Speech Language Pathology Medical Review Guidelines. https://www.asha.org/practice/reimbursement/SLP-medical-review-guidelines/ Accessed September 5, 2018.
6. American Speech-Language and Hearing Association Documentation in Health Care (Practice Portal) https://www.asha.org/Practice-Portal/Professional-Issues/Documentation-in-Health-Care/. Accessed September 5, 2018.
7.
8. Kelly H, Brady M, Enderby P. Speech and language therapy for aphasia following stroke. Cochrane Database of Systematic Reviews. 2016. CD000425.pub4 DOI: 10.1002/14651858. Accessed September 5, 2018.
9. Lavoie M, Macoir J, Bier N. Effectiveness of technologies in the treatment of post-stroke anomia: A Systematic Review. J Commun Disord. 2017; 65: 43-53.
10. Mesulam M. Primary progressive aphasia. Ann Neurol. 2001; 49: 425-432.
11. National Aphasia Organization. What is Aphasia? 2011. http://www.aphasia.org/aphasia-faqs/. Accessed September 5, 2018.

Acquired Apraxia of Speech

Related Terms

- Apraxia, dyspraxia
- Conduction aphasia
- Ideomotor apraxia
- Broca's aphasia
- Oral or verbal apraxia
- Phonemic paraphasia

Definition

- Apraxia of speech (AOS) is defined as “a neurologic speech disorder that relfects an impaired capacity to plan or program sensorimotor commands necessary for directing movements that result in phonetically and prosodically normal speech” by the American Speech Language and Hearing Association[4]
- The severity of AOS varies greatly from sound distortions and hesitant, groping speech to the total inability to produce any sound on a volitional basis

Presentation

- A common cause of acquired apraxia is CVA. Other causes include traumatic brain injury, dementia, tumors, and progressive neurological disorders"
- Apraxia of Speech rarely occurs in isolation. It is often concurrent with aphasia and/or dysarthria and/or cognitive-communication disorders.
- "When additional motor [as dysarthria], language [as aphasia], or cognitive deficits accompany the apraxia, these symptoms may be masked by these other problems and will not necessarily be as evident as these descriptions might suggest."[8] Conversely, if these other deficits are severe, they may be masking an underlying apraxia.
- Nonverbal oral apraxia and limb apraxia frequently occur with AOS.
- "These [AOS] symptoms may be accompanied by behaviors such as articulatory groping, difficulty initiating speech, increasing number of sound errors with increasing word length, and motoric perseveration. Its severity ranges from a complete inability to speak to minimal disruptions in speech production."

Differential Diagnosis Considerations

- Unlike dysarthria, there is an absence of muscle weakness.
- An individual may be mute but have normal musculature and automatic responses but no volitional control.
- Oral and/or limb apraxia are often present.

- Unlike dysarthria, errors appear random and are not consistent.
- AOS rarely occurs alone - usually with aphasia, dysarthria, and/or cognitive deficits.
- Unlike aphasia and cognitive disorders, AOS is a pure disorder of the ability to produce sounds and speech.
- The presence of AOS often masks other disorders or other disorders are masked by AOS.

Specific Treatment Issues

- Evaluation and treatment of concurrent disorders and an understanding of their impact on each other are important aspects of treating AOS.
- If AOS is severe, during the course of treatment, determine if low or high tech augmentative or alternative aids must be developed, obtained and trained.
- "The first principle of motor training for speech sound remediation in AOS is that intensive treatment is required...The second principle...is that a large number of repetitions of speech or non-speech movements are needed...Perhaps the most important aspect of motor learning has to do with the feedback provided during treatment sessions." [13]

Symptomotology

AOS can be mild or very severe. Consequently the symptoms will also range both in number of symptoms exhibited by an individual to their level of severity and to their functional effect on the individual's speech.

Clinical Symptoms	Functional Effects
➢ Poor oral posturing, inability to make, imitate or repeat sounds volitionally ➢ Articulatory groping and errors ➢ Automatic speech or singing better than purposeful utterances and oral reading ➢ Dysprosody: abnormal rhythm, stress, timing, intonation, voicing ➢ Slow/halting/uncontrolled rate of speech ➢ Obvious difficulty initiating utterances ➢ Speech worsens under pressure or stress ➢ Poor imitation, repetition ➢ Articulatory inconsistency on repeated productions of the same utterance ➢ Sequencing, phonemic errors; distortions ➢ Errors increase with length and complexity ➢ Inconsistent, random errors ➢ Sound or word perseveration ➢ Sound/syllable reversals ➢ Inability/difficulty with self-correction	➢ In severe cases, initially no speech is possible. ➢ Symptoms affect functional speech on a continuum of intelligibility - from none to mild articulation errors, hesitations, rate, and other symptoms. ➢ Because AOS rarely occurs alone, other means of communicating as using meaningful gestures, writing, typing, pointing, drawing, or indicating yes/no may also be impaired and not reliable. ➢ Because of its inconsistency, speech may be functional in a controlled situation, but deteriorate greatly in other environments.

SLP Management

Requirements for Speech Therapy Visits

- In order to establish medical necessity for speech therapy services, the following criteria must be met.
  - The treatment must be considered specific and effective for the patient's condition under evidence based practice guidelines.
  - Frequency and Duration must be considered acceptable under established standards of practice.
  - The complexity of the condition must be such that the skills of a speech therapist are required for the frequency requested.
  - Habilitative and Rehabilitative services- A positive prognosis must established that the patient's condition is expected to improve from the services provided.
  - Maintenance-Services are required to maintain the member's current condition or to prevent or slow deterioration of the member's condition. Coverage of maintenance service is health plan specific.
  - Continuation of care is supported by functional progress resulting from a positive response to skilled treatment.

Frequency and Duration

- Treatment frequency and duration must be based on:
  - Severity of objective clinical findings,
  - Presence of and number of complicating factors and comorbidities,
  - Natural history and chronicity of condition,
  - Expectation for functional improvement with skilled intervention,
  - Response to treatment provided
  - Patient's level of independence

Goal of the evaluation

- Establish a differential diagnosis based on clinical findings.
- Document changes from premorbid abilities, the extent to which the disorder has impacted daily life, and current level of functioning.
- Determine if treatment is necessary and potential for functional gains.

Evaluation should address:

- Relevant past medical history with cause and onset of disorder
- The level of functioning prior to the onset of the condition and any areas being treated must be clearly described in objective, measurable terminology. Past treatment, if any, for AOS. If prior treatment was provided in the past for the same condition, the level of functioning following discharge from that treatment must be clearly described using objective, measureable terminology
- Diagnosis of current condition including impact on daily life

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- Description of disorder(s) including extent and severity as determined from objective measures
- Concurrent conditions with complexities and their impact on prognosis
- Recommendations if treatment is warranted or not and why

Plan of Care if treatment is warranted

- Long-term goals and estimated time frame for attaining them
- Frequency and intensity of treatment; justification for intensive or long-term treatment
- Prognosis for improvements and why
- Referrals to other professionals and services as appropriate

Treatment Interventions: Clinical Process

- Statement of short-term functional measurable goals within each interval
- As appropriate in each case, home assignments between sessions
- As appropriate in each case, education and training to caregivers
- As appropriate in each case, counseling, dialogue, and support with patient / caregivers to assist understanding
- Continual assessing, monitoring, modeling, evaluating responses, providing meaningful feedback, and adjusting treatment and updating plans as needed
- As appropriate in each case, teach strategies, compensations, self-cueing techniques etc. and provide guidance and suggestions
- Ongoing preparation to patient and caregivers for discharge through education, training, and resources for "next steps"

Documentation

- Notes for each encounter to include type of treatment and patient's response to it
- Show measurable progress toward goals or reasons not attained such as: fluctuations in abilities and/or alertness, motivation, caregiver or home programming issues
- Show evidence that education was provided and response to it
- Include attainment, updates, or changes in short or long-term goals and/or changes in intensity or type of treatment

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Discharge Criteria

- Patient is at functional levels in all aspects of disorder
- No progress is noted after 2-4 typical sessions
- Patient is able to continue with a home management program
- All goals are reached; no further intervention indicated
- Patient's response /nonresponse to treatment justifies discharge
- Medical reasons dictate break from or termination of sessions

Possible Referrals to:

- Physician or neurologist for medical concerns
- Social worker for patient or family concerns
- Audiology for suspected hearing loss
- Specialist for providing hi-tech AAC if recommended
- Occupational therapy for limb apraxia

Outcomes/Treatment Efficacy

- "AOS [Apraxia of Speech] may be expected to make improvements in speech production as a result of treatment, even when AOS is chronic." [14]
- "Intervention is expected to result in reduced deficits and contextual barriers, improved abilities and contextual facilitators, and measurably enhanced functioning and participation."[1]

Skilled Maintenance Care

- Maintenance care is defined as services required to maintain the member's current condition or to prevent or slow deterioration of the member's condition.
- Services are covered for maintenance care if the specialized skill, knowledge and judgment of a qualified therapist are required:
  - To establish or design a maintenance program appropriate to the capacity and tolerance of the member
  - To educate/instruct the member or appropriate caregiver regarding the maintenance program
  - For periodic re-evaluations of the maintenance program
  - When skilled services are required in order to provide reasonable and necessary care to prevent or slow further deterioration, coverage will not be denied based on the absence of potential for improvement or restoration as long as skilled care is required.

References

1. American Speech-Language and Hearing Association Acquired Apraxia of Speech (Practice Portal). https://www.asha.org/Practice-Portal/Clinical-Topics/Acquired-Apraxia-of-Speech/ Accessed September 10, 2018.
2. American Speech-Language-Hearing Association. Admission/discharge Criteria in Speech-Language Pathology. http://www.asha.org/policy/GL2004-00046/. Accessed September 5, 2018.
3. American Speech-Language-Hearing Association. 2016. Code of ethics [Ethics]. https://www.asha.org/Code-of-Ethics/ Accessed September 5, 2018.
4. American Speech-Language-Hearing Association. Preferred Practice Patterns for the Profession of Speech-Language Pathology http://www.asha.org/policy/PP2004-00191/. Accessed September 5, 2018.
5. American Speech-Language-Hearing Association. Scope of Practice in Speech-Language Pathology http://www.asha.org/policy/SP2016-00343/. Accessed September 5, 2018.
6. American Speech-Language Hearing Association. Speech Language Pathology Medical Review Guidelines. https://www.asha.org/practice/reimbursement/SLP-medical-review-guidelines/ Accessed September 5, 2018.
7. Ballard KJ, Wambaugh JL., Duffy JR., Layfield C, Maas E, Mauszycki S., McNeil MR. Treatment for acquired apraxia of speech: A systematic review of intervention research between 2004 and 2012. American Journal of Speech-Language Pathology. 2015; 24:316–337.
8. Freed DB. Motor Speech Disorders: Diagnosis and Treatment, 1st ed. San Diego, CA. Singular Publishing Group; 1999.
9. Mauszycki SC, Wambaugh, JL. Acquired apraxia of speech: A treatment overview. ASHA Leader. May, 2011; 16:16-19.
10. McNeil MR, Clinical Management of Sensorimotor Speech Disorders. 2nd ed. New York, NY.Thieme Medical Publishers Inc; 2008.
11. Ogar J, Slama H, Dronkers N, Amici S, Gorno-Tempini ML. Apraxia of speech: An overview. Neurocase. 2005; 11:427-432.
12. Wambaugh J, Duffy J, McNeil M, Robin D, Rogers M. Treatment guidelines for acquired apraxia of speech: A synthesis and evaluation of the evidence. Journal of Medical Speech-Language Pathology. 2006; 14(2):15-34
13. Wambaugh J, Duffy J, McNeil M, Robin D, Rogers M. Treatment guidelines for acquired apraxia of speech: Treatment descriptions and recommendations.. Journal of Medical Speech-Language Pathology..2006; 14(2):35-67.
14. Wambaugh J. Treatment Guidelines for Apraxia of Speech: Lessons for future research. Journal of Medical Speech-Language Pathology. 2006;14(4):317-321.

Apraxia: Pediatrics

Synonyms

- Apraxia of speech,
- Articulatory dyspraxia,
- Childhood apraxia of speech,
- Childhood verbal apraxia,
- Developmental apraxia of speech,
- Developmental verbal apraxia,
- Developmental dyspraxia,
- Developmental verbal dyspraxia,
- Motor planning difficulties.

Definition

Childhood apraxia of speech is a nervous system disorder, which impacts an individual's ability to voluntarily plan, select, execute or sequence the motor patterns necessary to produce sounds, syllables or words.

History

Goals of Complaint History

Identify co-morbidities that affect general management or which require medical management such as Down's syndrome, children with or without cognitive disabilities.

Presentation

Symptomatology

Symptoms will range both in number, intensity, and level of severity and ultimately to their functional effect on an individual's communication.

Clinical Symptoms	Functional Effects
➢ Infants and Children ➢ Absence of coo or babble. ➢ Limited repertoire of consonant sounds. ➢ Omits sounds. ➢ Deviation of vowels sounds. ➢ Difficulty combining the various sounds they do have. ➢ Replaces difficult to produce sounds with easier to produce sounds. ➢ Feeding problems may exist. ➢ Inconsistent sound and speech production. ➢ Articulatory Groping	➢ Child will not follow the typical development or acquisition of speech sounds. ➢ Child appears to be inconsistent, resistant or stubborn. ➢ Child has difficulty expressing needs, wants, thoughts, and ideas. Frustration on the part of the child and the parent may manifest. ➢ Listeners have difficulty understanding the message.

Clinical Symptoms	Functional Effects
➢ Voicing Errors	➢ The pressure of having to produce a grammatically complex sentence using sounds which are difficult to produce and complex vocabulary.
◆ Selective repertoire of phonemes. ◆ Use of gestures. ◆ Ability to produce the word or sentence one time then "loses" it. ◆ Difficulty imitating sounds, words, phrases and sentences. ◆ Limited repetition/generalization of words, sounds, syllables upon request (i.e., difficulty with imitation of sounds or repetition of words upon request). ◆ Automatic words or phrases, such as "Hi", "How are you?" are easier to consistently produce than spontaneous speech. ◆ Delays or difficulties with syllable and word structure. ◆ Difficulty putting words into a sequence to form a grammatically correct sentence. ◆ Shorter phrases are easier to produce and more intelligible than longer sentences-as the complexity of the utterance increases the more difficult it becomes to produce a cohesive sentence.	◆ Struggling or groping when speaking or attempting to speak due to difficulty coordinating lips, tongue, and jaw for purposeful movements. ◆ Speech production becomes more unintelligible in stressful situations and during periods of anxiousness.
◆ Reversal of sounds or syllables (i.e., aluminum becomes alunimum).	➢ Metathesis.
◆ Syntax errors and omissions. ◆ Morphology errors and omissions. ◆ Mean Length of Utterance (MLU) is low relative to the individual's chronological or mental age. ◆ Word sequencing errors. ◆ Word-finding difficulties.	◆ Expressive language skills are delayed. ◆ Receptive language skills are greater than expressive language skills.
◆ Difficulty reading a word. Able to produce each sound in the word but unable to blend the sounds together to make a word. ◆ Difficulties with phonemic awareness.	◆ Reading deficits.
◆ Speech production will be relatively intelligible but the intonation patterns or stress errors may cause the utterance to sound unusual. ◆ The rate of speech may be too slow, too rapid, or uneven. ◆ Inappropriate loudness patterns. ◆ Inappropriate pitch patterns. ◆ Inconsistent hypernasality or hyponasality.	◆ Prosody and rhythm differences.

The Most Common Identifying Factors of CAS

Strands 10 point checklist characteristics. ➢ Difficulty achieving initial articulatory configurations and transitions into vowels	➢ Slow rate
➢ Syllable segregation	➢ Slow DDK rate even with same sequences
➢ Lexical stress errors or equal stress	➢ Increased difficulty with longer or more phonetically complex words
➢ Vowel or consonant distortions including distorted substitutions	**ASHA CONSENSUS BASED**
➢ Groping (nonspeech)	➢ Inconsistent errors on consonants and vowels in repeated productions of syllables or words
➢ Intrusive schwa	➢ Lengthened and disrupted coarticulatory transitions between sounds and syllables
➢ Voicing errors	➢ Inappropriate prosody,especially in the realization of lexical or phrasal stress

Findings

Goal of Apraxia Evaluation:

- Rule out other possible causes
  - Hearing loss
  - Muscle weakness or paralysis of oral musculature or speech mechanism
- Identify strengths, weaknesses, and any contributing factors that may be affecting functional communication.

Scope of Apraxia Evaluation:

- Obtain medical history from the individual's medical records, interview the individual if age-appropriate, and interview the individual's family member, caregiver or guardian.
- Obtain the individual's developmental, feeding and eating abilities, management of secretions and speech and language history.
- Identify any cultural or linguistic differences and any behavioral factors that may be contributing to the breakdown in functional communication.
- Assessment of the oral mechanism
  - Muscle development of the jaw, lips, and tongue and the integrity of the oral structures [hard and soft palate, jaw, lips and tongue].
  - Purposeful movement with imitation of non-speech actions.
  - Diadokokinetic rate: muscle movement for coordinating and sequencing a repetitive string of sounds rapidly (i.e., puh, tuh, kuh or buttercup).
- Assess the coordination of breathing with speaking.
- Assess motor skills of actions during plan as gross and fine motor imitation precede verbal imitation
- Assess articulation at the word to conversation level.

- Assess phonology for the presence of phonological processes. Include a list of consonant phonemes in child's repertoire
- Assess vowel sounds: Vowel sounds carry the intelligibility. Focusing on crisp, clean vowel sounds lead to increased speech intelligibility. Vowel structure must be in tact to have intelligible speech. Most articulation tests only assess consonant sounds but there are more than a dozen vowel sounds in the English Language
- Obtain and interpret a language sample if the child has sufficient verbal output.
- Assess prosody and stress patterns.
- Assess ability to imitate animal sounds, vehicles, exclamations, sound effects for prosody and intonation
-
- Assess receptive and expressive language abilities.
  - Use and understanding of vocabulary.
  - Understand and answer simple to increasingly complex yes/no and wh-questions.
  - Follow simple to multi-unit directives.
  - Comprehension of verbal passages from the sentence to paragraph level increasing in complexity.
  - Age-appropriate use of grammatical construction in sentences.
  - Use of word forms.
  - Social communication skills.
- The evaluation process may include the selection and administration of standardized tests, portions of standardized tests, non-standardized tests, and language samples.
  - Confirmed Apraxia Diagnosis
  - Determine an appropriate plan of care based upon the individual's medical history
  - Interpret the clinical findings of the apraxia evaluation that will include:
    - A clinical diagnosis of apraxia of speech based upon a combination of characteristics identified during the assessment process,
    - Standardized assessment scores that are within two standard deviations below the mean will be considered within normal limits,
    - Standardized assessment scores that are more than two standardized deviations below the mean will be considered delayed.
  - Determine the needs and abilities of the individual, parental concerns and the potential for functional improvement within a reasonable time frame.

Speech Language Management

Requirements for Speech Therapy Visits

- In order to establish medical necessity for speech therapy services, the following criteria must be met.
  - The treatment must be considered specific and effective for the patient's condition under evidence based practice guidelines.

- Frequency and Duration must be considered acceptable under established standards of practice.
- The complexity of the condition must be such that the skills of a speech therapist are required for the frequency requested.
- Habilitative and Rehabilitative services- A positive prognosis must established that the patient's condition is expected to improve from the services provided.
- Maintenance-Services are required to maintain the member's current condition or to prevent or slow deterioration of the member's condition. Coverage of maintenance service is health plan specific.
- Continuation of care is supported by functional progress resulting from a positive response to skilled treatment.

Frequency and Duration

- Treatment frequency and duration must be based on:
  - Severity of objective clinical findings,
  - Presence of and number of complicating factors and comorbidities,
  - Natural history and chronicity of condition,
  - Expectation for functional improvement with skilled intervention,
  - Response to treatment provided
  - Patient's level of independence

Treatment Considerations

(The following management will vary depending on the specific needs of the individual)

- Develop an individual program designed to address motor learning, which is needed for speech movement or speech production with graded complexity.
- Develop an individual program designed to address the individual's immediate communication needs so that the individual may participate in a variety of communication situations within his/her home, school and/or community.
- Develop a treatment plan that emphasizes practice and repetition to ensure acquisition of new sounds, syllables and words which can be enhanced with tactile, kinesthetic, auditory and visual prompts.
- Develop a home program to facilitate speech motor planning skills.
- Provide family members, caregivers, guardian, siblings, school teachers and/or other communication partners training in communication techniques and strategies to facilitate effective communication with individual including recognition and acknowledgement of the individual's communication attempts and identify and respond appropriately to the child's communicative attempts.
- Provide parents with information regarding community support groups and/or programs.
- Continue to assess the individual because symptoms will change over time.
- Select and implement appropriate Augmentative or Alternative Communication system for those individuals with significant difficulties.

Referral Guidelines Apraxia

- If improvement does not meet the above guidelines or improvement has reached a plateau:
  - Refer patients to the referring physician or specialist to explore other alternatives.
  - Consults with a specialist in the field of augmentative and assistive communication systems.
  - Consult with an audiologist if a hearing loss is suspected.
  - Referral to local support groups

Home Medical Equipment

- Augmentative and assistive communication device.

Self-Management Techniques

- Individual and parents to follow home exercise program.

Alternatives to ST Management

- Use of alternative and assistive communication device.

Treatment Plan Timeline

Frequency and duration of services is based upon the specific needs of the individual at the time of the evaluation. Children with apraxia of speech tend to have periods where they plateau then will go on to make functional improvements. In addition, the symptoms will change over time. Therefore, discharge planning will involve consideration of maximum potential achieved and the individual family circumstances.

Early stages of treatment	Explore factors that could impact outcomes now and in the future. Explore strengths and weaknesses; breakdowns in production, stimulability, self-monitoring, and other components for best treatment outcomes Explore patient and family understanding, challenges, and capabilities to develop education and training program Develop treatment program based on findings and best practices for this patient Develop an individualized supplemental home program to monitor and change as needed Document findings, techniques and responses to treatment
Ongoing treatment	Provide patient/family ongoing education and training Assess response to and feedback from home program to modify, and update Document measurable gains and modify plan of care if indicated Assess ongoing response to treatment, gains, lack of progress, other factors; modify program as needed Assess if intelligible verbalization or supplemental and/or alternative means of communication will be probable; develop these or refer as needed Determine other factors impacting condition requiring intervention or referral (see referral guidelines)
Later stage of treatment / discharge planning	Provide suggestions and resources for follow-up Provide home program to maintain gains Provide summary of course of treatment and progress If discharged due to medical issues and/or plateau in progress indicate under what future conditions new referral would be warranted

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➢ Discharge criteria	➢ Medical/psychological or other issues interfering with goals of treatment program ➢ Goals have been reached ➢ Plateau has been reached ➢ Insurance benefit has ended

References

1. American Speech-Language-Hearing Association. Admission/discharge Criteria in Speech-Language Pathology. http://www.asha.org/policy/GL2004-00046/ Accessed September 5, 2018.
2. American Speech-Language-Hearing Association. Childhood Apraxia of Speech. (Practice Portal) 2007. www.asha.org/Practice-Portal/Clinical-Topics/Childhood-Apraxia-of-Speech/ Accessed September 5, 2018.
3. American Speech-Language-Hearing Association. Position Statement Childhood Apraxia of Speech Ad Hoc Committee on Childhood Apraxia of Speech 2007. http://www.asha.org/policy/PS2007-00277/ Accessed September 5, 2018.
4. American Speech-Language-Hearing Association. Preferred Practice Patterns for the Profession of Speech-Language Pathology http://www.asha.org/policy/PP2004-00191/. Accessed September 5, 2018.
5. American Speech-Language-Hearing Association. Scope of Practice in Speech-Language Pathology http://www.asha.org/policy/SP2016-00343/. Accessed September 5, 2018.
6. American Speech-Language Hearing Association. Speech Language Pathology Medical Review Guidelines. https://www.asha.org/practice/reimbursement/SLP-medical-review-guidelines/ Accessed September 5, 2018.
7. American Speech-Language-Hearing Association. Technical Report Childhood Apraxia of Speech Ad Hoc Committee on Apraxia of Speech in Children. https://www.asha.org/policy/TR2007-00278 Accessed September 5, 2018.
8. Ballard KJ, McCabe PJ. A treatment for dysprosody in childhood apraxia of speech. Journal of Speech, Language, and Hearing Research, 2010;53, 1227–1245. http://jslhr.pubs.asha.org/article.aspx?articleid=1781609 Accessed September 5, 2018.
9. Gildersleve-Neumann C. Treatment for childhood apraxia of speech: A description of integral stimulation and motor learning. The ASHA Leader. 2007;12:10-30. http://leader.pubs.asha.org/article.aspx?articleid=2288154&resultClick=3. Accessed September 5, 2018.
10. Strand E. Appraising Apraxia: When a speech-sound disorder is severe, how do you know if it's childhood apraxia of speech? The ASHA Leader 2017;22, 50-58. http://leader.pubs.asha.org/article.aspx?articleid=2608149&resultClick=3 Accessed September 5, 2018.
11. Shribert L D, Strand E A. A Diagnostic Marker to Discriminate Childhood Apraxia of Speech From Speech Delay: IV. The Pause Marker Index. Journal of Speech, Language, and Hearing Research, 2017;60, S1153-S1169. http://jslhr.pubs.asha.org/article.aspx?articleid=2617252 Accessed September 5, 2018.

Augmentative and Alternative Communication (AAC)

Definition

Augmentative communication is used to supplement existing speech, and alternative communication is used in place of speech that is absent or not functional.

Augmentative and alternative communication (AAC) addresses the needs of individuals who present with significant and complex communication disorders characterized by impairments in speech-language production and/or comprehension and include spoken and written modes of communication. AAC may be temporary or permanent. It may be used temporarily by patients following an operation or trauma or permanently by those individuals who will require the use of some form of AAC throughout their lifetime.

With AAC a variety of techniques and tools are used to support communication. These tools help individuals express thoughts, wants and needs, feelings, and ideas, and include picture communication boards, line drawings, speech-generating devices (SGDs), tangible objects, manual signs, gestures, and finger spelling.

The goal of AAC is the most effective communication possible. Upon achievement of this goal, the individual will have the benefit of the highest quality life experience as related to communication. Individuals who rely on AAC indicate that most important to them are: saying exactly what they want to say, and saying it as fast as they can.

Presentation

- There are two main categories of individual's that will utilize AAC: congenital disabilities and acquired disabilities.
  - Congenital disabilities include:
    - genetic disorders;
    - motor speech disorders (e.g., developmental apraxia of speech);
    - cerebral palsy;
    - intellectual disabilities; and
    - autism spectrum disorder (ASD);
  - Acquired disabilities include:
    - traumatic brain injuries;
    - neurodegenerative diseases (e.g., Parkinson's, amyotrophic lateral sclerosis (ALS), multiple sclerosis, supranuclear palsy, muscular dystrophy, primary progressive aphasia and apraxia);
    - cerebrovascular accidents;
    - temporary conditions (e.g., intubation, concussion); and
    - disability following surgeries (e.g., glossectomy, laryngectomy)
- AAC needs for these individuals can vary and change over time depending on the condition. AAC can help aid or build areas of expressive and receptive communication skills.

AAC Systems-Forms

- AAC systems can be divided into two categories: unaided and aided communication systems.
  - Unaided communication systems rely on the individual's body to convey the message. Examples include body language, sign language and/or gestures.
  - Aided communication systems require the use of tools or equipment using either electronic or nonelectronic support. Examples range from low/light tech to high tech.

Unaided	Aided	Aided
No-tech	**Low/Light tech**	**High tech**
Body language Facial expressions Sign language Gestures vocalizations	Pictures Photographs Objects Letters Words/phrases Writing Communication books/boards	Speech generating devices (SGD) Single message devices AAC apps and/or software for devices

- Speech generating devices can be digitized or synthesized speech.
  - Digitized speech output is natural speech that an individual can used that has been pre-recorded and stored. Can be restrictive due to using only pre-recorded messages. **Advantage** is that messages with a high level of intonation such as singing songs can be included..
  - **Synthesized speech output** is computer generated speech that is controlled by the individual to create messages. **Advantage** with the inclusion of the alphabet the patient can self-generate novel messages.
    - **Symbols**: are utilized to represent actions, objects and concepts and can include photographs, letters, spoken words and objects.
    - **Display:** A display has symbol choices for the individual using the AAC system. It can include the type of screen that will be used to communicate and access vocabulary.
      - Fixed: The display is static and does not change. Most commonly used with communication boards or low/light tech devices.
      - Dynamic: The display changes when a selection is made. Can be organized by large categories and then broken down into specific categories. Most commonly associated with high tech communication devices.
      - Hybrid: A display that includes both fixed and dynamic areas. Typically the static area is used to access high frequency vocabulary/choices.
      - Visual scenes: Displays may be fixed or dynamic and organized with photographs and/or virtual environments to show an entire scene. Spoken messages can be embedded in the scenes and are known as “hot spots”.
- Vocabulary Selection is divided into two categories: core and fringe vocabulary.
  - Core vocabulary is associated with words/pictures/concepts that are high frequency items and often communicated on a daily basis. Core vocabulary makes up 80% of words.
  - Fringe vocabulary are context specific words/pictures that are used at a lower-frequency.
- Selection Techniques is divided into direct selection and indirect selection.
  - Direct selection- individuals select the desired symbol directly. Examples include: both electronic/non-electronic, direct physical touch, generated activation (eye gaze, joystick, mouse). More effective communicator requiring more accurate motor abilities.
  - Indirect selection- individuals select the desired symbol using auditory, tactile or visual support (scanning). Scanning can be presented in a row, column or quadrant on a communication device. Less effective communicator and requires less motor control.

SLP management

Requirements for Speech Therapy Visits

- In order to establish medical necessity for speech therapy services, the following criteria must be met.
  - The treatment must be considered specific and effective for the patient's condition under evidence based practice guidelines.
  - Frequency and Duration must be considered acceptable under established standards of practice.
  - The complexity of the condition must be such that the skills of a speech therapist are required for the frequency requested.
  - Habilitative and Rehabilitative services- A positive prognosis must established that the patient's condition is expected to improve from the services provided.
  - Maintenance-Services are required to maintain the member's current condition or to prevent or slow deterioration of the member's condition. Coverage of maintenance service is health plan specific.
  - Continuation of care is supported by functional progress resulting from a positive response to skilled treatment.

Frequency and Duration

- Treatment frequency and duration must be based on:
  - Severity of objective clinical findings,
  - Presence of and number of complicating factors and comorbidities,
  - Natural history and chronicity of condition,
  - Expectation for functional improvement with skilled intervention,
  - Response to treatment provided
  - Patient's level of independence

Findings

- Assessment may result in recommendations for AAC systems, for AAC intervention, for follow-up and for a referral for other examinations or services.
  - **Examples of AAC related assessment tools**
    - Augmentative and Alternative Communication Profile: A Continuum of Learning
    - Checklist of Communication Competencies, Revised
    - Functional Communication Profile, Revised
    - Social Networks: A Communication Inventory for Individuals with Complex Communication Needs and their Communication Partners.
    - The Test of Aided-Communication Symbol Performance
    - Communication Matrix
  - Please note for specific funding requirements, check with your state health plan.
- AAC Evaluation Report should include:
  - Patient demographic information
  - Background Information including:
    - Significant medical history and diagnosis

    - Significant treatment information, previous and current speech-language/communication therapy and current levels and means of communication
    - Medical prognosis, communication prognosis
    - History or previous AAC strategies and materials
  - Motor skills/physical status including mobility (i.e., posture/positioning, selection abilities, range and accuracy of movement, wheelchair use)
  - Cognitive skills (i.e. alertness, attention span, vigilance, etc.)
  - Sensory or perceptual abilities (i.e. hearing, vision, etc.)
  - Language comprehension/receptive language, skills demonstrated
  - Expressive language capabilities
  - Oral motor skills and speech status
  - Pragmatic skills
  - Reading abilities and weaknesses
  - Writing abilities and weaknesses
  - Functional Communication Needs including:
    - Environment (i.e. home, work, etc. with a description of communication barriers)
    - Communication Partners
    - Communication Activities, Abilities, and Participation
  - Limitations of current communication methods
  - AAC recommendations for feature matching:
    - description of devices trialed
    - input/output features
    - device features (i.e. level of representation, amount of symbols in array, type of speech, etc.)
    - Language characteristics
    - Justification of device features
    - Device recommended
  - Additional features and accessories (i.e. mounting system, case, switches, extra battery so it can be used throughout the day without recharging, etc.)
  - Appropriate long and short term goals.
  - Intervention schedule

- While Medicaid and private insurance coverage of Speech Generating Devices (SGDs) varies by state and healthcare plan, Medicare covers the purchase of a SGD under the classification of Durable Medical Equipment if determined medically necessary. With the passage of the Steve Gleason Enduring Voices ACT in February 2018, Medicare coverage includes the permanent purchase of SGDs.
- To obtain a device, an evaluation is required, and the device recommended must be a dedicated device or a device that is used for communication purposes only. SGDs are determined to be medically necessary when a condition/disease impairs the ability to communicate effectively. Such conditions might include, autism spectrum disorder, cerebral palsy, apraxia, dysarthria, amyotrophic lateral sclerosis (ALS), aphasia, and traumatic brain injury

Treatment Examples (not inclusive):

Treatment Options	Description
Augmented Input (also known as natural aided language or aided language modeling)	Receptive language training approach using a communication partner who uses spoken words in combination of AAC strategies.
Behavioral Interventions	Teach desired behaviors utilizing behavioral/operant concepts of learning. Involve assessing antecedents that elicit a behavior and the consequences that follow.
Discrete Trial Training (DTT)	Approach to teaching in simplified and structured steps. Instead of teaching an entire skill, the skill is broken down to teach each step at a time.
Milieu Training	Training including incidental teaching, time delay and mand-model procedures in a naturalistic environment (Kaiser, Yoder, & Keetz, 1992; Kasari et al., 2014).
Core Vocabulary Approach	Teaches an initial set of core vocabulary that consists of common words used in the individual's environment. Once concepts are learned, more vocabulary (words, pictures, etc.) is added to the AAC overlay.
Language Acquisition Through Motor Planning (LAMP)	An approach based on selecting words and sentences motor learning using a high tech AAC device. Involves a combination of readiness to learn, shared engagement, consistent motor planning, single words, auditory signals and natural consequences (Potts & Satterfield, 2013).
Picture Exchange Communication System (PECS)	Intervention program that promotes the individual's expressive communication abilities using prompting and reinforcement strategies. Instructional phases of the program consist of how to communicate, distance and persistence, picture discrimination, sentence structure, answering questions, responsive and spontaneous commenting (Flippin, Reska, & Watson, 2010).
Pragmatic Organization Dynamic Display (PODD) Communication Books	A systems of selecting and organizing symbols/words so that individuals can communicate with partners in all environments (Porter & Cafiero, 2009).
Total Communication (TC)	The use of all modes of communication, including sign language, spoken language, gestures, facial expressions and cues.
Visual Prompting Strategies	The use of visual cues to help individuals maintain attention, understand spoken language, sequence events, organize environments or increase independence when completing a task (Hodgdon, 1995).
Visual Schedules	Use of objects, photographs, written words or other symbols to cue an individual to sequentially complete an activity (Hart & Whalon, 2008). These are used to increase receptive understanding.

Outcomes/Treatment Efficacy

- Evidence supports the fact that carefully selected AAC including SGDs are a reasonable, necessary, and effective treatment for individuals with significant communication deficits. AAC/SGDs can support oral language development in young children with developmental delays. AAC can enable people with chronic delays to become more independent in the community, communicate functional needs more specifically, participate more fully in social exchanges, tell stories, and

make telephone calls. AAC can enable people to return to work, and can allow for continued quality of life for those with neurodegenerative disease.

- When teaching how to use AAC/SGD devices evidence-based practice suggests the following:
  - Model use of it. Family, teachers, therapists should model communication on the device. Model at the same level of complexity as the user. If user is at one hit or single icon, then model at that level.
  - Always respond to all AAC communication immediately, appropriately, and consistently. Provide the requested item, respond verbally to what is communicated.
  - Prompt patient/client to use the device if using body language or gesture to initiate a request (i.e. if indicating a want for something out of reach, prompt to use the device)
  - Wait for pause or stop if patient/client is engaging in challenging behavior, and then prompt use of the AAC device. The communication strategy you are asking the patient to use must be quicker and more effective than the behavior. You may need to use additional strategies such as having low tech "break" symbols throughout the environment.
  - Ensure that the AAC device is available across settings
  - Encourage use of the device by creating opportunities throughout the day in naturally occurring instances
  - Teach peers and family members how to use the device
- Treatment for patients who use AAC/SGD should be concentrated on communicative competence, or the ability to communicate functionally in their natural environments in order to meet daily needs. This includes 4 major skills areas:
  - Linguistic competency which is the ability to learn and apply vocabulary and grammar. This would include core and fringe vocabulary and sentence construction.
  - Operational competency which is the technical skills required to use the AAC system or the operation and maintenance of communication system.
  - Social competency or the ability to understand and implement the social rules of interacting with others through use of AAC.
  - Strategic competency which is the ability to effectively prevent or repair communication breakdowns.
- Consider the following domains when measuring meaningful outcomes following AAC implementation:
  - Achieving goals supported or requested by the person using the AAC, their family, and people with whom they interact
  - Positive changes to participation in activities
  - Increases in communicative competence
  - Improvements in other areas of communication skills and abilities (like speech, language, literacy, fluency, voice, and pragmatics) which are targeted goals within the AAC intervention.

Skilled Maintenance Care

- Initially, when working with patients, therapeutic services are implemented to restore lost function, but when progress is no longer observed/documented, maintenance therapy, designed to slow further functional decline or to maintain use of device, might be supported; therefore when decline is probable without skilled therapy intervention, a skilled maintenance program can often be implemented.
- It was under the Jimmo Settlement that Medicare coverage was extended to include maintenance skilled care in order to prevent or slow decline in the overall condition of patients with long-standing and chronic problems. Policies regarding skilled maintenance programming vary by state for Medicaid recipients and by health plan for the privately insured.
- If a patient is no longer making progress, the focus of therapy should shift to maintenance programming. Skilled maintenance therapy services are those that are of such a complex nature that they can only be performed by the therapist and/or the patients' medical complications are such they the skills of a qualified therapist are required in order to perform a service that may otherwise be deemed non-skilled. When moving to a maintenance program, the therapist should assess the patient and develop a plan of care reflecting new maintenance goals. Maintenance goals should be SMART goals, targeting prevention of unnecessary, avoidable complications from a chronic condition. For patients with degenerative neurologic conditions, maintenance goals should include maintaining function in order to stabilize or slow the natural course of deterioration or preventing potential aftereffects that could occur as a result of the progressive condition.
- When an AAC system is initially introduced progress is measured in terms of improvement with targets including training the individual and his/her family or caregivers in operational competence as well as teaching the patient to communicate using the device in the natural environment.
- For maintenance programming, progress is measured in terms of responsiveness of the patient to the established plan of care. This would include the patient's ability to function at an optimal level consistent with the stage of the progressive disease. Maintenance programming might focus on stabilizing communication of specific words/phrases/sentences regarding safety, help, and family. Ongoing assessment regarding continued ability to operate the device for communicating purposefully should also be considered as part of a skilled maintenance program for patients with progressive condition.

Discharge Criteria

- The patient has not shown progress towards reasonable goals, and has reached a plateau.
- Caregivers are able to independently carryover the treatment plan in the home environment to support continued progress.
- The goals do not require the skills of a skilled speech language therapist. Goals that can be implemented and carried out by a caregiver are not considered medically necessary.

- The goals are duplicative in a nature to another therapist's current treatment plan
- The patient has met all goals. No further treatment is indicated

References

1. American Speech-Language-Hearing Association. Admission/discharge Criteria in Speech-Language Pathology. http://www.asha.org/policy/GL2004-00046/ Accessed September 5, 2018.
2. American Speech-Language-Hearing Association (n.d.). Augmentative and Alternative Communication (Practice Portal). Retrieved March 12, 2018, from http://www.asha.org/Practice-Portal/Professional-Issues/Augmentative-and-Alternative-Communication/
3. American Speech-Language-Hearing Association. Preferred Practice Patterns for the Profession of Speech-Language Pathology http://www.asha.org/policy/PP2004-00191/. Accessed September 5, 2018.
4. American Speech-Language-Hearing Association. Scope of Practice in Speech-Language Pathology http://www.asha.org/policy/SP2016-00343/. Accessed September 5, 2018.
5. American Speech-Language Hearing Association. Speech Language Pathology Medical Review Guidelines. https://www.asha.org/practice/reimbursement/SLP-medical-review-guidelines/ Accessed September 5, 2018.
6. Augmentative and Alternative Communication. American Speech and Hearing Association. https://www.asha.org/NJC/AAC/
7. Boesch MC, Wendt O, Subramanian A, Hsu N. Comparative efficacy of the Picture Exchange Communication System (PECS) versus a speech generating device: effects on requesting skills. Pub Med.gov. 2013(3), 197-209. doi: 10.3109/07434618.2013.818059.
8. Brune P. Practical partner communication strategies for AAC clinical and implementation. Video presentation: Tobii Dynavox. December 9, 2015.
9. Chazin KT, Quinn ED, Ledford JR. Augmentative and alternative communication (AAC). An overview of evidence-based instructional practices (EBIPs) for young children with autism and other disabilities. 2016.
10. Costantino M, Bonati M. A scoping review of interventions to supplement spoken communication skills for children with limited speech or language skills. PLoS One 2014; 9(3) e90744. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3953121/. Accessed March 26, 2018.
11. Gold B. Writing Goals for AAC. Handout presented at: ASHA Annual Conference. November 2008; Chicago: IL.
12. Heath A, Ganz J, Parker R, Burke M, Ninci J. A meta-analytic review of functional communication training across mode of communication, age, and disability. J Autism Dev Disord. 2015; 2(2):155-166.
13. Hill K. Introduction to AAC. Lecture presented at: AAC Institute; February 4, 2015; Carnegie, PA.
14. Hill K, Romich B. AAC evidence-based clinical practice: a model for success. AAC Institute. December 2014. Accessed May 12, 2018.
15. Holyfield C., Drager KDR, Kremkow JMD, Light J. Systematic review of AAC intervention research for adolescents and adults with autism spectrum disorder. Augment Altern Commun. 2017; 33(4), 201-212 doi: 10.1080/07434618.2017.1370495.
16. Kinder Renee. Thriving in Skilled Nursing: Part 1. speechpathology.com video conference. 2016.
17. Kornetti D, Krafft C. Maintenance therapy for the home health patient with heart failure. CardioLan Webinar. 2016.
18. Lloyd LL, Koehler LJS, von Tetzchner S. eds. Augmentative and alternative communication research issues and needs proceedings of the 2012 ISAAC research symposium. International Society for Augmentative and Alternative Communication (ISAAC). Pittsburgh, USA. 2012
19. Logan K, Iacono T, Trembath D. A systematic review of research into aided AAC to increase social-communication functions in children with autism spectrum disorder.Augment Altern Commun. 2017; 33(1), 51-64. doi: 10.1080/07434618.2016.1267795.
20. Medicare Benefit Policy Manual, Sections 220.2 B, 220.2 D, and Chapter 7, Section 40.2.1
21. National Institute for Health and Care Excellence. Parkinson's disease in adults: diagnosis and management. 2017. London (United Kingdom): National Institute for Health and Care Excellence, (Nice Guideline 71), 1-243.

22. Ogden K, Swanson N. Billing for AAC: Device type helps determine codes here's the lowdown on coding and billing for AAC device evaluation, customization and ongoing treatment. ASHA Lead. February 2017; Vol. 22, 36-37.
23. Romski MA, Sevcik R. Augmentative communication and early intervention myths and realities. Infants Young Child. 2005; Vol. 18, No. 3, pp.174-185.
24. Ross T, Knoff D. Maintenance and palliative therapy: one agency's solution of chronic care management and financial success. 2016.
25. Rush E. Evidence-based emergent literacy practices for adolescent and adult AAC users. Oral presentation at: ASHA Annual Conference. November 2009; New Orleans: LA. Accessed April 6, 2018.
26. Rush ES, Helling CR. Evidence-based AAC assessment: integrating new protocols and existing best practices. Handout presented at: ASHA Annual Conference. November 2011; San Diego: CA.
27. Schlosser R, Braun U. Efficacy of AAC interventions: methodologic issues in evaluating behavior change, generalization, and effects. Augment Alternative Commun. 2009; 10 (4), 207-223. doi: 10.1080/07434619412331276920.
28. Simacek J, Pennington B, Reichle J, Parker-McGowan Q. Aided AAC for people with severe to profound and multiple disabilities: A systematic review of interventions and treatment intensity. Adv Neurodev Disord. 2017; Volume 2, issue 1, 100-115.
29. Van der Meer L, Sigafoos, J, O'Reilly MF, Lancioni GE. Assessing preferences for AAC options in communication interventions for individuals with developmental disabilities: A review of the literature. Res Dev Disabil. 2011; 32(5), 1422-1431. doi: 10.1016/j.ridd.2011.02.003.
30. Vicker B. Visual schedules and choice boards: avoid misinterpretation of their primary function. The Reporter. 1999; 4(2):4-5, 18.
31. Winstein CJ, Stein J, Arena R, et al. Guidelines for adult stroke rehabilitation and recovery: A guideline for healthcare professionals from the American Heart Association/American Stroke Association. Stroke. 2016; 47, e98-e169.
32. Winter K. ALS: A clinical population with unique communication management and AAC needs. Part one. Hospital for Special Care. September 15, 2016. www.speechpathology.com.

Autism Spectrum Disorder

Synonyms and Past/Related Diagnoses

- Autism
- Autistic disorder
- Asperger's disorder
- Pervasive developmental disorder
- Childhood disintegrative disorder.

Definition

Autism Spectrum Disorder (ASD) is a set of neurodevelopmental disorders characterized by core deficits in communication and reciprocal social interaction; accompanied by restricted and stereotypic behaviors and interests that impact the child's interaction with his/her environment. The core symptoms are usually accompanied by developmental delay in one or more area. Under the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), previously recognized subtypes of autistic disorder, Asperger's disorder and pervasive developmental disorder not otherwise specified, have been eliminated and integrated under the diagnosis of ASD. For the purposes of this document, autistic disorder and autism spectrum disorder (ASD) will be used interchangeably

History

Goals of Complaint History

- Identify co-morbidities that affect general management or which require medical management.
- Identify behavioral components in activities of daily living
- Identify speech and language deficits which interfere with communication in academic, social and/or professional contexts.
- Identify accompanying social emotional difficulties affecting relationships across all environments

Presentation

Symptomatology

Symptoms will range both in number, intensity, and level of severity and ultimately to their functional effect on an individual's communication. It should be noted that it is rare for children to have all of the symptoms listed. For instance, not responding to their name by twelve months is a significant symptom by itself but having the ability to handle change is not exclusive of a diagnosis. Additionally, many children with autistic disorder have eye contact but it may be reduced or unusual in its presentation.

➢ Early Intervention: ➢ Red Flags	➢ Does not respond to name ➢ No social smile ➢ Reduced or atypical eye contact ➢ Seems to tune others out or are in their own world ➢ Prefers to play alone or be alone ➢ Demonstrates inability to play with toys in the typical way ➢ Difficulty understanding of people's feeling or their own ➢ Has low to no social skills ➢ No speech or delayed speech ➢ Get upset by minor changes ➢ Has obsessive interests ➢ Has repetitive, odd or stereotypic behaviors ➢ Flaps hands, rocks body or spins in circles ➢ Have unusual reactions (over or under-sensitivity) to the way things sound, smell, taste look or feel ➢ Not engaged in pretend play (if older than 2 years) ➢ Loss of speech, babbling or social skills at any age
➢ Clinical Symptoms: All Ages	➢ Functional Effects
➢ Impaired social interaction/pragmatic language ➢	➢ Reduced or atypical eye contact ➢ Gets too close or too far away when speaking ➢ Difficulty interpreting non literal language including but not limited to inferences, sarcasm, metaphors, and idioms ➢ Difficulty reading facial expressions and body language ➢ Difficulty understanding the rules of conversation ➢ Reduced or unusual responses to social interactions ➢ Does not generally share observations or experiences with others ➢ Difficulty understanding and participating in group interactions ➢ Difficulty identifying thoughts/feelings of themselves and others ➢ Difficulty maintaining friendships and/or relationships ➢ Difficulty with topic maintenance including conversational turn taking skills
➢ Impaired expressive language	➢ Difficulty or inability to verbally communicate needs/wants expected for age ➢ Echolalia-repeats words or phrases ➢ Idiosyncratic language including "scripted" or repetitious language ➢ May be non-verbal ➢ May require other communication systems such as using pictures, sign language or communication devices ➢ Difficulty integrating gesture with expressive language.
➢ Impaired receptive language	➢ Difficulty or inability to understand information and follow instructions expected for age ➢ Difficulty with reading comprehension abilities

	➢ May require visual support for communication systems such as pictures, sign language or communication devices
➢ Impaired Speech	➢ Difficulty producing speech sounds correctly for chronological age ➢ Abnormal use of pitch, intonation, rhythm or stress while speaking ➢ Speech is abnormally loud or quiet ➢ Apraxia ➢ May use no speech
➢ Impaired oral motor/feeding skills	➢ Oral motor difficulties related to neuromusculature or structural anomalies ➢ Food adversities related to texture, taste or temperature ➢ Poor management of secretions
➢ Impaired Cognitive skills	➢ Range from mild to profound deficits in areas of attention, memory, perception, organization, orientation, processing speed, problem solving, reasoning and executive functioning.
➢ Related Behaviors	➢ Resistance to being held or touched or seeks deep touch ➢ Demonstrates little safety or danger awareness ➢ Prefers to be alone, aloof or overly-friendly ➢ Has obsessive interests ➢ Ritualistic or compulsive behavior patterns ➢ Resists changes in the environment (people, objects, places, times) ➢ May have challenging behavior

- Treatment for ASD is child-centered and focuses on the needs and goals of the individual and their family. Individualized assessment and an intervention plan that promotes collaboration between the family and professionals to achieve best results are indicated.
- Care for individuals with ASD may occur throughout the lifespan. Early intervention is considered key to minimizing the impact of ASD on both the child and family.

Findings

Goals of a Speech Language Evaluation for patients diagnosed with Autism Spectrum Disorder

- Sensory/motor involvement for oral motor musculature
- Determine the severity of the impairment in the areas of receptive and expressive language, articulation, literacy skills, and social communication including conversational skills
- Analysis of family centered treatment and goal development

Scope of Speech Language Evaluation for patients diagnosed with Autism Spectrum Disorder

- A speech language evaluation for patients with a diagnosis of ASD or a suspected diagnosis of ASD is often a component of a comprehensive assessment in collaboration with other professionals. An important factor to note regarding social communication assessment is cultural norms. Cultural norms regarding appropriate pragmatic behavior vary widely. It is important to be sensitive to differing cultural

traditions. Obtaining information from parents, teachers, caregivers, paraprofessionals, psychologist, and other relevant personnel is critical to a complete assessment. The child may exhibit a variety of symptoms across environments. Obtaining this information can support a much more complete and thorough viewpoint than the social behavior observed in a clinic setting. The components of a speech and language evaluation can include the following:

- A complete developmental, medical and behavioral case history
- Hearing and vision screening- A child with a diagnosis of hearing loss may exhibit some of the same symptoms as those of ASD especially in the areas of communication and socialization (American Speech-Language-Hearing Association. Autism Practice Portal, Available at http://www.asha.org/PRPSpecificTopic.aspx?folderid=8589935303&section=Overview).
- Standardized assessment of receptive and expressive language as appropriate for the patient. A formal evaluation gives data comparative to peers. This information is valuable in establishing the medical necessity of services in confirming the level of delay. Additional information regarding assessments can be found in the Pediatric Spoken Language section of the guidelines
- An objective observational assessment of prelinguistic and early linguistic skills can give important information relative to patients who are minimally or nonverbal communicators.
- Observational or Questionnaire assessments completed by parents, caregivers, and teachers.
- A comprehensive pragmatic language assessment to evaluate the accompanying social language delays characterized by ASD. Patients with autistic disorder require a unique emphasis on social communication to determine priority goals. Seeking the desired social skills that are motivating and relevant to the patient can support success in increasing social communication skills.
- An evaluation of reinforcers or motivating interests of the patient. Patients with ASD often have limited interests. Finding the appropriate methods to motivate communication and prompt communicative intent is an important precursor to intervention.
- Evaluation of potential benefits of Augmentative and Alternative Communication for patients with limited functional use of language.
- Behavioral Communication Observation-An observation of the patient in natural environments can yield significant benefits in identifying appropriate goals. Skills and behaviors that a skilled speech therapy may be able to identify to provide more meaningful and socially appropriate communication for daily activities.
- The evaluation and subsequent treatment must be conducted by an ASHA (American Speech-Language and Hearing Association) certified therapist
- Additional information related to speech and language evaluations can be found in the Pediatric Spoken Language section of the guidelines.

ASD Communication Evaluation Results and Follow up Recommendations

- Additional information or data to support physicians and teachers in the management of ASD symptoms
- Recommendations for intervention if applicable and other supports for the home, school, or vocational, or community setting.
- Recommendations for evaluations by accompanying medical professionals including Physical, Occupational, and Behavioral therapy, support groups, academic special education programs, nutritionist, job coach, etc.
- Developing a current profile of social communication skills for the individual for support in daily communication.
- Assessing the priority skills needed to promote the highest level of functional outcomes.
- Evaluating the communication needs by environment and communicative partner such as a peer, job supervisor, teacher, parent, and public customer service personnel.

ASD Management

Requirements for Speech Therapy Visits

- In order to establish medical necessity for speech therapy services, the following criteria must be met.
  - The treatment must be considered specific and effective for the patient's condition under evidence based practice guidelines.
  - Frequency and Duration must be considered acceptable under established standards of practice.
  - The complexity of the condition must be such that the skills of a speech therapist are required for the frequency requested.
  - Habilitative and Rehabilitative services- A positive prognosis must established that the patient's condition is expected to improve from the services provided.
  - Maintenance-Services are required to maintain the member's current condition or to prevent or slow deterioration of the member's condition. Coverage of maintenance service is health plan specific.
  - Continuation of care is supported by functional progress resulting from a positive response to skilled treatment.

Frequency and Duration

- Treatment frequency and duration must be based on:
  - Severity of objective clinical findings,
  - Presence of and number of complicating factors and comorbidities,
  - Natural history and chronicity of condition,
  - Expectation for functional improvement with skilled intervention,
  - Response to treatment provided

- Patient's level of independence

Types of Interventions

A variety of different types of speech, language, and communication interventions have been developed and utilized for treatment of children with autism. Autism is developmental condition that requires consistent modification of the treatment plan and strategies to address concerns. The symptoms of ASD vary widely dependent upon the stage of development. Treatment approach should be individualized for each child relating to their developmental level. The National Professional Development Center of Autism Spectrum Disorder (http://autismpdc.fpg.unc.edu/evidence-based-practices) provides a compendium of research recommending evidenced based treatment for autism at various development levels. The section below contains a brief description of treatment models that can be used to treat ASD. The first step in choosing a program model is prioritizing the daily needs of functional communication in combination with the best predictor of positive long term outcomes. The treatment approaches described below are not intended to be an exhaustive list of treatment options, but a reference point for review. The American Speech, Language, and Hearing Association provides an evidence map resource (http://www.asha.org/EvidenceMapLanding.aspx?id=8589943678&recentarticles=false&year=undefined&tab=allTab) for additional information regarding evidenced based treatment approaches for ASD.

Augmentative and Alternative Communication

- Augmentative and Alternative communication modes have proven to provide meaningful benefits to individuals with ASD with limited verbal ability (van der Meer, L.A., & Rispoli, M., 2010). Methods or devices to of supplement (augmentative) or replace (alternative) communication are included in this category.
  - Speech Generating Devices (SGD) are easily understood by a wide variety of communication partners making this a functional means of communication for individuals with limited functional verbal speech. An extensive variety of devices are available to meet the individualized needs of the patient. An additional evaluation by a specialist is often needed in order to appropriately choose the most appropriate device for an individual.
  - Picture Exchange Communication System (PECS) is a communication system involving an exchange of pictures as a method of expression. The system progresses through a hierarchy of increased communication demands. PECS is based on behavior shaping principles. The program encourages independent functional communication (Suchowierska, M., Rupinska, M. & Bondy, A., 2013).
  - Sign Language is often used to augment communication especially in early intervention. Sign language can be a functional means of communication. However, the communicator is limited to only those communication partners who understand sign language or very often, the individual's version of the signs acquired.

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Behavioral Modifications Treatment Approach

- Behavioral modification treatment approaches utilize methods of shaping behavior/responses by utilizing fundamental operant conditioning principles. They address replacement and alternative responses to challenging behaviors. Common methods of treatment that are included in this category are described below.
  - Applied Behavior Analysis (ABA) is a method of individualized direct behavioral response training. Specific behaviors and skills are addressed in a formal treatment setting with varying reinforcement methods.
  - Functional Communication Training addresses the communication intent behind challenging behaviors in order to replace them with appropriate, more effective strategies utilizing the ABA approach.
  - Pivotal Response Training (PRT) is a play based treatment which takes place in the child's natural environment. Natural reinforcement is emphasized in this approach. For example, during play if a child exhibits communicative intent for a certain object or action during play, the child is rewarded with that item. It differs from ABA in the implementation of a treatment in naturally occurring circumstances.
  - Millieu Therapy supports a naturalistic design for teaching in daily activities utilizing a variety of strategies.
  - Positive Behavior Support (PBS) utilizes the principles of ABA to addresses problem behaviors. The clinician interprets the communicative intent of the behavior in order to replace with an appropriate behavior that fulfills the intended purpose.

Cognitive Behavioral Therapy

- Cognitive Behavioral Therapy utilizes the behavioral approach with cognitive development principles in order to develop communication and eliminate problem behaviors. The foundation of this approach is that changes to the cognitive patterns of thinking can bring about changes in behavior. Programs focus on assisting individual with ASD in their ability to manage emotions and regulate impulsive behaviors.
  - Exploring Feelings- is a program designed to specifically address negative and positive emotions. Structured sessions to address emotions are designed to assist in learning how to appropriate manage these emotions.
  - Rational Emotive Behavioral Therapy is individualized to help the individual understand his or her emotions in order to more effectively manage their negative responses and promote a more positive outcome.
  - Social Stories are a method of preparing individuals for challenging social situations. A story is written in simple terms to describe a specific event (loading the bus for school, participating in extracurricular activities, restaurant outings, etc.). These situations are specific to the needs of the individual. This method can be a very functional method of teaching meaningful social skills to older children and teenagers.
  - Denver Model is a naturalistic environment based treatment program designed to collaborate with peers in a school setting, parents/caregivers, and individual

therapy sessions. The emphasis is on social development in a form that can be utilized in a variety of natural settings.

Parent Implemented Intervention

- Parent Implemented Intervention techniques are designed to empower the child's caregivers to implement instruction in activities of daily living in their natural environment. Engaging the caregivers as a partner in treatment gives the child an individualized trained caregiver to generalize and support goals across all environments. The Hanen Center (http://www.hanen.org/Programs/For-Parents.aspx) specializes in development and research of programs developed for parent training.
  - More than Words- This program focuses parent centered training for increasing language in routine daily activities. The activities support increased communication and social skills in young children with ASD.
  - Talkability- This program is designed for teaching pragmatic skills for children with ASD. Emphasis is placed on emotional intelligence and nonverbal language. Parents are given meaningful and feasible ways to support their child's social development.
  - Son-Rise is a child centered program focusing on relationship development. The caregivers play with the child including repetitive behaviors as more appropriate play skills are modeled. The program is used for both children and adults with disabilities.

The Treatment and Education of Autistic and related Communication-handicapped Children (TEACCH) program provides a wide variety of intervention services for children and adults with ASD. Services provided include evaluations, direct intervention, counseling, and vocational assistance.

Social Communication and related programs

Social communication based programs are developed based on a relationship based interactive approach. Social skills groups with peers as mentors can be utilized as socially appropriate communicative behavior is modeled by same age peers. Programs can also be individualized based on strengthening personal relationships with others. Direct teaching of social situations can also be implemented to specifically address difficult social situations. Multiple approaches and program are available to address the specific needs of patients with ASD.

Admission Criteria

- For those aspects of communication function for which there are standardized tests, significant delays are commonly indicated by performance that is mild to severely delayed or 1 standard deviation or more below the mean.
- Medical diagnosis of ASD is made or child is deemed at risk.
- Impaired speech or language skills affecting functional communication
- Identified deficit can be measured and progress demonstrated throughout the treatment plan.

- Home program development, education and training
- Patient or caregiver training in assistive or augmentative communication systems

Lifespan Considerations

Early Intervention

Early intervention (EI) programs are provided to children between the ages of 0 and 5 years, with or at risk for developmental disabilities. The direct involvement of parents, professionals, and peers is an important element to an effective early intervention program. Plauché Johnson describes the initial indicators of child at risk for ASD.

“For children who have autism (with or without coexisting global developmental delays), the development of social skills and language is more delayed and characteristically ‘out of sync' with motor, adaptive and cognitive functioning. The discrepancy between the development of social skills and general development is one of the most important defining criteria" (Plauché Johnson, 2008, p. 87).

Delays in the areas of joint attention is reported to be the most significant indicator of early ASD (Plauché Johnson, 2008). Parents often are able to identify that the infant’s interpersonal relationship development is not progressing as expected. Other red flags include delays in the areas of social orienting, verbal communication including responding to name, pretend play, prelinguistic skills, absent or delayed speech and language regression ((Plauché Johnson, 2008).

Early identification of these red flags can allow parents and caregivers to access necessary early intervention services at the earliest appropriate time. Early intervention services are correlated with improvement in long term communication function (Harris & Handlemen, 2000, Landa & Kalb, 2012). Early intervention services are supported as an important component for treatment of children with ASD.

One of the key factors in the successful implementation of an early intervention program is parental support. Parent implemented intervention has been shown to be effective in increasing communication skills in children with developmental delays including ASD (Kasari C, Gulsrud A, Paparella T, Hellemann G, Berry K , 2015; Roberts, M., & Kaiser, A., (2011). Parents and caregivers can be successful in implementing intervention in a natural home environment.

Child and Pre-teen

The social challenges presented by the diagnosis of ASD can cause significant difficulties for school age and pre-teen children. Routine daily activities in the areas of academics, extra-curricular activities, and peer relationships can be challenging. Intervention shifts from developmental skills to social communication and compensatory strategies. Participating in activities with typically developing peers such as a birthday party or an amusement park field trip can pose unique challenges for this age group. Speech Language Pathologists can have a significant impact towards assisting the parent and child to make accommodations and preparations to be included in peer activities. The public school system offers support in the areas needed for success in an academic setting.

Teenage and Young Adult

Functional communication skills become even more prominent in treatment as the child enters the teen years. Increased social challenges associated with high school, college, and vocation, further support the need for direct instruction and correlation with functional life skills individualized to the patient. The long term living environment and employment status/expectations play a significant role in the implementation of services at this age. Speech and language intervention can also assist with cognitive and reasoning skills to promote independent living. Adequate communication skills in the workplace are essential to long term vocational success. Focusing on skills necessary for independent living versus developmental language goals is a critical component to successful therapy intervention for this age group.

Adult

The focus of therapy should continue to be communication for daily living and vocational skills. Consultative treatment can be helpful to support the member in adjusting to changing life circumstances (new job, promotion, new living situation, etc.).

Management

- Management of this condition will vary depending upon the patient's individual need. The presentation of ASD varies widely between patients.
- The following management will vary depending on the specific needs of the patient
  - Develop an individual program designed to address the child's immediate communication needs so that the child may participate in a variety of communication situations within his/her home, school and/or community.
  - Develop an individual program utilizing the communication strengths of the child and the expectations of the family.
  - Provide family members, caregivers, guardian, siblings, educators and/or other communication partners training in communication techniques and strategies to facilitate effective communication with child including recognition and acknowledgement of the child's communication attempts and identify and respond appropriately to the child's communicative attempts.
  - Parent implemented intervention is reported to be effective in increasing communication, reducing problematic behaviors, and supporting generalization of skills. Caregivers should be empowered with appropriate training and an intervention plan developed specifically for each family's lifestyle.
  - Provide parents with information regarding community support groups and/or programs.
  - Continue to assess the child because symptoms will change over time. Methods of reinforcement and motivation are often very specific to patients with ASD. Continually assessing what is of communicative value to the patient provides the most opportunity for meaningful progress.
  - Select and implement appropriate Augmentative or Alternative Communication system for those children with limited functional verbal communication.

- Progress expectations should include progression in social communication that support the patient's ability to maintain appropriate social relationships, communicate functionally, and participate in activities of daily living.

Discharge Criteria

- The patient has acquired age appropriate communication skills
- The patient has not shown progress towards reasonable goals, and has reached a plateau.
- Caregivers are able to independently carryover the treatment plan in the home environment to support continued progress.
- The goals do not require the skills of a skilled speech language therapist. Goals that can be implemented and carried out by a caregiver are not considered medically necessary.
- The goals are duplicative in a nature to another therapist's current treatment plan (typically Occupational therapist).
- The patient has met all goals. No further treatment is indicated

Inappropriate exclusion of services

The following criteria are outline by the American Speech, Language, and Hearing Association regarding inappropriate exclusion of coverage of services for members with ASD (American Speech-Language-Hearing Association. Autism Practice Portal, Available at http://www.asha.org/PRPSpecificTopic.aspx?folderid=8589935303&section=Overview)

- Cognitive referencing. This practice of comparing IQ scores and language scores to determine eligibility for speech-language intervention is based on the assumption that language functioning cannot surpass cognitive levels.
- Chronological age. Research has shown that infants, toddlers, and preschoolers with ASD do benefit from communication services and supports (Garfinkle & Schwartz, 2002; Lawton & Kasari, 2012; Pierce et al., 2011). In addition, individuals with autism can continue to develop communication abilities across their lifespan (Hamilton & Snell, 1993; Pickett, Pullary, O'Grady, & Gordon, 2009; Watanabe & Sturmey, 2003).
- Diagnostic label. A diagnostic label on its own typically reveals very little about the individual's communication abilities; however, in the case of the autism spectrum, social communication impairment is encompassed in its very definition (Baron-Cohen, Allen, & Gillberg, 1992; DiLavore, Lord, & Rutter, 1995; Lord & Corsello, 2005). Therefore, the diagnosis of ASD indicates the inclusion of communication services and supports rather than the exclusion of services.
- Absence of cognitive or other prerequisite skills. Research has shown that individuals (including those with ASD) who do not demonstrate supposed

prerequisites can benefit from appropriate communication services and supports (Amato, Barrow, & Domingo, 1999; Bondy & Frost, 1998; Moes & Frea, 2002);

- Failure to benefit from previous communication services. Lack of progress may be tied to issues other than factors associated with the individual, such as inappropriate goals, unsuitable intervention methods, failure to incorporate assistive technology, or insufficient methods in measuring outcomes (National Joint Committee, 2003). Access to communication services and supports should not be denied merely because an individual failed to progress as a function of prior therapy; rather, previous experiences should be examined in order to determine ways in which communication services and supports could be better tailored to meet the individual's unique communication needs.
- Lack of funding or adequately trained personnel. Lack of funding and expertise often fuels exclusionary practices. If trained personnel are not available, there is an obligation either to find trained personnel or to train existing personnel (Timothy W. v. Rochester, NH School District, 1989). Similarly, lack of funding does not constitute a reason for exclusion from communication services and supports. IDEA states that identified needs have to be met.

Adjuncts to Speech Therapy Management in ASD

- Educational and community based programs
- Respite Care
- Behavioral intervention
- Vocational services
- Nutritionists
- Psychologists
- Audiologists
- Physical Therapist
- Occupational Therapist
- Gastroenterologist
- AAC Specialist

Autism Mandates

- American Speech Language and Hearing Association Autism Mandates https://www.asha.org/Advocacy/state/State-Insurance-Mandates-Autism/
- Centers for Medicare & Medicaid Services (CMS) Informational Bulletin. *Clarification of Medicaid coverage of services to children.* July 7, 2014. http://www.medicaid.gov/Federal-Policy-Guidance/Downloads/CIB-07-07-14.pdf

- National Conference of State Legislatures (NCLS), *Insurance coverage for autism*. August, 2012. http://www.ncsl.org/research/health/autism-and-insurance-coverage-state-laws.aspx

References

1. Adams C, Lockton E, Freed J, et al. The Social Communication Intervention Project: a randomized controlled trial of the effectiveness of speech and language therapy for school-age children who have pragmatic and social communication problems with or without autism spectrum disorder. Int J Lang Commun Disord. 2012;47(3):233-244.
2. Agency for Healthcare Research and Quality (AHRQ). Therapies for children with autism spectrum disorder: behavioral interventions update. Comparative Effectiveness Review. No. 137. August 2014.
3. Aldred, C., Green, J., & Adams, C. (2004). A new social communication intervention for children with autism: A pilot randomized controlled treatment study suggesting effectiveness. *Journal of Child Psychology and Psychiatry,* 45, 1420-1430.
4. Amato, J., Barrow, M., & Domingo, R. (1999). Symbolic play behavior in very young verbal and nonverbal children with autism. Infant–Toddler Intervention: The Transdisciplinary Journal, 9, 185–194.
5. American Speech-Language-Hearing Association. Admission/discharge Criteria in Speech-Language Pathology. http://www.asha.org/policy/GL2004-00046/ Accessed September 5, 2018.
6. American Speech-Language-Hearing Association. Autism (Practice Portal). http://www.asha.org/PRPSpecificTopic.aspx?folderid=8589935303&section=Overview. Accessed September 21, 2018.
7. American Speech-Language-Hearing Association. Preferred Practice Patterns for the Profession of Speech-Language Pathology http://www.asha.org/policy/PP2004-00191/. Accessed September 5, 2018.
8. American Speech-Language-Hearing Association. Scope of Practice in Speech-Language Pathology http://www.asha.org/policy/SP2016-00343/. Accessed September 5, 2018.
9. American Speech-Language Hearing Association. Speech Language Pathology Medical Review Guidelines. https://www.asha.org/practice/reimbursement/SLP-medical-review-guidelines/ Accessed September 5, 2018.
10. Baron-Cohen S, Allen J, Gillberg C. Can autism be detected at 18 months? The needle, the haystack, and the CHAT. British Journal of Psychiatry.1992;161:839–843.
11. Casenhiser DM, Binns A, McGill F, Morderer O, Shanker SG. Comparison of the evolutional process of children with autism spectrum disorders in different language therapeutic interventions. Soc Bras Fonoaudiol. 2015;23(1):8-12.
12. Cardoso C, Montegegro ML. Speech and language pathology and autistic spectrum. The Spanish Journal of Psychology. 2009;12(2):686-695.
13. Charwarska K, Paul R, Klin, Hannigen S., Dichtel LE, Volmar F. (2007) Parental recognition of developmental problems in toddlers with autism spectrum disorders. Journal of Autism and Developmental Disorders. 2007;37(1):62-72.
14. Fogleman CD. Implementing AHRQ effective health care reviews. Therapies for children with autism spectrum disorders. American Family Physician. 2012;85(9):878-880. http://www.aafp.org/afp/2012/0501/p878.pdf. Accessed September 5, 2018.
15. Gillett JN, LeBlanc LA. Parent-implemented natural language paradigm to increase language and play in children with autism. Research in Autism Spectrum Disorders;20071:247-255.
16. Ginsburg, KR.The importance of play in promoting healthy child development and maintaining strong parent-child bonds. Pediatrics. 2007;119:82-191.
17. Gulsrud AC, Hellemann G, Shire S, Kasari C. Isolating active ingredients in a parent-mediated social communication intervention for toddlers with autism spectrum disorder. J Child Psychol Psychiatry. 2016;57(5):606-13.
18. Hampton LH, Kaiser AP. Intervention effects on spoken-language outcomes for children with autism: a systematic review and meta-analysis. Journal of Intellectual Disability Research. 2016; 60(5):444-463.
19. The Hanen Centre, available at http://www.hanen.org/Home.aspx. Accessed September 5, 2018.

20. Harris, S. L., & Handleman, J. S. (2000). Age and IQ at intake as predictors of placement for young children with autism: A four-to six-year follow-up. Journal of Autism and Developmental Disorders, 30(2), 137–142
21. Kasari C. Assessing change in early intervention programs for children with autism. *J Autism Dev Disord* 2002; 32:447-461
22. Kasari C, Gulsrud A, Paparella T, Hellemann G, Berry K. Randomized comparative efficacy study of parent-mediated interventions for toddlers with autism. Journal Of Consulting And Clinical Psychology [serial online]. June 2015;83(3):554-563 available from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4755315/ Accessed September 5, 2018.
23. Koegel, R.L., Symon, J.B., & Koegel, L.K. (2002). Parent education for families of children with autism living in geographically distant areas. *Journal of Positive Behavior Interventions,* 4(2), 88-103.
24. Kozlowski, A. M., Matson, J. L., Horovitz, M., Worley, J. A., & Neal, D. (2011). Parents' first concerns of their child's development in toddlers with autism spectrum disorders. *Developmental Neurorehabilitation,* 14(2), 72-78.
25. Landa, R. J., & Kalb, L. G. (2012). Long-term outcomes of toddlers with autism spectrum disorders exposed to short-term intervention. Pediatrics, 130(2), 186–190.
26. McLaughlin MR. Speech and language delay in children. *American Fam Physician*. 2011; 83(10):1183-1188.
27. Moes, D. R., & Frea, W. D. (2002). Contextualized behavioral support in early intervention for children with autism and their families. Journal of Autism and Developmental Disorders, 32, 519–533.
28. National Joint Committee for the Communication Needs of Persons with Severe Disabilities. (2003). Position statement on access to communication services and supports: Concerns regarding the application of restrictive "eligibility" policies [Position statement]. Available from https://www.asha.org/policy/ps2003-00227/ y Accessed September 7, 2018.
29. The National Professional Development Center of Autism Spectrum Disorder. Evidence based practice retrieved from http://autismpdc.fpg.unc.edu/evidence-based-practices. Accessed September 5, 2018.
30. Ozonoff, S., & Cathcart, K. (1998) Effectiveness of a home program intervention for young children with autism. *Journal of Autism and Developmental Disorders*, 28(1), 25-32.
31. Pierce, K., Carter, C., Weinfeld, M., Desmond, J., Hazin, R., Bjork, R., & Gallagher, N. (2011). Detecting, studying, and treating autism early: The one-year well-baby check-up approach. The Journal of Pediatrics, 159(3), 458–465.
32. Plauché Johnson, C. (2008). Recognition of autism before age 2 years. Pediatrics in Review, 29, 86-96. Available at http://pedsinreview.aappublications.org/cgi/content/full/29/3/86 Accessed September 5, 2018.
33. Plauché Johnson, C., Myers, S. M., & the Council on Children with Disabilities. (2007). Identification and evaluation of children with Autism Spectrum Disorders. Pediatrics, 120(5), 1183-1215.
34. Roberts, M., & Kaiser, A. (2011). The Effectiveness of Parent-Implemented Language Intervention: A Meta-Analysis. American Journal of Speech-Language Pathology, 20, 180-199.
35. Suchowierska, M., Rupinska, M. & Bondy, A. (2013). Picture Exchange Communication System (PECS): A short “tutorial” for doctors. *Postępy Nauk Medycznych,* t. XXVI, nr 1. 95-92.
36. van der Meer L, Rispoli M. Communication interventions involving speech-generating devices for children with autism: a review of the literature. Developmental Neurorehabilitation [serial online]. 2010;13(4):294-306.
37. Volkmar F, Siegel M, Woodbury-Smith M, et al. Practice parameter for the assessment and treatment of children and adolescents with autism spectrum disorder. J Am Acad Child Adolesc Psychiatry. 2014; 53(2):237-257.
38. Watanabe, M., & Sturmey, P. (2003). The effect of choice-making opportunities during activity schedules on task engagement of adults with autism. Journal of Autism and Developmental Disorders, 33, 535–538.

39. Zwaigenbaum L, Bauman ML, Choueiri R, et al. Early intervention for children with autism spectrum disorder under 3 years of age: recommendations for practice and research. Pediatrics; 2015; 136:S60-S81.

Bilingual Service Criteria

Definition

The ability to communicate in two languages and proficiency in either language may fluctuate based on need or the purpose of language use..

Related Terminology:

- L1 and L2 - native or mother tongue vs. second language.
- Home Language – Language spoken in the home
- Academic Language – Language used to communicate in academic contexts, teacher discourse, and textbooks.
- Dual language learners- Children who have systematic exposure to more than one language.
- English Language Learners (ELL)- An individual who is learning English as a second (or third) language.
- Positive transfer- A shared linguistic skill is appropriately generalized across more than one language resulting in correct production.
- Negative transfer- A linguistic skill is generalized inappropriately across languages resulting in an incorrect production.

Types of Bilingualism

- Acquisition of the Languages
  - **Simultaneous**-Bilingualism is the “first” language developed by exposure to both languages in the home setting.
  - **Sequential**- L1 is acquired from birth in the home. L2 develops from exposure in a secondary setting (academic, social, or vocational).
- Age of Acquisition
  - **Early bilinguals** begin learning L2 in childhood.
  - **Late bilinguals** begin to acquire L2 as adults.
- Context of Language Acquisition
  - **Subtractive**- The home language is the minority language and is replaced by the L2.
  - **Additive/Immersion**-L1 is used temporarily until L2 is developed.
- Language Registers
  - **Basic Interpersonal Communication Skills (BICS)**, also known as conversational language, typically takes two to three years to acquire.
  - **Cognitive Academic Language Proficiency (CALP)**, also known as academic language, takes five to seven years to develop.

Typical Second Language Acquisition Processes

- Silent period
  - The silent period occurs when a client is first exposed to a new language. This stage typically ends between six months to a year. Minimal expressive language is noted during this time as the client is absorbing the vocabulary and syntax of the new language.
- Code switching
  - Code switching refers to use of words or phrases from one language in the sentence or discourse of the other language. It is used to fill linguistic gaps by early learners or for a specific communicative purpose by the advance speaker.
- Language Loss/Attrition
  - A reduction in linguistic skill in one language as a result of a rapid focus shift to a second language
- Cross-linguistic transfer
  - The generalization of shared language elements between two languages. This process may be bidirectional and involves both positive and negative transfer.
- Translanguaging
  - Bilingual speakers using their full linguistic repertoires without placing more regard or prestige on either language

Language Difference	Language Disorder
Communication behaviors meet the norms of the primary speech community but do not meet the norms of Standard English.	Communication behaviors do not correlate with accepted norms across languages. Impairment in understanding others, or sharing thoughts, ideas and feelings.
A language difference represents variances in articulation and language resulting from exposure to more than one language.	A language disorder represents delays or errors observed in the acquisition of any language. The disorder must be evident in the patient's native language(s).
Phonology patterns that are the result of the influence of a second language. This may include accent and dialectical variations.	Phonological patterns extending across phonemes present in both languages that exhibit a disorder in the developmental sequence appropriate for the language referenced.
Syntax and Morphological patterns vary across languages. Errors in grammatical structure should be evaluated to determine if the errors result from L1 interference across existing second language grammar rules.	Syntax or Morphology delays or errors present in one or both languages as indicated in the grammatical rules for the languages assessed.
Semantic development may vary across languages. Bilingual children may acquire words in one language in the home environment, and social and academic vocabulary in a second language.	Delayed semantic development when vocabulary of both languages is combined and evaluated for developmental norms.
Pragmatic or social language behavior is culturally appropriate for the primary language, although expectations for the second language (especially in academic settings) may differ.	Social language development is delayed in comparison to the pragmatic language customs of L1.

▪ Must account for the process of language development, language loss, impact of language dominance fluctuation and influence of dual language acquisition.	▪ True communication disorders will be evident in both languages used by an individual.

- Language development characteristics of monolingual children with language impairment can overlap with the typically developing English L2 learner. In addition, those same characteristics will be significant in comparison to typical English L1 development. Listed below are some indicators or "red flags" that are indicative of a delay or disorder in bilingual individuals. The identification of these red flags in case history or referral forms should be noted and carefully considered.
  - Family history of speech-language impairment
  - Speech and Language development is slower in comparison to siblings
  - Atypical peer interactions
  - Intelligibility is below expected norms in both languages
  - Limited vocabulary acquisition across languages
  - Delayed developmental pre-linguistic and play skills

Best Practice for Assessment:

Cultural Competence

- Cultural competence refers to the ability to understand and appropriately address the values and customs of different cultures. As it applies to speech language pathology, expectations exist regarding the consideration of cultural factors. Some important elements to note include:
  - Consider the client and caregivers cultural customs. This includes lifestyle considerations such as dress, diet, and holiday celebrations.
  - Identify both explicit cultural variables discernible on the surface—such as external symbols, food, and language—and implicit variables, including religious practices and beliefs, spiritual beliefs, educational values, age and gender roles, child-rearing practices, and fears and perceptions.
  - Power differentials- Some cultures may feel uncomfortable communicating with the therapist the "expert" in this area. They may be hesitant to voice objections or give feedback due to this.
  - Incorporating cultural preferences and traditions into treatment demonstrates an important respect for the patient and the caregivers.
  - Avoid pressuring the patient and family to participate in aspects of treatment that they do not feel are appropriate for their life.
  - Social language norms are particularly relevant in assessing pragmatic disorders. Social customs vary widely across cultures, and consideration of their impact on pragmatic communication is essential.
- The American Speech Language and Hearing Association has developed a guidelines for culture awareness that can be found at https://www.asha.org/Practice-Portal/Professional-Issues/Cultural-Competence/

Assessment Procedures

- Use an interpreter if necessary: a person trained to translate written text from one language to another. Additional information is available under Collaborating with Interpreters: https://www.asha.org/Practice-Portal/Professional-Issues/Collaborating-With-Interpreters/.
- Case History: Conduct a thorough family/caregiver interview including the following:
  - Age, manner and exposure of acquisition of the language(s)
  - Dialect of the language utilized
  - Language(s) used at home, school, etc.
  - language(s) used with the family
  - Length and exposure to each language
  - Language of academic instruction
- Questionnaires
- Assessment tools- Select appropriate assessment tools individualized to the patient in order to evaluate the five domains of language: phonology, morphology, syntax, semantics, and discourse (pragmatics).
  - Criterion-referenced assessment tools can be helpful to identify areas of strengths and weaknesses.
  - Use norm referenced tests appropriate to the population/background of the individual. Standardized test scores are not valid for an individual who is not reflected in the normative sample for a given assessment. These assessments can provide informative descriptive information about abilities/limitations.
  - Use culturally and linguistically adapted test equivalents in both languages to compare areas of deficit.
  - Utilize Dynamic Assessment: involves pretest of a skill, an intervention to address that skill and then a post test to determine if there was progress. Additional information is available at ASHA: https://www.asha.org/practice/multicultural/issues/Dynamic-Assessment/
- Language and speech sampling: collect clinical information in both languages
- Speech Sound Assessment
  - Shared and unshared sounds/processes including consonant clusters/position of sounds in words/syllables- Additional information can be found at Phonemic Inventories Across Languages https://www.asha.org/practice/multicultural/Phono/.
  - Developmental acquisition within each language
- Error Assessment
  - Developmental errors- Errors that are normal in childhood development
  - Native language influence errors- Errors that are the result of the influence of L1
  - Atypical errors- Errors that do not fit in the either of the first two categories and are considered atypical. These are the issues that are cause for concern.
- Accommodations and modifications may be needed to gather information about the individual's abilities/limitations-changes may invalidate the standardized scores. The

Speech-Language Pathologist is responsible for documenting any changes made during the assessment process.

- Examples include:
  - Rewording and giving additional test instructions
  - Providing cues or repeating items
  - Skipping items that are not appropriate
  - Having the individual explain correct/incorrect responses
  - Translating standardized assessments

Commonly used Bilingual Assessments:

Assessments	Ages	Descriptions
Bilingual Vocabulary Assessment Measure (BVAM)	3:0-up	Basic vocabulary in variety of languages
The Bilingual Verbal Ability Test (BVAT)	5:0-18+	Verbal ability measure in 17 languages
Clinical Evaluation of Language Fundamentals (CELF 5- Spanish)	5:0-21:11	Receptive and expressive language assessment in Spanish and English
Clinical Evaluation of Language Fundamentals Preschool 2 Spanish (CELF-Preschool-2 Spanish)	3:0-6:11	Comprehensive language evaluation for Spanish-speaking preschool children
Contextual Probes of Articulation Competence-Spanish (CPAC-S)	3:0-8:11	Test of phonology and articulation skills in Spanish
Expressive One-Word Picture Vocabulary Test-R Spanish-Bilingual Edition (EOWPVT-R-SBE)	2:0-18+	Expressive vocabulary assessment in Spanish
Differential Ability Scales II Spanish (DAS II)	2:6-6:11	Assess cognitive strengths
Dos Amigos	5:0-13:0	Verbal language and language dominance assessment
Goldman-Fristoe Test of Articulation-3 Spanish (GFTA 3 Spanish)	2:0-21:11	Assessment of articulation in Spanish and English
Preschool Language Scale 5 Spanish (PLS-5 Spanish)	Birth-7:11	Assessment of expressive and receptive language skills
Receptive One-Word Picture Vocabulary Test-R Spanish-Bilingual Edition (ROWPVT-R-SBE)	2:0-18+	Receptive vocabulary assessment in Spanish
Spanish Articulation Measure (SAM)	3:0-up	Assessment of consonant production and phonological processes in Spanish
Spanish Language Assessment Procedures (SLAP)	3:0-9:0	Assessment of vocabulary development, speech sound production and pragmatic communication skills
Test of Auditory Processing 3 (TAPS3)	5:0-18:11	Assessment of auditory processing skills in Spanish and English
Test de Vocabulario en Imagenes Peabody (TVIP)	2:6-17:11 months	A measure of Spanish vocabulary based on the PPVT

Assessments	Ages	Descriptions
Wechsler Intelligence Scale for Children-4 Spanish (WICS IV- Spanish)	6:0-16:11	Cognitive/intellectual ability assessment
Woodcock-Munoz Language Survey (WMLS-R)	2:0-90	Language proficiency assessment in English, Spanish and other language

Treatment Considerations

- Selecting the language of intervention/therapy is determined on an individual basis:
  - Language history and experience with each language,
  - Frequency of use for each language,
  - Proficiency in each language,
  - Environmental factors,
  - Family considerations and goals
- Two main approaches for treatment: Bilingual approach and the cross linguistic approach.
  - Bilingual approach focuses on utilizing both languages to facilitate intervention. Working on a goal that has common traits to both languages and errors. This is a dual language focus. Generalization-the goal is to promote a cross language association or positive transfer to promote development of each language.
  - Cross linguistic approach focuses on the differences in the linguistic structures of each language. One area may be targeted that is consistent in just one language. Treatment plan may focus on developing L1 to gain skills for learning L2.
  - Generalization of skills is an important concept of a successful intervention plan. These approaches are complementary and are not mutually exclusive. The goal is to facilitate communication gains, both within and across languages.

Requirements for Speech Therapy Visits

- In order to establish medical necessity for speech therapy services, the following criteria must be met.
  - The treatment must be considered specific and effective for the patient's condition under evidence based practice guidelines.
  - Frequency and Duration must be considered acceptable under established standards of practice.
  - The complexity of the condition must be such that the skills of a speech therapist are required for the frequency requested.
  - Habilitative and Rehabilitative services- A positive prognosis must established that the patient's condition is expected to improve from the services provided.
  - Maintenance-Services are required to maintain the member's current condition or to prevent or slow deterioration of the member's condition. Coverage of maintenance service is health plan specific.
  - Continuation of care is supported by functional progress resulting from a positive response to skilled treatment.

Frequency and Duration

- Treatment frequency and duration must be based on:
  - Severity of objective clinical findings,
  - Presence of and number of complicating factors and comorbidities,
  - Natural history and chronicity of condition,
  - Expectation for functional improvement with skilled intervention,
  - Response to treatment provided
  - Patient's level of independence

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References:

1. American Speech-Language and Hearing Association. Collaborating With Interpreters. https://www.asha.org/Practice-Portal/Professional-Issues/Collaborating-With-Interpreters/. Accessed June 15, 2018
2. American Speech-Language and Hearing Association. Cultural Competence. https://www.asha.org/Practice-Portal/Professional-Issues/Cultural-Competence/. Accessed June 15, 2018
3. American Speech-Language and Hearing Association. Phonemic Inventories Across Languages. https://www.asha.org/practice/multicultural/Phono/. Accessed August 6, 2018
4. American Speech-Language-Hearing Association. Admission/discharge Criteria in Speech-Language Pathology. http://www.asha.org/policy/GL2004-00046/ Accessed September 5, 2018.
5. American Speech-Language-Hearing Association. Preferred Practice Patterns for the Profession of Speech-Language Pathology http://www.asha.org/policy/PP2004-00191/. Accessed September 5, 2018.
6. American Speech-Language-Hearing Association. Scope of Practice in Speech-Language Pathology http://www.asha.org/policy/SP2016-00343/. Accessed September 5, 2018.
7. American Speech-Language Hearing Association. Speech Language Pathology Medical Review Guidelines. https://www.asha.org/practice/reimbursement/SLP-medical-review-guidelines/ Accessed September 5, 2018.
8. American Speech-Language and Hearing Association. Speech Sound Disorder-Articulation and Phonology (Practice Portal) http://www.asha.org/PRPSpecificTopic.aspx?folderid=8589935321&section=Assessment. Accessed June 22, 2018
9. American Speech-Language and Hearing Association: Bilingual Service Delivery (Practice Portal) http://www.asha.org/Practice-Portal/Professional-Issues/Bilingual-Service-Delivery/. Accessed June 22, 2018
10. American Speech-Language and Hearing Association. Dynamic Assessment. http://www.asha.org/practice/multicultural/issues/Dynamic-Assessment.htm. Accessed June 22, 2018
11. Bader S, Simon S. Bilingual assessment for monolingual SLPs and the BID process. Los Angeles Unified School District. Accessed June 25, 2018
12. Goldstein B, Bunta F. Positive and negative transfer in the phonological systems of bilingual speakers. International Journal of Bilingualism. 2011;16(4):388-401
13. Goldstein B, Fabiano L. Assessment and intervention for bilingual children with phonological disorders. ASHA Leader. 2007;12:6-31 doi:10.1044/leader.FTR2.12022007.6
14. Gross M, Buac M, Kaushanskaya M. Conceptual scoring of receptive and expressive vocabulary measures in simultaneous and sequential bilingual children. American Journal of Speech-Language Pathology. 2014;23:574-586.
15. Gutierrez-Clellen VF, Restrepo MA, Bedore L, Pena E, Anderson R. Language sample analysis in spanish-speaking children methodological considerations. Language Speech and Hearing Services in Schools. 2000;31(1):88-98. doi:10.1044/0161-1461.3101.88
16. Gutierrez-Cclellen VF, Simon-cerreijido G, Leone A. Codeswitching in bilingual children with specific language impairment. Int J Billing. 2009:13(1):91-109 doi: 10.1177/1367006909103530
17. Gutierrez-Clellen VF, Simon-cerreijido G, Wager C. Bilingual children with language impairment: A comparison with monolinguals and second language learners. Applied psycholinguistics. 2008;29(1):3-19. doi:10.1017/S0142716408080016.
18. Kohnert K. Bilingual children with primary language impairment; Issues, evidence and implications for clinical actions. Journal of Communication Disorders. 2010;43:456-473.
19. Paradis J. The development of english as a second language with and without specific language impairment: Clinical Implications Journal of Speech, Language, and Hearing Research. 2016;59:171-182. doi:10.1044/2015_JSLHR-L-15-0008
20. Prath, S. Red flags for speech-language impairment in bilingual children. The ASHA Leader. 2016;21(11), 32-33. doi: 10.1044/leader.SCM.21112016.32

21. Prezas R, Hodson B, Schommer-Aikins M. Phonological assessment and analysis of bilingual preschoolers' spanish and english word productions. American Journal of Speech-Language Pathology. 2014;23:176-185.
22. Roseberry-McKibbin C. Assessment and intervention for children with limited english proficiency and language disorders. American Journal of Speech-Language Pathology.1994;3:77-88.

(Central) Auditory Processing Disorder (C)APD

Associated Terminology

- Attention Deficit Hyperactivity Disorder (ADHD)
- Auditory Temporal Processing Deficit
- Pansensory Temporal Deficit
- Cognitive/Language Disorder
- Receptive Language Disorder.

Definition

- (Central) Auditory Processing (C)AP is the efficiency and effectiveness by which the central nervous system (CNS) utilizes auditory information. It can be more narrowly defined as, the perceptual processing of auditory information in the CNS and the neurobiologic activity that underlies said processing and promotes electrophysiologic auditory potentials. Although abilities such as phonological awareness, attention to and memory for auditory information, auditory synthesis, comprehension and interpretation of aurally presented information, and similar skills may be reliant on or associated with intact central auditory function, they are considered higher order cognitive-communicative and/or language-related functions and as such, are not included in the definition of (C)AP.
- What is included are the auditory mechanisms that underlie the following abilities:
  - Sound localization and lateralization
  - Auditory discrimination
  - Auditory pattern recognition
  - Temporal aspects of audition, including temporal integration
  - Temporal discrimination (e.g., temporal gap detection)
  - Temporal ordering
  - Temporal masking
  - Auditory performance in competing acoustic signals (including dichotic listening)
  - Auditory performance with degraded acoustic signals.
- (Central) Auditory Processing Disorder (C)APD refers to difficulties in the perceptual processing of auditory information in the CNS as demonstrated by poor performance in one or more of the above noted skills. More specifically, Central Auditory Processing Disorder (C)APD refers to limitations in the ongoing transmission, analysis, organization, transformational, elaboration, storage, retrieval, and use of information contained in audible signals.

Presentation

- Individuals suspected of having (C)APD frequently present with one or more of the following behavioral characteristics:
  - difficulty understanding spoken language in competing messages, noisy backgrounds, or in reverberant environments
  - misunderstanding messages inconsistent or inappropriate responding
  - frequent requests for repetitions, saying “what” and “huh” frequently
  - taking longer to respond in oral communication situations
  - difficulty paying attention; being easily distracted
  - difficulty following complex auditory directions or commands
  - difficulty localizing sound
  - difficulty learning songs or nursery rhymes
  - poor musical and singing skills
  - associated reading, spelling, and language/learning problems
- It is important to note that this list is illustrative, not exhaustive, and that these behavioral characteristics are not exclusive to (C)APD. Other diagnoses often present with some subset of similar characteristics, including learning disorder (LD), language impairment (SLI), Attention Deficit Hyperactivity Disorder (ADHD), and Autism Spectrum Disorder (ASD); therefore, these behavioral characteristics are not exclusively diagnostic of (C)APD.
- Additionally, those who present with symptoms of (C)APD are typically of average intelligence and demonstrate hearing acuity levels within normal limits.

Admission Criteria

It is the position of the American Speech-Language-Hearing Association (ASHA) that there is sufficient scientific evidence to support the existence of (central) auditory processing disorder (C)APD as a distinct diagnostic entity, to guide diagnosis and assessment of the disorder, and to inform the development of more customized, deficit-focused treatment and management plans. (C)APD is an auditory deficit; therefore, it continues to be the position of ASHA that the audiologist is the professional who diagnoses (C)APD. Consistent with the ASHA Scope of Practice in Speech-Language Pathology, speech-language pathologists (and other professionals) collaborate with the audiologist in the overall screening and assessment process, differential diagnosis, and development and implementation of intervention plans where there is evidence of speech-language and/or cognitive-communicative disorders. Specifically, speech-language pathologists are uniquely qualified to delineate the cognitive-communicative and/or language factors that may be associated with (C)APD. Full understanding of the ramifications of (C)APD for the individual requires a multidisciplinary assessment to determine the functional impact of the disorder and to guide treatment and management of the condition and associated deficits. Finally, it is the position of ASHA that the knowledge base required for understanding, diagnosing, and treating/managing individuals with (C)APD is extensive and may require additional training and education beyond that obtained in a typical professional preparation program.

Goals of a Speech Language Evaluation for patients diagnosed with Central Auditory Processing Disorder

- Confirm the (C)APD diagnosis has been made by an Audiologist.
- Select an appropriate method for testing based on recommendations and results.
- Establish a plan of care (including home program) based on the comprehensive speech/language evaluation, all other available interdisciplinary assessments, and parent/child feedback.

Scope of Speech Language Evaluation for patients diagnosed with Central Auditory Processing Disorder

- A complete developmental, medical and behavioral case history. The history should include information on the subject's family/genetic history; pre-, peri-, and postnatal course; health status (medications and other medical history); communication, listening, and auditory behavior; psychological factors; educational achievement; social development; cultural and linguistic background; and prior related therapies and current treatments.
- Hearing and vision screening- Screening for (C)APD typically involves systematic observation of listening behavior and/or performance on tests of auditory function to identify those individuals who are at risk for (C)APD. (C)APD screening can be conducted by audiologists, SLPs, psychologists, and others using a variety of measures that evaluate auditory-related skills. A number of screening test protocols, questionnaires, checklists, and other procedures can be used to identify individuals who are candidates for auditory processing evaluation (e.g., Bellis, 2003; J. Jerger & Musiek, 2000; Keith, 1986, 1994, 2000; Smoski, Brunt, & Tanahill, 1992). Typically, screening questionnaires, checklists, and related measures probe auditory behaviors related to academic achievement, listening skills, and communication. At this time, there is no universally accepted method of screening for (C)APD. It is critical that a complete assessment of the peripheral auditory system, including consideration of auditory neuropathy/ (AN/AD), occur prior to administering a central auditory test battery. At minimum, this would include evaluation of hearing thresholds, immittance measures (tympanometry and acoustic reflexes), and otoacoustic emissions (OAEs). When contradictory findings exist (e.g., present OAEs combined with absent acoustic reflexes or abnormal hearing sensitivity; abnormal acoustic reflexes with normal tympanometry and OAEs), additional follow up should occur to rule out AN/AD prior to proceeding with central auditory testing.
- Formal Assessment: (C)APD is an auditory deficit; therefore, the SLP's responsibility in (C)APD involves collaboration in the assessment of (central) auditory processing disorders, assessment of speech and language, and providing intervention where there is evidence of speech, language, and/or other cognitive-communication disorders. SLPs have a unique role in delineating cognitive-communicative and language-related factors that may be associated with (C)APD in some individuals, and in the differential diagnosis of language processing disorders from (C)APD. Full understanding of the ramifications of (C)APD for the individual requires a multidisciplinary assessment involving other professionals to determine the

functional impact of the diagnosis and to guide treatment and management of the disorder and associated deficits; however, speech-language, psychological, and related measures cannot be used to diagnose (C)APD.

- Once (C)APD has been diagnosed by an audiologist or is suspected, the speech-language evaluation should include assessment of the following:

Auditory Memory	Word Discrimination
Auditory Conceptualization	Auditory Closure
Auditory Synthesis	Auditory Association
Auditory Comprehension	Understanding and following directions
Phonemic Awareness	Auditory Figure Ground
Spoken Language	Pragmatics

- Examples of appropriate evaluations/measuring tools include:
  - The Listening Comprehension Test-2
  - Preschool Language Scale-5 (PLS-5)
  - Oral and Written Language Scales-II (OWLS-II)
  - Test of Language Development-Primary-4 (TOLD-P:4)
  - Test of Language Development-Intermediate-4 (TOLD-I:4)
  - Test of Auditory Processing-4 (TAPS-4 (Spanish-Bilingual versions available)
  - Batelle Developmental Inventory-2 (BDI-2)
  - SCAN-3:C- Tests of Auditory Processing Disorders in Children (SCAN-3:C)
  - SCAN-3:A – Test of Auditory Processing Disorders in Adults and Adolescents (SCAN-3:A)
  - Staggerd Spondaic Word Test (SWW)
  - Gap detection tests (Gap In Noise, Random Gap Detection)
  - Degraded signal Tests- assess auditory closure (Low- pass filtered, Time compressed, Speech-in-noise)
  - Multiple Auditory Processing Assessment (MAPA–2)
  - Test for Auditory Comprehension of Language-4 (TACL-4)
  - Oral Passage Understanding Scale (OPUS)
  - Comprehensive Assessment of Spoken Language-2 (CASL-2)
  - The Listening Inventory (TLI)
  - Auditory Processing Abilities Test (APAT)
  - Comprehensive Test of Phonological Processing-2 (CTOPP-2)
  - Test of Adolescent and Adult Language-4 (TOAL-4)

SLP Management

Requirements for Speech Therapy Visits

- In order to establish medical necessity for speech therapy services, the following criteria must be met.
  - The treatment must be considered specific and effective for the patient's condition under evidence based practice guidelines.
  - Frequency and Duration must be considered acceptable under established standards of practice.
  - The complexity of the condition must be such that the skills of a speech therapist are required for the frequency requested.
  - Habilitative and Rehabilitative services- A positive prognosis must established that the patient's condition is expected to improve from the services provided.
  - Maintenance-Services are required to maintain the member's current condition or to prevent or slow deterioration of the member's condition. Coverage of maintenance service is health plan specific.
  - Continuation of care is supported by functional progress resulting from a positive response to skilled treatment.

Frequency and Duration

- Treatment frequency and duration must be based on:
  - Severity of objective clinical findings,
  - Presence of and number of complicating factors and comorbidities,
  - Natural history and chronicity of condition,
  - Expectation for functional improvement with skilled intervention,
  - Response to treatment provided
  - Patient's level of independence

(C)APD Communication Evaluation Results and Follow up Recommendations

Once a diagnosis is made, the audiologist should consult with other team members to design an intervention plan that addresses the range of communication, educational, and social issues associated with the (C)APD. Essential to this collaboration is the audiologist's diagnostic report that identifies the auditory processing deficits and recommends specific treatment/management approaches. Such a report helps the patient with (C)APD, family members, and the professional team understand the ramifications of the (C)APD, the treatment strategies, and the prognosis. For the school-aged child, this information is conveyed to the team of parents, teachers, and support personnel who will develop a plan to address the adverse effects of a (C)APD on the child's day-to-day communicative and educational functioning. Audiologists often act in consultation with the school team. Similarly, audiologists who diagnose (C)APD in other populations, including young adults and older adults, must consider the range of communication, occupational, educational, and social ramifications associated with (C)APD.

Recommendations should be based on sound principles of intervention and management. When working with a school team, these recommendations also should take into account current educational philosophies and practices. For school-aged children, day-to-day modifications in the learning environment (e.g., a smaller learning environment or a quieter learning environment) may be included in an IEP, a 504 Plan, or a school-based instructional plan. For adults, these recommendations may take the form of a letter to a college, rehabilitation counselor, or an employer.

When recommending environmental and/or instructional modifications or specific compensatory strategies or services, the deficit areas to be addressed and the desired changes should be identified. There are a number of treatment options currently available, each purporting to improve AP skills and communication. These include direct skill remediation through auditory training, compensatory strategies training, enhancement of the acoustic signal and the listening environment, and instructional modifications. Although an accumulating body of research suggests the efficacy of several of these techniques (e.g., Brand-Gruwel, Aarnoutse, & Van Den Bos, 1997; McKenzie, Neilson, & Braun, 1981; Musiek, 1999; Rosenberg et al., 1999; Tremblay & Kraus, 2002; Tremblay et al., 2001), considerable research is needed to substantiate, objectively, the efficacy of specific intervention programs for (C)APD. It is important, therefore, that treatment programs and approaches be described relative to the skill areas to be addressed rather than simply specified by name. Goals and outcomes should be well-defined and tied to expectations and prognosis. Engagement of the patient, family members, and all professional team members is essential throughout this process.

(C)APD Treatment and Management

- Intervention for (C)APD typically requires an interdisciplinary approach involving the audiologist, speech-language pathologist, and other professionals, and should be implemented as a collaborative effort by the audiologist and speech-language pathologist (and possibly others) as soon as possible following the diagnosis to exploit the plasticity of the CNS, maximize successful therapeutic outcomes, and minimize residual functional deficits. Treatment and management goals are deficit driven and are determined on the basis of diagnostic test findings, the individual's case history, and related speech-language and psychoeducational assessment data.
- Treatment and management of (C)APD should incorporate both bottom-up (e.g., acoustic signal enhancement, auditory training) and top-down (i.e., cognitive, metacognitive, and language strategies) approaches delivered consistent with neuroscience principles. Bottom-up approaches are designed to enhance the acoustic signal and to train specific auditory skills. Top-down approaches provide compensatory strategies designed to minimize the impact of (C)APD through the strengthening of higher order central resources (i.e., language, memory, attention) that individuals with (C)APD may draw upon to buttress deficient auditory processing skills not fully remediated through auditory training. In addition, it is important that training principles be extended across all settings, including the clinic, the classroom, the workplace, and the home, to maximize mastery and ensure generalization of learned skills. Some support exists for the claim that auditory and

language interventions can improve auditory functioning in children with (C)APD and those with primary spoken language disorder. There is little indication, however, that observed improvements are due to the auditory features of these programs.

Types of Interventions

- Comprehensive Management of (C)APD should focus on three aspects:
  - Changing the learning or communication environment
  - Direct skills remediation
  - Improving the child's learning and listening skills by teaching compensatory strategies
- The primary purpose of environmental modifications is to improve access to aurally presented information. Suggestions may include use of electronic devices that assist listening, teacher-oriented suggestions to improve delivery of information, and other methods of altering the learning environment so that the child with APD can focus his or her attention on the message.
- Compensatory strategies usually consist of suggestions for assisting listeners in strengthening central resources (language, problem-solving, memory, attention, other cognitive skills), so that they can be used to help overcome the auditory disorder. In addition, many compensatory strategy approaches teach children with APD to take responsibility for their own listening success or failure and to be an active participant in daily listening activities through a variety of active listening and problem-solving techniques.
- Finally, the purpose of direct treatment is to remediate the disorder, itself. There exists a wide variety of treatment activities to address specific auditory deficits. Some are computer-assisted whiles others include one-on-one training with a therapist. Sometimes home-based programs are appropriate whereas others may require children to attend therapy sessions in school or at a local clinic. Once again, it should be emphasized that there is no one treatment approach that is appropriate for all children with APD.

Examples of Management/Treatment Techniques (not inclusive):

Environmental Adaptations	Compensatory Strategies	Deficit Specific Treatment
➢ Preferential Seating- nearest sound source, farthest from noise source	➢ Role Playing- problematic situations by simulating difficult listening situations	➢ Poor Auditory Memory- Teach strategies for recall including chunking, visual imagery, verbal rehearsal, and location
➢ Sound absorbing material in listening environments to reduce reverberations	➢ Teach child to write down important information- note-taking skills	➢ Poor Phonological Awareness- Teach rhyming and sentence, syllable, and sound segmenting and blending.
➢ Gain child's attention by calling his/her name or tapping shoulder before addressing	➢ Teach child to recognize communication breakdown and to ask for clarification or repetition	➢ Difficulty with temporal aspects of audition- Teach temporal gap detection (detect gaps in white noise, pauses in texts and conversation), discrimination (high v. low tones, sounds in

Environmental Adaptations	Compensatory Strategies	Deficit Specific Treatment
		syllables, minimal pairs) sustained attention (respond to targeted words within environmental noise/background words)
➢ Ensure adequate lighting	➢ Teach lip reading	➢ Prosody training- Metalinguistic skills- teach intonation, rhythm, stress, segmenting, and pauses (key words, reading with directed pauses and stress, plays, pragmatics)
➢ Comprehension Monitoring	➢ Use tape recorder/iPad with recorder	➢ Receptive language-teach comprehension of figurative language- matching semantically similar meaning phrases/sentences, exclusion when presented 4-5 words (which one doesn't belong), identify synonyms
➢ Use of FM system	➢ Teach Active Listening Skills: ➢ Repeat directions/important information aloud or in whisper ➢ Eye contact, child should look at speaker ➢ Body posture, sitting upright leaning forward toward speaker ➢ Child should nod and/or smile occasionally ➢ Child should reflect what was said through paraphrasing and summarizing periodically ➢ Refrain from side conversations ➢ Ask relevant questions	➢ Expressive language- teach expression of figurative language- cloze activities, label vocabulary as described
➢ Rephrase and repeat important information	➢ Introduce a daily planner and teach its use	➢ Interhemispheric transfer of information- binaural integration- teach naming objects out of sight, through touch with one hand then the other, teach drawing while describing, using left hand then right hand, engage in activities to follow directions related to movement (tap L knee, jump on L foot), listen to a book using only L headphone
Break up multi-step directions into smaller parts	Pre-teach new vocabulary	
Provide visuals to support aurally presented information		

Environmental Adaptations	Compensatory Strategies	Deficit Specific Treatment
Consider a study carrel or separate room for test-taking		
Placement with an animated instructed		

Adjuncts to Speech Therapy Management in (C)APD

Researchers have identified distinct characteristics that help distinguish between behavioral manifestations of ADHD and symptoms of CAPD. These include the following:

(Central) Auditory Processing Disorder (C)APD	Attention Deficit Hyperactivity Disorder-Inattentive Type ADHD-Inattentive Type
Brain-based, makes it difficult to process information that the ears hear	Brain-based, makes it difficult to pay attention and stay focused.
Often impacts language-related skills including receptive and expressive language	Often impacts executive function and working memory
Struggles to follow conversations and respond to spoken questions	Struggles to focus during conversation and when responding to spoken questions.
Is easily distracted by background noise or loud and sudden noises	Is easily distracted by whatever is going on around him/her—sounds, sights, activity
May appear "tuned out" due to inability to understand what is being said.	May appear "tuned out" due to inattention.
Struggles with listening comprehension	Struggles with staying on task- daydreaming whether auditory or visual presentation
Often asks for repetition, says "huh" or "what"	Often doesn't respond when spoken to, says "I didn't hear you"
Can miss social cues, sarcasm, and nonverbal language because of intense focus on comprehending what is being said	Has difficulty following social rules as a result of inattention/distractibility
Difficulty with sustained selective auditory attention	Difficulty engaging in activities that require sustained mental effort auditory or visual
Difficulty discriminating speech	Loses things needed for tasks and activities
Diagnosed by audiologists	Diagnosed by pediatricians, psychiatrists
Diagnosis not before age 7, should have average cognitive skills	Diagnosis typically school-aged but can be as early as age 4, over ½ diagnosed have at least one co-existing condition
Interventions include modifying environment, use of FM system, teaching compensatory strategies, evaluating for speech and language delays and learning issues (reading/decoding)	Interventions include prescribing medication, working on organization, time management, evaluating for learning issues

- CAPD and ADHD frequently co-occur. Differential diagnosis requires determining whether the disorders are co-morbid or whether ADHD or CAPD is the primary (or sole) disorder.

References

1. Ahmmed AU, Ahmmed AA, Bath JR, Ferguson MA, Plack JC, Moore DR. Assessment of children with suspected auditory processing disorder: a factor analysis study. Ear Hear. 2014; 35(3):295-305. doi:10.1097/01.aud.0000441034.02052.0a.
2. American Speech-Language-Hearing Association. Admission/discharge Criteria in Speech-Language Pathology. http://www.asha.org/policy/GL2004-00046/ Accessed September 5, 2018.
3. American Speech-Language-Hearing Association. Preferred Practice Patterns for the Profession of Speech-Language Pathology http://www.asha.org/policy/PP2004-00191/. Accessed September 5, 2018.
4. American Speech-Language-Hearing Association. Scope of Practice in Speech-Language Pathology http://www.asha.org/policy/SP2016-00343/. Accessed September 5, 2018.
5. American Speech-Language Hearing Association. Speech Language Pathology Medical Review Guidelines. https://www.asha.org/practice/reimbursement/SLP-medical-review-guidelines/ Accessed September 5, 2018.
6. Bellis T J. Understanding auditory processing disorders in children. American Speech and Hearing Association. https://www.asha.org/public/hearing/understanding-auditory-processing-disorders-in-children/.
7. Brand-Gruwel S, Aarnoutse CAJ, van den Bos KP. Improving text comprehension strategies in reading and listening settings. Learn Instr. 1998; 8(1): 63-81.
8. Cacace AT, McFarland DJ. Delineating auditory processing disorder (APD) and attention deficit hyperactivity disorder (ADHD): a conceptual, theoretical, and practical framework. In: Parthasarathy Teralandur ed. An Introduction to Auditory Processing Disorders in Children. New York, NY: Psychology Press. 2014; 39-63.
9. *(Central) auditory processing disorders—the role of the audiologist* [Position Statement]. American Speech-Language-Hearing Association. 2005. Available from www.asha.org/policy .
10. Coen-Cummings M. Language processing therapy for children diagnosed with a (central) auditory processing disorder. Part one. Cincinnati Children's. January 2017. www.speechpathology.com Accessed January 25, 2018.
11. Coen-Cummings M. Language processing therapy for children diagnosed with a (central) auditory processing disorder. Part two. Cincinnati Children's. February 14, 2017. www.speechpathology.com Accessed February 5, 2018.
12. DeBonis DA. It is time to rethink central auditory processing disorder protocols for school-aged children. Am J Audiol. 2015; 24: 124-136. doi:10.1044/2015_AJA-14-0037.
13. de Wit E, Visser-Bochane MI, Steenbergen B, van Dijk P, van der Schans CP, Muinge MR. Characteristics of auditory processing disorders: a systematic review. J Speech Lang Hear Res. 2016; 59: 384-413. doi: 10.1044/2015_JSLHR-H-15-0118.
14. Fey ME, Richard GJ, Geffner D, et al. Auditory processing disorder and auditory/language interventions: an evidence-based systematic review. Lang Speech Hear Serv Sch. 2011; 42: 246–264.
15. Kamhi AG. What speech-language pathologists need to know about auditory processing disorder. Lang Speech Hear Serv Sch. 2011; 42(3):265-272.
16. Keith RW. Auditory processing disorders: application and interpretation of SCAN-3 test battery. Presented at: University of Cincinnati. October 18, 2016. www.speechpathology.com Accessed December 12, 2017.
17. McArthur G. Auditory processing disorders: can they be treated? Current Opinions Neurology. 2009; 22(2): 137-143.
18. Miller CA. Auditory processing theories of language disorders: past, present, and future. Lang Speech Hear Serv Sch. 2011; 42: 309-319 37.
19. Musiek FE. (1999). Habilitation and management of auditory processing disorders: overview of selected procedures. J Am Acad Audiol. 1999; *10*: 329–342.
20. Richburg CM, Atcherson SR, Findlen UM, Wakefield S, Benafield NJ. (Central) auditory processing disorder grand rounds: multiple cases, multiple causes, multiple outcomes. Am J Audiol. 2017; 26: 202-225. doi: 10.1044/2017_AJA-16-0074.

21. Rosenberg GG, Blake-Rahter P, Heavner J, et al. Improving classroom acoustics (ICA): a three-year FM sound field classroom amplification study. J Educ Audiol. 1999; 7: 8–28.
22. Sharma M, Purdy SC, Kelly AS. A randomized control trial of interventions in school-aged children with auditory processing disorders. International Journal of Audiology, 2012; 51 (7): 506-518. doi: 10.3109/14992027.2012.670272.
23. Tremblay K, Kraus N. Auditory training induces asymmetrical changes in cortical neural activity. J Speech, Lang Hear Res. 2002; 45: 564–572.
24. Tremblay K, Kraus N, McGee T, Ponton C, Otis B. Central auditory plasticity: changes in the N1-P2 complex after speech-sound training. Ear Hear. 2001; 22(2): 79–90.
25. Understanding the differences between auditory processing, speech and language disorders, and reading disorders. American Speech and Hearing Association. October 2014.
26. Wilson WJ, Arnott W. Using different criteria to diagnose (central) auditory processing disorder: how big a difference does it make? J Speech Lang Hear Res. 2013; 56 (1):63-70.

Cognitive Communication Disorders and Dementia

Related Terms

- Cognitive-communication disorder is an umbrella term for a number of symptoms that are a part of the disorder.
- Alzheimer's Disease
- Vascular Dementia
- Dementia with Lewy Body
- Frontotemporal Dementia
- Huntington's Disease
- Parkinson's Disease
- Traumatic Brain Injury (TBI)

Definition

- Cognitive-communication disorders encompass difficulty with any aspect of communication that is affected by disruption of cognition. Communication may be verbal or nonverbal and includes listening, speaking, gesturing, reading, and writing in all domains of language (phonologic, morphologic, syntactic, semantic, and pragmatic). Cognition includes cognitive processes and systems (e.g., attention, perception, memory, organization, executive function).
- Dementia is a "progressive condition (such as Alzheimer's disease) marked by the development of multiple cognitive deficits (such as memory impairment, aphasia, and the inability to plan and initiate complex behavior)."[1]
- Although dementias differ by etiology, the decline in communication and vocational skills that occur as dementia progresses consistently represent a change from the individual's level of prior functioning.
- Traumatic brain injury (TBI) is an acquired nondegenerative injury. An external physical force to the head resulting in shifting of the brain within the skull may result in a TBI.
- TBI in children can be different than in adults. The pediatric brain is still developing therefore deficits may not be immediately apparent. TBI in children is not a one-time event. It is a chronic disease process. Symptoms change and evolve over time.

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Presentation

- Two main causes of acquired cognitive communication disorders are traumatic brain injury and stroke. Additional etiologies include but are not limited to anoxia, cardiovascular disease, encephalitis, meningitis and other infectious disorders, brain tumors, and dementia.
- Sources of pediatric TBI are diverse and differ by age. The Centers for Disease Control and Prevention (CDC) identified leading causes of TBI in children ages 0 to 14:
  - Falls (50.2%)
  - Struck by/against events (24.8%)
  - Motor vehicle accidents (6.8%)
  - Assault (2.9%)
  - Unknown/other (15.3%)
- TBI is the largest source of acquired disability in children.
- TBI may present as a change in level of consciousness, memory disturbance, confusion, new onset or worsening of a seizure disorder, visual field deficit, hemiparesis, or neurological signs observable on neuroimaging, etc.
- When concomitant speech disorders or aphasia and cognitive-communication disorders occur, the cognitive deficits may be masked by the aphasia or unintelligible speech and will not necessarily be evident. Conversely, if the speech and/or language deficits are moderate to severe, they may be masking the cognitive deficits.
- Cognitive-communication disorders can be found singly but also often in combination with other disorders. For example, the presence of an auditory comprehension deficit (aphasia) may be noted, but in further investigation, it is found that an underlying attention and short-term recall or cognitive deficit is a causal factor.
- Dementia is a characterized by progressive deterioration in multiple areas of cognition including memory, language, reasoning and executive functioning.
- Dementia has various etiologies; some forms are reversible and others are irreversible.
- After age 65, the risk of developing dementia doubles every 5 years.

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Differential Diagnosis Considerations

- Unlike apraxia, dysarthria, and aphasia, speech may sound normal and language may be fluent, but content of message may be disorganized, inappropriate, rambling, off-topic, etc. It should be noted that dysarthria and apraxia of speech can and often do occur with cognitive communication deficits.
- Denial and/or lack of awareness of deficits is a common symptom so patient self-observations cannot be relied upon.
- A team approach is required to diagnose dementia; and a medical workup is necessary to determine the type of dementia, and whether the condition is reversible or irreversible
- The use of multiple medications or "polypharmacy" may contribute to cognitive changes that may present similarly to dementia.
- There are a number of standardized instruments available with demonstrated reliability for dementia screening.
- Extent and nature of injury is used to classify the severity of a TBI as mild, moderate, or severe. The severities are based on duration of the loss of consciousness, post-traumatic amnesia, and the severity of confusion at the acute phase assessment. These classifications describe the extent of neurological injury and are not reflective of the degree of functional deficits or predictive of the recovery from the TBI.
- Mild TBI (mTBI) is typically diagnosed by self-reports of symptoms by the patient and often does not show up on neuroimaging. Loss of consciousness less than 30 minutes, memory loss less than 24 hours, and a Glasgow Coma Scale (GSC) of 13-15, 30 minutes after injury aid in the differential diagnosis of a mild TBI. In children, 85% of reported TBI is diagnosed as mild.
- Concussion is a brain injury typically considered a mild TBI. Typically, the injury is caused by a blow, bump, or jolt to the head, face, neck, or body that may or may not involve loss of consciousness (McCrory et al., 2013).[2] In recent years, more attention has been focused on concussion specifically in regards to sports injuries.

Specific Treatment Considerations

- Cognition and language are equally connected in development and function. A cognitive impairment (attention, perception, memory, executive function) may disrupt language processes or systems. Likewise, a language impairment, verbal or non-verbal (listening, speaking, gesturing, reading, and writing), may disrupt a cognitive process. Deficits in any of these skills will impair effective communication. Understanding the hierarchy of cognitive-linguistic skills is needed in order to assess their impact upon communication.
- Individuals with cognitive-communication disorder as a primary diagnosis may exhibit complex emotional and behavioral responses, making treatment even more challenging.
- Factors that influence outcomes for childhood TBI:

- Age: 0-4 and 15-19 are the critical developmental windows for TBI. Early injury does not = a better outcome
- Severity: Rehabilitation + habilitation
- Personal Traits (premorbid risk factors: Academic/ LD, ADHA, Social Emotional/Mood Disorder
- Cognition
- Family: Social Economic, Stresses, Education
- Access to Care: Access to medical and community resources

Specific Treatment Issues Related to Dementia Management and Programming

- Effective treatments are highly individualized, are based on the patient's current abilities, and focus on improving functional communication and quality of life.
- Partners and family members play a critical role in assisting the SLP to define the individual's personally relevant needs, beliefs, interests and lifestyle as these variables influence decisions related to treatment plans and interventions.
- Caregiver education and training, including restorative or maintenance programming are necessary components to any treatment plan to ensure the post treatment usage of effective strategies and methods to aid the individual impacted by dementia to maintain optimal functioning in their environment.
- The role of the SLP involves assessment and management of the symptomatology as the disease progresses through various stages.
- The SLP should make appropriate referrals to other clinical professionals as needs arise, and should use comprehensive assessment information to develop useful interventions, strategies and approaches to maintain optimal communicative and cognitive functioning through the assistance of caregivers and family members.

Specific Treatment Considerations Related to TBI and Dementia

- The relationship between cognitive domains (short-term memory impairments, attention deficits, etc. that impact the patient's ability to attend to and encode newly presented information) should be taken into consideration.
- Limited participation in treatment due to fatigue and physical endurance
- Age, level of education, work status (current or premorbid); social history, cultural and linguistic background
- Physical, sensory, and neurobehavioral consequences of the illness or injury
- Poor understanding of deficits
- Executive function impairments that may negatively impact the patient's recognition of breakdowns in performance, recognize potential benefits of treatment, and follow treatment suggestions.

Symptomatology

- Symptoms will range both in amount and level of severity as will their functional effect on the individual. Cognitive-communication disorders include large sequelae of deficits. The list includes but is not limited to the following main issues.

Clinical Symptoms	Functional Effects
➢ Impaired functional communication	➢ Verbal output may have many words, even verbose, but little or inappropriate content; rambling, poor thought organization, disorganized, off-topic, verbosity, literal and concrete; loses point, little initiation, lack of social skills, impaired turn-taking, topic maintenance and shifting ➢ Unable to recall the names of family, friends, acquaintances, lack of empathy, negative reactions when questioned, poor understanding or denial of deficits
➢ Impaired and slow processing of information; impaired and/or delayed understanding	➢ Inability to attach meaning to what is heard or read (verbal or written); doesn't get emotion or implied meaning of message; literal; gets lost in details; can't interpret verbal and nonverbal cues; can't separate relevant from irrelevant info; impaired comprehension and comprehension
➢ Impaired executive functioning: includes poor planning, goal-setting, initiation, and self-monitoring; and; rigid, inflexible thinking, difficulty in handling interruptions, distractions, or change	➢ Difficulty running one's life; in-ability to plan, organize and follow-through with communications; poor initiation of communication; inability to initiate lists, writing reminders or messages, or initiating speech for assistance
➢ Impaired attention and concentration; ➢ Memory as related to ➢ immediate processing ➢ short-term recall of information in order to act on or respond to others	➢ Easily distracted, difficulty attending without task simplification or restricted stimuli, poor reading and writing; impairment in understanding what is heard or written; impaired ability to keep information that is heard or read in working memory long enough to process the information and respond to it or recall it; related to slow processing impairment and basic to language skills ➢ Difficulty completing common daily tasks
➢ Impaired perceptual skills (auditory, visual, spatial)	➢ Necessary skills to read, spell, and write; if severe, an inability to distinguish, track, or scan for letters/words on a page; difficulty tracing or copying letters, words ➢ Inability to recognize and name environmental sounds, objects, familiar people ➢ Difficulty navigating in a familiar or new environment; depth perception changes
➢ Specific to TBI:	➢ Dysfunction due to injuries to the outer ear (debris, tears, etc.); middle ear (ruptured tympanic membrane); inner ear (cochlear injury); and temporal lobe lesions ➢ Central auditory dysfunction ➢ May have difficulty hearing speech in noise ➢ Transient or permanent loss of hearing ➢ Sensitivity to sounds ➢ Tinnitus

Clinical Symptoms	Functional Effects
	➢ Dizziness, vertigo, balance problems
➢ Impaired problem-solving and reasoning	➢ Impairment in making appropriate decisions; impaired ability to judge and communicate issues of importance and safety
➢ Impaired word retrieval; word fluency; vocabulary and syntax (verbal and non-verbal communication)	➢ Inability to get across needs and ideas; lack of meaning; empty or shortened speech, impaired listening, speaking, gesturing, reading, and writing
➢ Lack of awareness, insight, integration; denial; impulsivity; lack of understanding of deficits	➢ Inability to communicate appropriately with others and deal with public; misunderstood interactions; inability to get needs met with no insight as to why
➢ Impaired pragmatics and social communication skills	➢ Verbose with difficulty with topic selection and maintenance ➢ Problems with initiating conversation ➢ Struggles with interpreting or generating nonverbal communication (facial expressions and body language) ➢ Turn taking ➢ Tone of voice
➢ Adverse Mood/ Behaviors	➢ Wide fluctuations in mood, erratic behavior, increased agitation, restlessness, aggression, depression, combativeness or hostility, erratic, obsessive-compulsive or unusual behaviors, lack of motivation, paranoia/delusions ➢ Over-emotional or over-reactive affect or flat affect, anxiety disorder, depression, difficulty identifying emotions in others, drowsiness and changes in sleep patterns, including difficulty falling or staying asleep, feeling disoriented , hypersensitive with exaggerated response to perceived threats, impulsivity, reduced frustration tolerance, stress disorders.

SLP Management

Requirements for Speech Therapy Visits

- In order to establish medical necessity for speech therapy services, the following criteria must be met.
  - The treatment must be considered specific and effective for the patient's condition under evidence based practice guidelines.
  - Frequency and Duration must be considered acceptable under established standards of practice.
  - The complexity of the condition must be such that the skills of a speech therapist are required for the frequency requested.
  - Habilitative and Rehabilitative services- A positive prognosis must established that the patient's condition is expected to improve from the services provided.
  - Maintenance-Services are required to maintain the member's current condition or to prevent or slow deterioration of the member's condition. Coverage of maintenance service is health plan specific.
  - Continuation of care is supported by functional progress resulting from a positive response to skilled treatment.

Frequency and Duration

- Treatment frequency and duration must be based on:
  - Severity of objective clinical findings,
  - Presence of and number of complicating factors and comorbidities,
  - Natural history and chronicity of condition,
  - Expectation for functional improvement with skilled intervention,
  - Response to treatment provided
  - Patient's level of independence

Goal of the evaluation

- Establish a differential diagnosis based on clinical findings.
- Document changes from premorbid abilities, the extent to which the disorder has impacted daily life, and current level of functioning.
- Determine patient's/caregiver's perception of abilities/deficits and establish patient/caregiver goals
- Obtain current, objective measures to describe functional levels of cognition
- Determine if treatment is necessary and potential for functional gains.

Evaluation Should Identify:

- Relevant past medical history with cause and onset date of disorder
- Education
- Occupation
- Cultural and linguistic backgrounds

- The patient's preferences and goals
- The patient's perceived communication deficits and their impact on social interactions
- Level of functioning prior to the onset of the current condition. Areas being treated should be clearly described in objective, measurable terminology.
- Past treatment. The level of functioning following discharge from prior treatment should be clearly documented using objective, measureable terminology.
- Diagnosis of current condition, including impact on daily life and barriers to success
- Description of the communication impairments including extent and severity and the impact of communication impairments on the quality of life
- Concurrent conditions such as motor speech impairments, hearing loss, visual acuity, visual agnosia, visual field cuts, pain, endurance/fatigue, depression, upper extremity hemiparesis and the impact these deficits may have on prognosis.
- Treatment recommendations and description of participation limitations and impact on communicative activities of daily living
- Prognosis for improvement and rationale
- For individuals with a diagnosis of dementia, the assessment should include determining the stage of the illness and a review of relevant personal history such as level of education, socioeconomic, linguistic and cultural status, occupation, hobbies/interests, caregiver support, environment and other relevant information regarding needs to assist in intervention planning.

Assessment of Young Children (Infants, Toddlers, and Preschoolers)

- One of the main challenges in assessing infants, toddlers, and preschoolers is a lack of objective information regarding prior skill level. As cognitive-communication demands increase, ongoing assessment is necessary at various stages of development. Cognitive and communication skills are still developing during this period, making symptoms difficult to evaluate.
- Standardized assessments for young children with TBI are limited. Key factors in determining changes in baseline function are parent report and observation. When interpreting evaluation results for children ages 0–5 years, consider the following:
  - age at injury
  - time since injury
  - developmental stage at time of injury
  - developmental stage at time of assessment

Assessment of School-Age Children and Adolescents

- Assessment of school age children should focus on the individual's ability to function academically and relate with peers. Assessment should define the child's strengths and requisites for supporting new learning and/or re-learning. Assessment should identify areas for remediation.

- Cognitive-communication skills should continue to be monitored through high school, transition to postsecondary educational and/or vocational settings. The SLP should assess the impact of new demands and challenges in order to implement effective strategies to maximize functional outcomes and participation in communicative activities of daily living.

Testing and Measurement Tools for Use with Children with TBI

- Pediatric Test of Brain Injury (PTBI)
- Test of Integrated Language and Literacy (TILLS)
- Comprehensive Assessment of Spoken Language (CASL)
- Clinical Evaluation of Language Fundamentals, 5th ed (CELF-5)
- Behavior Rating Inventory of Executive Function (BRIEF)
- Student Functional Assessment of Verbal Reasoning and Executive Strategies (Student FAVRES)
- Comprehensive Test of Nonverbal Intelligence 2nd ed (C-TONI 2)
- Peabody Picture Vocabulary Test, 4th ed (PPVT-4)
- Test of Everyday Attention (Tea-Ch)
- Child and Adolescent Scale of Participation (CASP)
- Pediatric Evaluation of Disability Inventory (PEDI) Social Functional Scales
- Child Health Questionnaire (CHQ)
- Observation
- Discourse
- Monologue
- Conversation

Screening, Staging, Testing and Lifestyle Assessment Tools for Use with Individuals with Dementia and Adult TBI

- Screening Tests:
  - Montreal Cognitive Assessment (MoCA)
  - http://www.mocatest.org/about
  - Saint Louis University Mental Status Exam (SLUMS)
  - http://aging.slu.edu/pdfsurveys/mentalstatus.pdf
    - Quick screening tests typically are not sensitive enough to pick up on subtle linguistic/cognitive deficits in TBI patients.
- Staging Tests:
  - Brief Cognitive Rating Scale (BCRS)
  - https://www.ncbi.nlm.nih.gov/pubmed/3249764
  - Global Deterioration Scale (GDS)
  - https://www.fhca.org/members/qi/clinadmin/global.pdf

- Standardized Assessments:
  - Arizona Battery of Communication Disorders and Dementia (ABCD)
  - Cognitive-Linguistic Quick Test (CLQT)
  - Ross Information Processing Assessment-Geriatric (RIPA-G)
  - Ross Information Progressing Assessment (RIPA)
  - Boston Diagnostic Aphasia Examination (BDAE)
  - Woodcock-Johnson IV Test of Cognitive Abilities
  - Functional Assessment of Verbal Reasoning and Executive Strategies (FAVRES)
  - Behavioral Assessment of the Dysexecutive Syndrome (BADS)
  - Test of Everyday Attention(TEA)
  - Test of Memory and Language (TOMAL)

Determining Life Roles, Habits and Interests:

- The Role Checklist
- https://moho.uic.edu/products.aspx?type=free
- Activity Interest Checklist
- https://moho.uic.edu/resources/files/Modified%20Interest%20Checklist.pdf

Caregiver Assessment:

- Zarit Burden Interview
  https://www.apa.org/pi/about/publications/caregivers/practice-settings/assessment/tools/zarit.aspx

Plan of Care

- Long-term/short term goals with estimated completion time frames
- Frequency and intensity of treatment
- Justification for intensive or long-term treatment
- Prognosis for functional improvements and rationale
- Referrals to other professionals and services as appropriate

Treatment Interventions: Clinical Process

- Statement of short-term functional, measurable goals within each interval
- Home Exercise Program (HEP)
- Care giver training and education
- Continual skilled assessment, monitoring, modeling, evaluating responses, providing meaningful feedback, adjusting treatment and updating plans as needed
- Teach compensatory strategies, self-cueing techniques etc. and provide guidance and suggestions
- Ongoing preparation to patient and caregivers for discharge through education, training, and community resources
- For individuals with dementia, lifestyle profiling is crucial to design interventions. Involve family and friends to complete a profile of the patient's personal history, including occupation, educational level, likes and dislikes, routines and habits, personal preferences, culture, communication style, personality traits, hobbies and interests to help establish personally relevant activities and routines for stimulation and comfort as they progress through the stages of illness.
- Establishment of a maintenance program for post treatment usage of effective strategies and methods to aid the individual impacted by dementia to maintain optimal communication skills and functioning within their environment.
- The role of the SLP involves assessment and management of the symptomatology as the illness progresses through various stages, and to develop or modify useful interventions, strategies and approaches to maintain optimal communicative and cognitive functioning through the assistance of caregivers and family members.
- Students with TBI may require specialized education/support, accommodations and assistive technology in order to access the school curriculum and achieve academic success.

Treatment Techniques for Individuals with Dementia and TBI

- Interventions and activities for individuals with dementia are patient specific, and are focused on personally relevant, meaningful tasks specific to their specific routines, values and interests.
- Interventions and activities for TBI are individualized and focus on adaptations and compensatory strategies to increase independence and self-awareness/monitoring.

Assistive Technology	Use of devices to improve, maximize and maintain communicative or cognitive function. Assistive hearing devices, computers, tablets, fall into this category
Cognitive Stimulation Therapy	Focuses on any activity of interest to the engage and provide stimulation to the individual with dementia, typically these are small group and theme based
Environmental Modifications	Any environmental adaptations used to maximize communication by optimizing auditory, visual and other sensory skills. Some options may include improving lighting while reducing glare, visual clutter and ambient noise
External Memory Aids	Use of calendars, clocks, lists, technology, pictures, etc. to help compensate for memory deficits.
Montessori-Based Treatment	Developed by Maria Montessori (2008), this treatment involves including using materials used in real life and practicing activities that are meaningful to the individual. Activities the person formerly enjoyed are recreated and are designed to engage the individual's senses. It promotes sequential learning to minimize failure and improve success. Tasks are broken down into steps that are repeated one at a time to promote retention.
Memory Retraining	This technique targets memory via interventions and activities such as error free learning, procedurally based memory activities, spaced retrieval, or fading cues based on the stage
Reminiscence Therapy	Focuses on improving the patient's sense of self using customized photos, music, or relevant props to allow the remembrance and discussion of past life history, including events or facts that are meaningful to the patient
Validation Therapy	Developed by Naomi Feil (1982) this approach includes allowing the individual with dementia to verbalize their feelings while the caregiver offers validation or acceptance of their reality, rather than correcting inaccuracies, in order to relieve symptoms of stress and anxiety
Simulated Presence Therapy (SimPres)	This technique uses pre-recorded video or statements from friends or family members, which may be played for the individual with dementia. When used with patients who have retained adequate hearing and functional communication, the recordings promote positive emotional responses and may reduce adverse behaviors.
Sensory Stimulation	Providing sensory stimuli to improve safety, visibility, comfort, alertness or awareness. May include additives to sweeten foods/drinks, striking visual cues to improve ability to attend/locate items, comfortable bedding, applying lotions/massage, playing soft music.

Strategies for each dementia stage
(As defined the GDS developed by Dr. Barry Reisberg)

Stage	Characteristics	Strategies
4-Early Stage of Dementia Moderate Cognitive Decline	Deficits in concentration, difficulty with complex tasks such as finances and traveling to novel locations, forgetfulness, may be in denial of deficits	➢ Use memory aids such as planners, calendars, and smartphones. ➢ Assist with travel to new places or perform novel or complex tasks including medication management and finances. Provide written plans for emergencies and safety hazards. ➢ Art/craft activities (30 min) for cognition
5-Middle Stage of Dementia Moderately – Severe Cognitive Decline	Deficits in memory and orientation, may forget address and phone number. May be unaware of time of day or location	➢ Use simple phrases, avoid pronoun use, and allow extra time to respond ➢ Assist with task completion by using 1-step commands and cueing to start, continue and end tasks of personal relevance. ➢ Eliminate visual and auditory distractions and provide tactile cues as needed for instructions and task maintenance. ➢ Use visual aids at eye level and in front of view with primary colors (blue, green red) that contrast. ➢ Use clear pictures and print with simple wording ➢ Music/entertainment activities (<25 min)
6-Middle Stage of Dementia Severe Cognitive Decline	Forgets names of close friends and family members, forgetful of recent events. May recall some details of lives (long term memories), with decline in ability to talk using clear language and complete tasks. Personality and behavior changes including delusions, anxiety, compulsions and agitation may be noted.	➢ ➢ Same as above ➢ Plan short time frames for activities ➢ Note adverse behaviors and antecedent (time or situation), plan calming activities to mitigate stress ➢ Provide repetitive, error free activities such as sorting/manipulating objects, and sensory based activities (<15 min)
7-Late Stage of Dementia Very Severe Cognitive Decline	Loses ability to speak, needs must be anticipated. Require assistance with all activities and are usually bedbound.	➢ Provide comforting sensory stimulation (tastes, smells, lotion rubs, frequent human contact, comfortable bedding, watch nonverbal behaviors and vocalizations to help anticipate needs.

Documentation to Support Medical Necessity:

- Document why the service require the skills and knowledge of an SLP
- Daily notes and progress notes should include type of treatment and patient's response to treatment
- Document how treatment supports a functional change in the patient's communication

- Document measurable progress toward goals or reasons not attained such as: fluctuations in abilities and/or alertness, reason for decreased participation , caregiver or home programming concerns
- Document evidence that patient/caregiver education was provided and response to the education, including need for re-education
- Document update/changes to short/long-term goals and/or rationale for changes in intensity or type of treatment
- Use skilled terminology

Discharge Criteria:

- Patient is at functional levels in all aspects of disorder
- The interventions or tasks provided are repetitive in nature and no longer skilled, or the patient requires ongoing cueing to complete tasks.
- The patient's condition has stabilized and care no longer requires the skills of a therapist.
- Caregivers, family members, support personnel have been trained to use communicative strategies and other approaches to improve or maintain cognitive skills, decrease the risk for decline, and /or decrease adverse behaviors while enhancing the person's quality of life.
- Patient is able to continue with a home management or maintenance program.
- All goals are reached. Further intervention is not indicated.
- Patient's response/nonresponse to treatment justifies discharge
- Medical reasons dictate break from or termination of sessions

Possible Referrals to:

- Physician or neurologist for medical or dysphagia concerns
- Social worker for patient or family concerns
- Audiologist for suspected hearing loss
- Physical or occupational therapy for evaluation
- Vision specialist for checking vision or field cuts
- Neuropsychologist for dementia, depression and behavior concerns

Skilled Maintenance Care:

- Maintenance care is defined as services required to maintain the patient's current condition or to prevent or slow deterioration of the patient's condition. Services are covered for maintenance care if the specialized skill, knowledge and judgment of a qualified therapist are required:

- To establish or design a maintenance program appropriate to the capacity and tolerance of the patient
- To educate/instruct the patient or appropriate caregiver regarding the maintenance program
- For periodic re-evaluations of the maintenance program

References:

1. Dementia. 2018. In Merriam-Webster.com. https://www.merriam-webster.com/dictionary/dementia. Accessed June 5, 2018
2. McCrory, et all. Consensus statement on concussion in sport: The 4th International Conference on Concussion in Sport held in Zurich, November 2012. Br J Sports Med. 2013; 47:250–258.
3. American Speech-Language-Hearing Association. Admission/discharge Criteria in Speech-Language Pathology. http://www.asha.org/policy/GL2004-00046/ Accessed September 5, 2018.
4. American Speech-Language-Hearing Association. Dementia (Practice Portal) https://www.asha.org/Practice-Portal/Clinical-Topics/Dementia/ Accessed June 5, 2018
5. American Speech-Language and Hearing Association. Documentation in Health Care (Practice Portal) https://www.asha.org/Practice-Portal/Professional-Issues/Documentation-in-Health-Care/. Accessed June 5, 2018
6. American Speech-Language-Hearing Association Pediatric Traumatic Brain Injury (Practice Portal) https://www.asha.org/Practice-Portal/Clinical-Topics/Pediatric-Traumatic-Brain-Injury/. Accessed June 5, 2018
7. American Speech-Language-Hearing Association. Preferred Practice Patterns for the Profession of Speech-Language Pathology http://www.asha.org/policy/PP2004-00191/. Accessed September 5, 2018.
8. American Speech-Language-Hearing Association. Scope of Practice in Speech-Language Pathology http://www.asha.org/policy/SP2016-00343/. Accessed September 5, 2018.
9. American Speech-Language Hearing Association. Speech Language Pathology Medical Review Guidelines. https://www.asha.org/practice/reimbursement/SLP-medical-review-guidelines/ Accessed September 5, 2018.
10. American Speech-Language-Hearing Association Traumatic Brain Injury (Practice Portal) Traumatic Brain Injury in Adults https://www.asha.org/Practice-Portal/Clinical-Topics/Traumatic-Brain-Injury-in-Adults/. Accessed June 5, 2018.
11.
12. Centers for Disease Control and Prevention. Report to Congress: The Management of Traumatic Brain Injury in Children. National Center for Injury Prevention and Control, Division of Unintentional Injury Prevention, CDC, Atlanta, GA. 2018 https://www.cdc.gov/traumaticbraininjury/pdf/reportstocongress/managementoftbiinchildren/TBI-ReporttoCongress-508.pdf Accessed June 5, 2018DeMatteo C, Stazyk K, Giglia L, et al. A balanced protocol for return to school for children and youth following concussive injury. Clin Pediatr. 2015; 54(8):783-92. https://doi.org/10.1177/0009922814567305
13. Elgmark A, Lund E, Mansson J. Traumatic brain injury in children between 7-12 years of age. Dev Neurohabil. 2010; 13(5), 346-350. https://doi.org/10.3109
14. Haarbauer-Krupa J, Ciccia A, Dodd, J, et al. Service delivery in the healthcare and educational systems for children following traumatic brain injury: Gaps in care. J Head Trauma Rehabil: 2010; (32)6, 357-377.
15. Masel BE, DeWitt DS. Traumatic Brain Injury: A Disease Process, Not an Event. J Neurotrauma. 2010; 27(8):1529-1540. doi:10.1089/neu.2010.1358.

Dysarthria

Related Terms

- Slurred speech
- Flaccid dysarthria
- Hypokinetic dysarthria
- Mixed dysarthria
- Ataxic dysarthria
- Spastic dysarthria
- Hyperkinetic dysarthria
- Lower motor neuron dysarthria

Definition

Dysarthria is a motor speech disorder. It results from impaired movement of the muscles used for speech production, including the lips, tongue, vocal folds, and/or diaphragm. The type and severity of dysarthria depend on which area of the nervous system is affected.

Presentation

- Dysarthria "characteristics reflect abnormalities in the strength, speed, range, timing or accuracy of speech movements as a result of pathophysiologic conditions such as weakness, spasticity, ataxia, rigidity, and a variety of involuntary movements (e.g. dystonia, tremor)... Dysarthria can affect the respiratory, laryngeal, velopharyngeal, and oral articulatory subsystems, singly or in combination."
- Common causes of dysarthria include trauma, stroke, brain injury, brain tumor; conditions that cause facial paralysis or weakness; and degenerative neuromotor and neuromuscular disease.
- Dysarthria may also occur as a result of alcohol toxicity, medication side effects, loose dentures, post-surgery.
- Onset may be sudden or gradual over months or years

Differential Diagnosis Considerations

- Unlike apraxia of speech, dysarthria does show evidence of muscular weakness and articulatory errors are consistent.
- When dysarthria is evident, a screening for dysphagia is important.
- Dysarthria often occurs with both aphasia and cognitive deficits.
- Unlike aphasia and cognitive disorders, dysarthria is purely a disorder of speech production.

- The presence of dysarthria can mask other disorders or other disorders can be masked by the dysarthria.

Specific Treatment Issues

- Evaluation and treatment of concurrent disorders and an understanding of their impact are important aspects of management.
- In addition to symptomatology, the underlying cause, the type, and status of dysarthria are pertinent to management and treatment.
- If dysarthria is severe and/or progressive, consideration of augmentative or alternative aids may be appropriate during the course of treatment.

Symptomatology

Because dysarthria can be mild or very severe and involve several systems, the symptoms will range both in number and intensity as well their effect on respiration, chewing swallowing, and phonation.

Clinical Symptoms	Functional Effects
➢ Imprecise, distorted, slurred, decreased rate of speech ➢ Impaired pitch levels and breaks ➢ Impaired vocal loudness, intensity, quality ➢ Hyper or hypo nasality ➢ Impaired or poorly controlled rate, rhythm, and phrasing ➢ Impaired voice quality and prosody ➢ Distorted sounds and words ➢ Shortened length of utterance ➢ Limited tongue, lip, jaw movements ➢ Impaired control of oral secretions ➢ Limited breath/respiratory support ➢ Mumbled or garbled speech	➢ At its most severe, are inaudible or undifferentiated sounds. Improvements affect intelligibility through voicing, articulation, rate, volume, length and strength of utterances. ➢ Other means of communication as writing, gestures, spelling, typing, pointing may not be possible. ➢ Symptoms such as limited movement, shortness of breath, drooling, etc. affect both speech and daily life.

SLP Management

Requirements for Speech Therapy Visits

- In order to establish medical necessity for speech therapy services, the following criteria must be met.
  - The treatment must be considered specific and effective for the patient's condition under evidence based practice guidelines.
  - Frequency and Duration must be considered acceptable under established standards of practice.
  - The complexity of the condition must be such that the skills of a speech therapist are required for the frequency requested.
  - Habilitative and Rehabilitative services- A positive prognosis must established that the patient's condition is expected to improve from the services provided.

- Maintenance-Services are required to maintain the member's current condition or to prevent or slow deterioration of the member's condition. Coverage of maintenance service is health plan specific.
- Continuation of care is supported by functional progress resulting from a positive response to skilled treatment.

Frequency and Duration

- Treatment frequency and duration must be based on:
  - Severity of objective clinical findings,
  - Presence of and number of complicating factors and comorbidities,
  - Natural history and chronicity of condition,
  - Expectation for functional improvement with skilled intervention,
  - Response to treatment provided
  - Patient's level of independence

Goal of the evaluation

- Establish a differential diagnosis based on clinical findings.
- Document changes from premorbid abilities, the extent to which the disorder has impacted daily life, and current level of functioning.
- Determine if treatment is necessary and potential for functional gains.

Evaluation should address:

- Relevant past medical history with cause and onset of disorder
- The level of functioning prior to the onset of the condition and any areas being treated must be clearly described in objective, measurable terminology
- Past treatment, if any, for dysarthria. If prior treatment was provided in the past for the same condition, the level of functioning following discharge from that treatment must be clearly described using objective, measureable terminology. Diagnosis of current condition including impact on daily life
- Description of disorder(s) including extent and severity as determined from objective measures
- Concurrent conditions with complexities and their impact on prognosis
- Recommendations if treatment is warranted or not and why

Plan of Care if treatment is warranted

- Long-term goals and estimated time frame for attaining them
- Frequency and intensity of treatment; justification for intensive or long-term treatment
- Prognosis for improvement and support for chosen intervention

- Referrals to other professionals and services as appropriate

Treatment Interventions: Clinical Process

- Statement of short-term functional measurable goals within each interval as appropriate in each case, home assignments between sessions
- Education and training to caregivers
- counseling, dialogue, and support with patient / caregivers to assist understanding
- Assessment for selection and implementation of an alternative augmentative communication system if appropriate
- Continual assessing, monitoring, modeling, evaluating responses, providing meaningful feedback, and adjusting treatment and updating plans as needed
- As appropriate in each case, teach strategies, compensations, self-cueing techniques etc. and provide guidance and suggestions
- Ongoing preparation to patient and caregivers for discharge through education, training, and resources for "next steps"

Documentation

- Notes for each encounter to include type of treatment and patient's response to it
- Show measurable progress toward goals or reasons not attained such as: fluctuations in abilities and/or alertness, motivation, caregiver or home programming issues
- Show evidence that education was provided and response to it
- Include attainment, updates, or changes in short or long-term goals and/or changes in intensity or type of treatment
- Include any contextual factors that serve as barriers to or facilitators of successful functional communication

Discharge Criteria

- Patient is at functional levels in all aspects of disorder
- No progress is noted after 2-4 typical sessions
- Patient is able to continue with a home management program
- All goals are reached; no further intervention indicated
- Patient’s response /nonresponse to treatment justifies discharge
- Medical reasons dictate break from or termination of sessions

Possible Referrals to:

- Neurologist if progressive disorder is suspected but undiagnosed
- Social worker for patient or family concerns

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- ENT for muscular or respiratory concerns
- Specialist for providing hi-tech AAC if recommended
- Physician for concerns of dysphagia

Outcomes/Treatment Efficacy

- "Outpatient speech-language pathology services are associated with improved intelligibility and communication functioning of patients... Treatment efficacy studies have shown promising results in patients with progressive dysarthria.
- ASHA's Treatment Efficacy Summary on dysarthria [PDF] describes evidence about how well treatment works. This summary useful to individuals with dysarthria and their caregivers. https://www.asha.org/uploadedFiles/public/TESDysarthria.pdf

Skilled Maintenance Care

- Maintenance care is defined as services required to maintain the member's current condition or to prevent or slow deterioration of the member's condition.
- Services are covered for maintenance care if the specialized skill, knowledge and judgment of a qualified therapist are required:
  - To establish or design a maintenance program appropriate to the capacity and tolerance of the member
  - To educate/instruct the member or appropriate caregiver regarding the maintenance program
  - For periodic re-evaluations of the maintenance program
  - When skilled services are required in order to provide reasonable and necessary care to prevent or slow further deterioration, coverage will not be denied based on the absence of potential for improvement or restoration as long as skilled care is required.

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References

1. American Speech-Language-Hearing Association. Admission/discharge Criteria in Speech-Language Pathology. http://www.asha.org/policy/GL2004-00046/ Accessed September 5, 2018
2. American Speech-Language-Hearing Association. Dysarthria.www.asha.org/public/speech/disorders/dysarthria.htm. Accessed September 7, 2018
3. American Speech-Language Hearing Association. Dysarthria in Adults (Practice Portal). https://www.asha.org/Practice-Portal/Clinical-Topics/Dysarthria-in-Adults/. Accessed September 7, 2018.
4. American Speech-Language-Hearing Association. Preferred Practice Patterns for the Profession of Speech-Language Pathology http://www.asha.org/policy/PP2004-00191/. Accessed September 5, 2018.
5. American Speech-Language-Hearing Association. Scope of Practice in Speech-Language Pathology http://www.asha.org/policy/SP2016-00343/. Accessed September 5, 2018.
6. American Speech-Language Hearing Association. Speech Language Pathology Medical Review Guidelines. https://www.asha.org/practice/reimbursement/SLP-medical-review-guidelines/ Accessed September 5, 2018.
7. Darley, FL, Aronson, AE. Differential diagnostic patterns of dysarthria. Journal of Speech & Hearing Research. 1969; Jun;12(2): 246-69
8. McNeil, MR, Clinical Management of Sensorimotor Speech Disorders. 2nd ed. New York, NY: Thieme; 2009
9. Medicare Benefit Policy Manual, chapter 15: 230-230.6 , Coverage of Outpatient Rehabilitation Therapy Services (Physical Therapy, Occupational Therapy, and Speech-Language Pathology Services) www.cms.gov/manuals/Downloads/bp102c15.pdf. Accessed September 5, 2018
10. Spencer, KA, Yorkston, KM. Behavioral management of respiratory/phonatory dysfunction from dysarthria: A flowchart for guidance in clinical decision making. Journal for Medical Speech-Language Pathology. 2003; 11(2): xxxix-lxi
11. Yorkston, KM, Spencer, KA, et al. Evidence-based practice guidelines for dysarthria: Management of velopharyngeal function. Journal of Medical Speech-Language Pathology. 2001; 9 (4): 257-273.
12. Yorkston, KM, & Beukelman, DR May. Dysarthria: Tools for clinical decision-making. ASHA News Leader. May 2004; 9: 4-21.

Dysphagia (Swallowing Disorder): Adults

Synonyms

- Swallowing disorder
- Swallowing impairment
- Oral phase dysphagia
- Pharyngeal phase dysphagia
- Esophageal phase dysphagia
- Deglutition impaired

Definition

Difficulty in swallowing from the time food/liquid enters the mouth to the time it enters the stomach. Dysphagia affects the ability to maintain adequate nutrition and hydration and may lead to dehydration and aspiration. Swallowing is divided into four phases:

Oral Preparatory Phase:

Requires:

- Lip strength for removing material from utensil and holding material in the oral cavity.
- Tongue strength and coordination for manipulating and forming a bolus and keeping material from falling posteriorly.
- Mandible/jaw control for good labial seal and coordinating chewing.
- Adequate dentition condition for masticating and chewing solids

Oral Transit Phase:

Requires:

- Ability to propel the bolus into the pharyngeal area to trigger a swallowing response.
- Needs adequate labial seal, intact tongue mobility, buccal muscles, & nasal breathing

Pharyngeal Phase:

Requires:

- Velopharyngeal Closure
- Timely swallowing reflex to be triggered
- Posterior tongue retraction
- Pharyngeal wall contraction
- Laryngeal elevation
- Hyoid excursion

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- Epiglottic inversion
- Glottic closure/airway protection
- Crico-pharyngeal sphincter opens

Esophageal Phase:

Requires:

- Peristalsis of the esophageal musculature.
- Movement of material from the upper esophageal sphincter to the lower esophageal sphincter.

History

Goals of Complaint History

- Determine possible "medical red flags" that place an individual at risk for Dysphagia such as cerebral vascular accident, traumatic brain injury, Parkinson's disease, multiple sclerosis, spinal cord injury, cerebral palsy, Alzheimer's disease, head/neck cancer, and other damage to or diseases of the nervous system, etc…
- Identify co-morbidities that affect general management or which require medical management (medications, age/frailty, vital signs, cognition).
- Determine if trauma-related or congenital; determine the nature, extent of the event, and onset of the dysphagia.

Presentation

Symptomatology

The table below contains some of the more common symptoms for the four phases of swallowing. Clinical judgment should be used to identify and react to case specific circumstances.

Difficulty taking material from a utensil	➢ Weak labial skills; decreased labial range of motion ➢ Post-surgery; cerebral palsy (CP); Down's Syndrome (DS); cerebral vascular accident (CVA); Parkinson's Disease (PD); any neurological disease/accident
Leakage of material out of oral cavity; drooling/difficulty managing secretions	➢ Weak labial skills ➢ Post-surgery; CP; DS; CVA; PD; any neurological disease/accident; decreased sensation
Pocketing of material in the oral cavity	➢ Weak buccal muscles; weak labial skills; weak lingual skills; decreased oral sensation ➢ Head/neck cancer; Bell's Palsy; CVA; post-surgery; PD; any neurological disease/accident

Difficulty manipulating food into a bolus	➢ Weak buccal muscles; weak labial skills; weak lingual skills ➢ Head/neck cancer; Bell's Palsy; CVA; post-surgery; PD, any neurological disease/accident
Premature spillage of material into the pharyngeal area	➢ Weak posterior lingual strength or range of motion; decreased sensation ➢ Head/neck cancer; CVA; post-surgery; PD, any neurological disease/accident
Poor mastication or breakdown of material	➢ Poor dentition condition; decreased jaw excursion/range of motion ➢ Edentulous/lacking dentition; ill-fitting dentures; trismus; head/neck cancer; post-radiation treatment; CVA
Oral Transit – Clinical symptoms	**Functional effects**
Tongue pumping	➢ Weak posterior tongue strength; inability to propel the bolus into the pharyngeal area ➢ PD
Increased time to propel the bolus	➢ Weak posterior tongue strength; inability to propel the bolus into the pharyngeal area ➢ PD; CVA; CP; any neurological disease/accident
Tongue thrusting	➢ Weak posterior tongue strength; ; inability to propel the bolus into the pharyngeal area ➢ CP; DS
Pharyngeal – Clinical symptoms	**Functional effects**
Nasal penetration or regurgitation	➢ Poor velo-pharyngeal closure ➢ Head/neck cancer; PD; velo-pharyngeal insufficiency; velo-pharyngeal incompetence; cleft palate; post-surgery; CVA; any neurological disease/accident
Sneezing when swallowing liquids, solids, or both	➢ Poor velo-pharyngeal closure ➢ Head/neck cancer; PD; velo-pharyngeal insufficiency; velo-pharyngeal incompetence; cleft palate; post-surgery; CVA; any neurological disease/accident
Coughing/choking when swallowing liquids, solids, or both	➢ Swallow delay (delay in initiating a swallow response); poor airway protection

	➢ CVA; PD; amyotrophic lateral sclerosis (ALS); any neurological disease/accident
Throat clearing when swallowing liquids, solids, or both	➢ Swallow delay (delay in initiating a swallow response); poor airway protection ➢ CVA; PD; amyotrophic lateral sclerosis (ALS); any neurological disease/accident
Wet/gurgly voice quality	➢ Swallow delay (delay in initiating a swallow response); poor airway protection ➢ CVA; PD; amyotrophic lateral sclerosis (ALS); any neurological disease/accident
Pneumonia	➢ Aspiration/penetration; poor airway protection; ➢ Any neurological disease/accident; CVA; ALS; PD; head/neck cancer; post-radiation treatment; post-surgery
Chest congestion after P.O. intake	➢ Aspiration/penetration; poor airway protection; ➢ Any neurological disease/accident; CVA; ALS; PD; head/neck cancer; post-radiation treatment; post-surgery
Temperature spike within one hour of oral intake	➢ Aspiration/penetration; poor airway protection; ➢ Any neurological disease/accident; CVA; ALS; PD; head/neck cancer; post-radiation treatment; post-surgery
Drop in oxygen saturation levels	➢ Aspiration/penetration; poor airway protection; ➢ Any neurological disease/accident; CVA; ALS; PD; head/neck cancer; post-radiation treatment; post-surgery
Multiple swallows to clear material from pharyngeal/laryngeal area(s)	➢ Residue in the valleculae, pyriform sinuses, and/or lateral channels ➢ Any neurological disease/accident; CVA; ALS; PD; head/neck cancer; post-radiation treatment; post-surgery; osteophytes; Zenker's diverticulum
Report of material "sticking" in pharyngeal area	➢ Residue in the valleculae, pyriform sinuses, and/or lateral channels ➢ Any neurological disease/accident; CVA; ALS; PD; head/neck cancer; post-radiation treatment; post-surgery; osteophytes; Zenker's diverticulum
Difficulty sustaining adequate nutrition and hydration and/or weight loss	➢ Weak oral skills; poor airway protection; behavioral/cognitive deficits ➢ Any neurological disease/accident; CVA; ALS; PD; head/neck cancer; post-radiation treatment; post-surgery; dementia; delirium

Esophageal – Clinical symptoms	Functional effects
Report of material "sticking" laryngeal area and/or sterna area (globus sensation)	➢ Poor esophageal motility; gastro-esophageal reflux ➢ Gastro-esophageal reflux disease (GERD); hiatal hernia; diverticulum; achalasia; esophageal stricture
Gastro-esophageal reflux (material may come up into the pharyngeal area or regurgitated out of the oral cavity	➢ Poor esophageal motility ➢ Gastro-esophageal reflux disease (GERD); hiatal hernia; diverticulum; esophageal stricture

Findings

Techniques for Evaluating Swallowing (it should be noted that it is ideal to begin with a bedside/clinical swallowing evaluation prior to an imaging evaluation, but the physician may refer the patient directly for an imaging evaluation)

Non-Imaging

- Bedside/Clinical Swallowing Evaluation
- Electromyography (EMG) (rarely used)
- Electroglottography (EGG) (rarely used)
- Pharyngeal Manometry (rarely used)

Imaging

- Modified Barium Swallow Study (MBS) aka Videofluoroscopic Swallow Evaluation (VFSE)
- Fiberoptic Endoscopic Evaluation of Swallowing (FEES)
- Ultrasound (rarely used)
- Scintigraphy (rarely used)

Goals of Evaluation of Swallowing

Bedside/Clinical Swallowing Evaluation

- To rule out Dysphagia
- To begin to determine what the possible etiologies are for the Dysphagia
- To determine if a further imaging evaluation is necessary

Modified Barium Swallow Study/Videofluoroscopic Swallow Evaluation

- To determine if aspiration is occurring, how much aspiration is occurring, what textures are being aspirated, why aspiration is occurring, and degree of aspiration risk for the individual.
- To determine strategies/techniques, positions, diet textures, and safety of oral intake.
- To determine if therapy is indicated for exercises, stimulation, learning strategies/techniques, and safe diet textures.

Fiberoptic Endoscopic Evaluation of Swallowing

- To determine if aspiration is occurring, how much aspiration is occurring, with what textures aspiration is occurring, why aspiration is occurring, and degree of aspiration risk for the individual.
- To determine which (if any) strategies/techniques, positions, diet textures, and safety or oral intake.
- To determine if therapy is indicated for exercises, stimulation, learning strategies/techniques, and safe diet textures.

Scope of Swallowing Evaluations

Bedside/Clinical Swallowing Evaluation

- Obtain medical history from the individual's medical records including a list of medications and medication schedules; interview the individual, family members, or caregiver(s).
- Complete an oral peripheral evaluation to assess the integrity of the oral structures and the oral motor function of those structures.
- Assess the oral preparatory phase, oral transit phase, and watch for pharyngeal and esophageal red flags.
- Clinical judgments of the adequacy of airway protection and coordination of respiration and swallowing.
- Identify the presence and observe the characteristics of a dysphagia based on clinical signs and symptoms (red flags).
- Assessment of the effects of compensatory strategies such as altering bolus size and/or bolus delivery rate, therapeutic postures, maneuvers/techniques, alternating solids and liquids, and changes in textures.
- The use of tools (such as cervical auscultation and pulse oximetry) may be used in the assessment process to detect and monitor clinical signs of dysphagia.

MBS/VFSE

- Obtain medical history from the individual's medical records including a list of medications and medication schedules; interview the individual, family members, or caregiver(s) unless already done during the bedside/clinical swallowing evaluation.

- Complete an oral peripheral evaluation to assess the integrity of the oral structures and the oral motor function of those structures.
- Assess the oral preparatory phase, oral transit phase, pharyngeal phase, and screen the esophageal phase.
- Determine adequacy of airway protection and coordination of respiration and swallowing.
- Assess pharyngeal phase skills

Area assessed	Effects if disordered
Velo-pharyngeal closure	Nasal penetration and/or regurgitation
Presence of a swallow delay	Penetration and/or aspiration
Posterior tongue retraction	Poor supraglottic pressure with residue on the tongue base
Posterior pharyngeal wall contraction	Poor supraglottic pressure with residue on the pharyngeal wall
Hyoid excursion	Decreased laryngeal elevation resulting poor epiglottic inversion and poor crico-pharyngeal sphincter opening resulting in residue in the valleculae and/or pyriform sinuses respectively
Laryngeal elevation	Poor epiglottic inversion and poor crico-pharyngeal sphincter opening resulting in residue in the valleculae and/or pyriform sinuses respectively
Epiglottic inversion	Poor hyoid excursion/laryngeal elevation; stiff or immobile epiglottis (radiation damage); hits posterior pharyngeal wall (due to osteophytes, swelling, cervical hardware post-surgery, narrow hypopharynx
Crico-pharyngeal sphincter opening	Poor hyoid excursion/laryngeal elevation; tight (to protect against reflux, crico-pharyngeal bar, presence of osteophytes causing tightness)
Airway protection	Poor epiglottic inversion; paralyzed or weak vocal folds
Cough response	Penetration or aspiration
Unilateral pharyngeal weakness (need to turn patient for an anterior-posterior view)	Residue on one side of the pharynx more than the other
Structural anomalies	Zenker's Diverticulum; osteophytes; crico-pharyngeal bar; tumors; swelling post-surgery

Screen esophageal phase

Esophageal motility	Reflux; tertiary contractions
Structural abnormalities	Hiatal hernia; diverticulum; stenosis

- Assessment of the effects of compensatory strategies such as altering bolus size and/or bolus delivery rate, therapeutic postures, maneuvers/techniques, alternating solids and liquids, and changes in textures.

FEES

Same as the above chart except one cannot assess hyoid excursion or laryngeal elevation and visual the exact moment of aspiration due to the “white out period”. Cannot screen the esophageal phase either.

Results of Evaluating Swallowing

- Consult with primary care physician on clinical findings and proceed as agreed by primary care physician.
- Determine appropriate referrals based upon clinical findings.
- If pharyngeal phase or esophageal phase dysphagia is suspected based on clinical findings and/or the presence of pharyngeal “red flags” during a bedside/clinical swallow evaluation, further imaging techniques for evaluating the pharyngeal phase is warranted.
- Develop a plan of care based upon the patient’s medical history, prior level of function, current medical and nutritional status, date of onset, age, cognitive abilities, contributing behavioral and psychological factors, patient specific quality of life issues, and clinical findings.
- Establish long-term and short-term goals with functional and measurable outcomes.

Requirements for Speech Therapy Visits

- In order to establish medical necessity for speech therapy services, the following criteria must be met.
  - The treatment must be considered specific and effective for the patient’s condition under evidence based practice guidelines.
  - Frequency and Duration must be considered acceptable under established standards of practice.
  - The complexity of the condition must be such that the skills of a speech therapist are required for the frequency requested.
  - Habilitative and Rehabilitative services- A positive prognosis must established that the patient’s condition is expected to improve from the services provided.
  - Maintenance-Services are required to maintain the member’s current condition or to prevent or slow deterioration of the member’s condition. Coverage of maintenance service is health plan specific.
  - Continuation of care is supported by functional progress resulting from a positive response to skilled treatment.

Frequency and Duration

- Treatment frequency and duration must be based on:
  - Severity of objective clinical findings,
  - Presence of and number of complicating factors and comorbidities,
  - Natural history and chronicity of condition,
  - Expectation for functional improvement with skilled intervention,
  - Response to treatment provided
  - Patient’s level of independence

Swallowing Management through therapy

- The following management will vary depending on the specific needs of the patient.
  - If oral feedings are appropriate, determine the least restrictive diet consistency and liquid level.
  - If the patient is currently NPO (nothing presented by mouth), develop an appropriate plan of care with introduction of P.O. when appropriate.
  - Determine positions that would improve the safety and efficiency of P.O. intake (such as upright ninety degrees, chin tuck, head turns, head tilts).
  - Determine compensatory strategies to improve the safety and efficiency of P.O. intake (such as rate of intake, bolus amount, hard-effortful swallow, repeat/extra swallows, alternate solids with liquids, periodic throat clears).
  - Provide written instructions to the patient and his/her family, if appropriate, for safe swallow strategies.
  - Determine if any exercises may help to improve the safety and efficiency of P.O. intake (such as oral motor exercises, Mendohlson maneuver, Masako exercise, Shaker exercise, vocal fold adduction exercises).
  - Determine if any techniques to stimulate the swallowing reflex and/or musculature (such as Neuromuscular Electrical Stimulation (NMES), myofascial release, Deep Pharyngeal Neuromuscular Stimulation (DPNS), thermal-tactile stimulation).
  - If reflux is a concern, educate and train the patient and his/her family about behavioral management of GERD (such as elevate head of bed, don't eat 2-3 hours prior to lying down or going to bed, eating smaller, more frequent meals throughout the day, avoiding foods/liquids known to aggravate reflux).
  - Educate and train the patient and his/her family, if appropriate, about swallowing and feeding disorders
  - Educate and train the patient and his/her family, if appropriate, to follow-through with patient specific swallow strategies, diet textures, and exercises).
  - Document progress and modify the treatment plan to meet the needs of the patient when indicated.
  - Determine patient specific dismissal criteria.

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Treatment Plan Timeline

The frequency and duration of services is based upon the specific needs of the patient at the time of the evaluation and the patient's measurable response to treatment on a weekly basis. The frequency and duration may vary depending on what therapy will incorporate. For example, if the clinician is going to do NMES, more intensive frequency and duration is warranted. Discharge is recommended when the patient has reached a plateau (i.e.: no qualitative gains made over a period of at least three weeks) or maximum potential has been achieved.

Stages of Treatment	Activities and Progress
➢ Early Stages of Therapy	➢ Establish safest and efficient diet consistency and liquid level (i.e.: thin, nectar, honey, or pudding thick). ➢ Establish patient specific safe swallow protocol and train the patient and/or caregiver(s) to use these compensatory strategies to improve swallow safety. ➢ Establish best positions and train the patient and/or caregiver(s) to use them. ➢ Exercises specific to the type of dysphagia (oral phase vs. pharyngeal phase) ➢ Stimulation techniques if appropriate for patient specific needs and responses. ➢ P.O. trials if appropriate ➢ Document response to treatment in measurable terms. ➢ Determine the need to modify the plan of care in terms of frequency, duration, and treatment plan based upon the patient's response to treatment. ➢ Determine the need to modify the dismissal criteria.
➢ Ongoing Treatment	➢ Ongoing education and training for follow-through of patient specific safe swallow protocol with modifications to reflect the patient's response to treatment.
➢ Later Stages of Treatment/ Discharge Planning	➢ Ongoing education and training for follow-through of patient specific safe swallow protocol with modifications to reflect the patient's response to treatment. ➢ Exercises specific to the type of dysphagia (oral phase vs. pharyngeal phase) ➢ Stimulation techniques if appropriate for patient specific needs and responses. ➢ P.O. trials if appropriate ➢ Document response to treatment in measurable terms and compare with baseline. ➢ Determine the need to modify the plan of care in terms of frequency, duration, and treatment plan based upon the patient's response to treatment. ➢ Determine the need to modify the dismissal criteria.
➢ Discharge Criteria	➢ Determine the need to modify the dismissal criteria. ➢ Establish a method for follow-up services should the individual experience any changes in swallow function that affects swallow safety. ➢ To determine discharge criteria or transition to an alternative treatment: ➢ Review the plan benefit language for specific benefit limits or restrictions ➢ End or transition when maximum potential has been reached; or ➢ When little or no progress has occurred for at least three weeks. ➢ Provide a method of follow-up services for individuals who have been discharged.

Skilled Maintenance Care

➢ Maintenance care is defined as services required to maintain the member's current condition or to prevent or slow deterioration of the member's condition.

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- Services are covered for maintenance care if the specialized skill, knowledge and judgment of a qualified therapist are required:
  - To establish or design a maintenance program appropriate to the capacity and tolerance of the member
  - To educate/instruct the member or appropriate caregiver regarding the maintenance program
  - For periodic re-evaluations of the maintenance program
  - When skilled services are required in order to provide reasonable and necessary care to prevent or slow further deterioration, coverage will not be denied based on the absence of potential for improvement or restoration as long as skilled care is required.

Referral Guidelines

- Consult a registered dietitian to determine nutrition and hydration needs.
- Referral to another specialty if clinical signs or symptoms of gastro-esophageal reflux or esophageal dysphagia are present
- Referral for an instrumental assessment of dysphagia (i.e., MBS, FEES) if clinical signs or symptoms of dysphagia present after performing a beside/clinical swallowing evaluation.
- Refer HMO patients to Primary Care Physician to explore other alternatives; PPO patients may be referred to family physician or appropriate specialist(s).

Home Medical Equipment

- Suction equipment for saliva management
- Wedge or hospital bed for nocturnal saliva management or GERD

Self-Management Techniques

- Instruct the patient and/or caregiver(s) for safest diet consistency and liquid level.
- Provide a list of foods and/or liquids, which fall within the specified diet textures.
- Provide a list of foods/liquids to avoid.
- Provide written instructions for any compensatory safe swallow strategies necessary to increase swallow safety.
- Instruct patient to notify primary care physician and/or Speech-Language Pathologist should any changes occur in the swallow function that negatively affects the patient's swallow safety.

Alternatives to ST Management

- Consult with primary care physician regarding non-imaging and/or imaging findings.
- Provide patient and/or caregiver(s) education and training.
- Pharmacological intervention

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- Surgery
- Customized oral devices

References

1. American Speech-Language-Hearing Association. Admission/discharge Criteria in Speech-Language Pathology. http://www.asha.org/policy/GL2004-00046/ Accessed September 5, 2018.
2. American Speech-Language-Hearing Association. Adult Dysphagia: (Practice Portal). https://www.asha.org/Practice-Portal/Clinical-Topics/Adult-Dysphagia/. Accessed September 7, 2018
3. American Speech-Language-Hearing Association. Knowledge and Skills Needed by Speech-Language Pathologists Providing Services to Individuals with Swallowing and/or Feeding Disorders: Practice Portal. https://www.asha.org/policy/KS2002-00079/ . Accessed September 5, 2018.
4. American Speech-Language-Hearing Association. Preferred Practice Patterns for the Profession of Speech-Language Pathology http://www.asha.org/policy/PP2004-00191/. Accessed September 5, 2018.
5. American Speech-Language-Hearing Association. Roles of speech-language pathologists in swallowing and feeding disorders: Position statement. ASHA Leader, vol. 7 (Supplement 22), 73. 2002
6. American Speech-Language-Hearing Association. Roles and Responsibilities: Practice Portal.https://www.asha.org/PRPSpecificTopic.aspx?folderid=8589942550&section=Roles_and_Responsibilities Accessed September 5, 2018
7. American Speech-Language-Hearing Association. Scope of Practice in Speech-Language Pathology http://www.asha.org/policy/SP2016-00343/. Accessed September 5, 2018.
8. American Speech-Language Hearing Association. Speech Language Pathology Medical Review Guidelines. https://www.asha.org/practice/reimbursement/SLP-medical-review-guidelines/ Accessed September 5, 2018.
9. Corbin-Lewis K, Liss J. Clinical Anatomy and Physiology of the Swallow Mechanism, 2nd ed. Singular (Thomson) New York. 2004
10. Huckabee ML and Pelletier CA. Management of Adult Neurogenic Dysphagia, Singular (Thomson) New York, NY. 1999
11. Logeman JA. Evaluation and Treatment of Swallowing Disorders, 2nd ed. Pro Ed. Austin, TX 1998.

Dysphagia (Swallowing Disorder): Pediatrics

Synonyms

- Swallowing disorder
- Oral phase dysphagia
- Pharyngeal phase dysphagia
- Esophageal phase dysphagia.

Definition

Difficulty in swallowing. Dysphagia affects the ability to maintain adequate nutrition and hydration and may lead to dehydration and aspiration.

History

Goals of Complaint History

- Determine primary medical condition such as prematurity, anatomical or structural problems present at birth, failure to thrive vs. pediatric under nutrition, genetic conditions, metabolic disorders, brain injury, developmental disability, or psychosocial or behavioral issues that affect feeding or swallowing abilities.
- Identify co-morbidities that affect general management or which require medical management.
- Determine if trauma-related or congenital; determine nature and extent of event.

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Presentation

Symptomatology

The table below contains some of the more common symptoms for the four phases of swallowing. Clinical judgment should be used to identify and react to case specific circumstances.

Clinical Symptoms	Functional Effects
➢ Abnormal tongue movement patterns in the first few days after birth ➢ Aspiration with coughing or choking during and after nursing/mealtimes ➢ Silent aspiration ➢ Pneumonia, recurring chest congestion after P.O. intake ➢ Difficulty sustaining adequate nutrition and hydration, lack of weight gain or weight loss ➢ Gastroesophageal reflux ➢ Eosinophilic Esophagitis ➢ Apnea, bradycardia and cyanosis related to feeding	➢ Prematurity
➢ Poor management of secretions; drooling ➢ Feeding difficulties such as impaired sucking, poor oral motor skills or abnormalities in the oral phase, reduced or poor nutritional intake ➢ Difficulty taking oral medications ➢ Impaired pharyngeal motility of the bolus ➢ Aspiration with coughing or choking during and after nursing/mealtimes ➢ Silent aspiration ➢ Pneumonia, recurring chest congestion after P.O. intake ➢ Disruptive or maladaptive behavior at mealtime ➢ Difficulty sustaining adequate nutrition and hydration, lack of weight gain or weight loss ➢ Gastroesophageal reflux disease ➢ Transition difficulties from tube feedings to oral feedings	➢ Neurological related conditions such as cerebral palsy ➢ Developmental disability (generally associated with a progressive deterioration of the swallow function) ➢ Brain disorder
➢ Failure to thrive ➢ Growth during the first two to three years of life is affected due to inadequate nutrition (pediatric under nutrition) ➢ Oral motor dysfunction that may cause sucking, chewing, or swallowing difficulties ➢ Aspiration with coughing or choking during and after nursing/mealtimes ➢ Silent aspiration ➢ Pneumonia, recurring chest congestion after P.O. intake ➢ Disruptive or maladaptive behavior at mealtime ➢ Gastroesophageal reflux disease ➢ Transition difficulties from tube feedings to oral feedings	➢ Craniofacial anomalies such as cleft palate or mobius syndrome

Findings

Goal of Bedside Swallow Evaluation

To rule out dysphagia.

Scope of Initial Swallow Evaluation

- Obtain medical history from the child's medical records including a list of medications and medication schedules, interview the parents or caregiver.
- Consider the age of the child, related diagnosis, techniques and positioning used during feeding.
- Complete an oral peripheral evaluation to assess the integrity of the oral structures and the oral motor function of those structures.
- Assess the preparatory phase, oral phase and clinical signs of a pharyngeal phase disorder.
- Clinical judgments of the adequacy of airway protection and coordination of respiration and swallowing.
- Identify the presence and observe the characteristics of a dysphagia based on clinical signs and symptoms.
- Assessment of the effects of compensatory strategies such as altering bolus size and/or bolus delivery rate, alternating liquids and solids, and therapeutic postures or maneuvers on the swallow.
- The use of tools (such as cervical auscultation and pulse oximetry) may be used in the assessment process to detect and monitor clinical signs of dysphagia.
- Assess speech and vocal quality.

Results if dysphagia

- Consult with primary care physician on clinical findings and proceed as agreed by primary care physician.
- Determine appropriate referrals based upon clinical finding.
- Develop a plan of care based upon the child's medical history, prior level of function, current medical and nutritional status, date of onset, age, cognitive abilities, contributing behavioral and psychological factors, specific quality of life issues, and clinical findings.
- Establish long-term and short-term goals with functional and measurable outcomes.

ST Management

Requirements for Speech Therapy Visits

- In order to establish medical necessity for speech therapy services, the following criteria must be met.
  - The treatment must be considered specific and effective for the patient's condition under evidence based practice guidelines.
  - Frequency and Duration must be considered acceptable under established standards of practice.
  - The complexity of the condition must be such that the skills of a speech therapist are required for the frequency requested.
  - Habilitative and Rehabilitative services- A positive prognosis must established that the patient's condition is expected to improve from the services provided.
  - Maintenance-Services are required to maintain the member's current condition or to prevent or slow deterioration of the member's condition. Coverage of maintenance service is health plan specific.

Continuation of care is supported by functional progress resulting from a positive response to skilled treatment.Frequency and Duration

- Treatment frequency and duration must be based on:
  - Severity of objective clinical findings,
  - Presence of and number of complicating factors and comorbidities,
  - Natural history and chronicity of condition,
  - Expectation for functional improvement with skilled intervention,
  - Response to treatment provided
  - Patient's level of independence

Treatment Considerations

- The following management will vary depending on the specific needs of the child.
  - If the child is currently NPO (nothing presented by mouth), develop an appropriate plan of care with introduction of P.O. when appropriate.
  - If oral feedings are appropriate, determine the least restrictive diet consistency and liquid level.
  - Determine compensatory strategies to improve the safety and efficiency of P.O. intake, (such as positioning/posture, rate of intake, bolus amount, special devices and feeding implements, etc.)
  - Educate and train the child, if age-appropriate, about swallowing and feeding disorders.
  - Educate and train the child's parents, caregivers, and school teachers, if appropriate, about swallowing and feeding disorders.
  - Educate and train the child and his/her family, caregivers, and school teachers, if appropriate, to follow-through with the child's specific safe swallow strategies.
  - Provide written instructions to the child, his/her family, caregivers and school teachers, if appropriate, for safe swallow strategies.

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- Oral motor exercises to improve oral motor control of the bolus and the voluntary stage of the swallow
- Address techniques for oral-defensiveness and educate the child, if age-appropriate, and the child's parents, caregivers and school teachers.
- Therapy to stimulate the swallow reflex.
- Exercises to increase adduction of tissues to improve airway protection.
- Document progress and modify the treatment plan to meet the needs of the child when indicated.
- Determine child specific dismissal criteria.

Treatment Plan Timeline

The frequency and duration of services is based upon the specific needs of the child at the time of the evaluation and the child's measurable response to treatment on a weekly basis. Discharge is recommended when the child has reached a plateau (i.e.: no qualitative gains made over a period of at least three weeks) is able to continue with a home management program, or maximum potential has been achieved.

➢ Early Stages of Treatment	➢ Explore factors that could impact outcomes now and if progressive, the future ➢ Explore level of patient (if appropriate), and family understanding, challenges, and capabilities to develop appropriate education and training program ➢ Develop treatment program based on all facts, findings, and best practices for this patient ➢ As appropriate, develop an individualized supplemental home program to closely monitor and update as needed ➢ Document findings, techniques, and responses to treatment
➢ Ongoing Treatment	➢ Provide patient/family ongoing education and training ➢ Assess response to and feedback from home program to modify and update ➢ Document measurable gains and modify plan of care if indicated ➢ Assess ongoing response to treatment, gains, lack of progress, other factors; modify program as needed ➢ Determine other factors impacting condition requiring intervention or referral (see referral guidelines)
➢ Later Stage of Treatment/Discharge Planning	➢ Provide suggestions and resources for follow-up ➢ Provide home program to continue progress and/or maintain gains if appropriate ➢ Provide summary of course of treatment and progress ➢ If discharged due to medical issues and/or progressive nature of condition, indicate under what future conditions new referral would be warranted
➢ Discharge Criteria	➢ Medical/psychological or other issues interfering with goals of treatment program ➢ Able to continue with a home management program ➢ Goals have been reached ➢ Plateau has been reached ➢ Insurance benefit has ended

Referral Guidelines to confirm dysphagia

➢ Consult a registered dietician/nutritionist to determine nutrition and hydration needs.

- Referral to another specialty if the child presents with:
  - Clinical signs or symptoms of gastroesophageal reflux or esophageal dysphagia are present.
  - Clinical signs or symptoms of disruptive or maladaptive behaviors at mealtimes.
- Referral for an instrumental assessment of dysphagia (i.e., modified barium swallow study or videofluoroscopy) if clinical signs or symptoms of dysphagia are present.
- Consult with Occupational Therapist for sensorimotor issues or assistance with positioning devices.
- Refer HMO patients to Primary Care Physician to explore other alternatives; PPO patients may be referred to family physician or appropriate specialist.

Home Medical Equipment

- Suction equipment for saliva management
- Positioning devices

Self-Management Techniques

- Instruct the child, parents, caregivers and/or school teachers for safest diet consistency and liquid level, positioning, and other modifications to improve swallow safety.
- Provide a list of foods and/or liquids, which fall within the specified diet consistency.
- Provide a list of foods and/or liquids to avoid.
- Provide written instructions for any compensatory safe swallow strategies necessary to increase swallow safety.
- Instruct the child, parents and/or caregiver in home exercise program for oral activities or oral desensitization techniques as needed.
- Instruct parent or caregiver to notify primary care physician and/or Speech-Language Pathologist should any changes occur in the swallow function that negatively affects the child's swallow safety

Alternatives to ST Management

- Consult with primary care physician regarding clinical findings.
- Provide the child, parents, caregivers and classroom teachers education and training.
- Drug therapy
- Surgery
- Customized oral devices

References

1. American Speech-Language-Hearing Association. Admission/discharge Criteria in Speech-Language Pathology. http://www.asha.org/policy/GL2004-00046/ Accessed September 5, 2018.
2. American Speech-Language Hearing Association. Knowledge and Skills for Speech-Language Pathologists Performing Endoscopic Assessment of Swallowing Functions. https://www.asha.org/policy/KS2002-00069/ Accessed September 5, 2018
3. American Speech-Language Hearing Association. Knowledge and Skills needed by Speech-Language Pathologists Performing Videofluoroscopic Swallowing Studies. https://www.asha.org/policy/ks2004-00076/. Accessed September 5, 2018
4. American Speech-Language Hearing Association. Knowledge and Skills Needed by Speech-Language Pathologists Providing Services to Individuals With Swallowing and/or Feeding Disorders. https://www.asha.org/policy/KS2002-00079/ Accessed September 5, 2018
5. American Speech-Language-Hearing Association. Pediatric Dysphagia Practice Portal. www.asha.org/Practice-Portal/Clinical-Topics/Pediatric-Dysphagia/ Accessed Otober 31, 2017
6. American Speech-Language-Hearing Association. Preferred Practice Patterns for the Profession of Speech-Language Pathology http://www.asha.org/policy/PP2004-00191/. Accessed September 5, 2018.
7. American Speech-Language-Hearing Association. The Role of the Speech-Language Pathologist in the Performance and Interpretation of Endoscopic Evaluation of Swallowing: Position Statement. https://www.asha.org/policy/PS2005-00112/
8. American Speech-Language-Hearing Association. Scope of Practice in Speech-Language Pathology http://www.asha.org/policy/SP2016-00343/. Accessed September 5, 2018.
9. American Speech-Language Hearing Association. Speech Language Pathology Medical Review Guidelines. https://www.asha.org/practice/reimbursement/SLP-medical-review-guidelines/ Accessed September 5, 2018.
10. Etges CL, Sheeren B, Gomes E, De Rosa Barbosa L. Screening tools for dysphagia: A systematic review . CoDAS. 2014;26(5):343-349. http://www.scielo.br/scielo.php?script=sci_arttext&pid=S2317-17822014000500343. Accessed September 5, 2018.
11. Sanchez K, Spittle A J, Allinson L, Morgan A. Parent questionnaires measuring feeding disorders in preschool children: a systematic review. Developmental Medicine Child Neurology. March 2015; 57:798–807. doi:10.1111/dmcn.12748.

Feeding Aversion

Definition

A patient, with adequate feeding/swallowing abilities, chooses to refuse oral consumption of food or liquids. Learned feeding avoidance behaviors that may have been related to a prior organic/ medical issue.[11]

Presentation

Symptomatology	Possible consequence or cause
A feeding/swallowing evaluation reports swallowing abilities to be within normal limits, yet the patient is unable to consume appropriate foods/liquids for age and development ➢ Refusal by verbalizing/turning away/closing & covering mouth/refusal to swallow. ➢ Selectivity by food type/ flavor, color or texture ➢ Able to eat in one setting but not another ➢ Extreme gagging or vomiting during or after meals ➢ Spitting out food/ pocketing/ Emesis ➢ Behavior outbursts such as screaming, tantrums, or attempts to escape the feeding environment ➢ Throwing food/shut down	➢ Autism[14,23] ➢ Cardiac Disease ➢ Cerebral Palsy ➢ Cleft Palate/Structural abnormalities ➢ Congenital Heart Disease ➢ Constipation ➢ Cystic Fibrosis ➢ Delayed Gastric Emptying ➢ Developmental Delays ➢ Down Syndrome ➢ Gastroesophageal Reflux Disease (GERD) ➢ Genetic Syndromes ➢ Hearing related difficulties ➢ History of Dysphagia resulting in a fear of feeding/swallowing ➢ Premature Birth ➢ Previous placement of a Tracheotomy ➢ Pulmonary Disease ➢ Respiratory Difficulties ➢ Sensory Disorder[12] ➢ Surgical procedures affecting swallowing ➢ Oral Motor Dysfunction ➢ Behavioral Disorder (accounts for 43% of feeding disorders)[22] ➢ Cardiorespiratory (accounts for 34% of feeding disorders)[22] ➢ Mechanical/ Structural (accounts for 53% of feeding disorders)[22] ➢ Metabolic Disorders (accounts for 12% of feeding disorders)[22] ➢ Neurological Disorders (accounts for 62% of feeding disorders)[22] ➢ Serious feeding difficulties requiring medical intervention occur in 3–10% of children[22]
➢ Extreme gagging or vomiting during or after meals	➢ Delayed Gastric Emptying ➢ Food Allergies (including Celiac Disease) ➢ Gastroesophageal Reflux Disease (GERD) ➢ Sensory Disorder
➢ Behavior outbursts such as screaming, tantrums, or attempts to escape the feeding environment	➢ Food Neophobia ➢ Sensory Disorder
➢ Low percentile for weight on the chart for the National Academy of Pediatrics	➢ Nutritional Effects ➢ Ongoing need for enteral or parenteral nutrition ➢ Prolonged status of inadequate caloric intake
➢ Growth Deficiency	➢ Dehydration

Symptomatology	Possible consequence or cause
	➢ Growth Hormone Deficiency ➢ Nutritional effects ➢ Ongoing need for enteral or parenteral nutrition ➢ Prolonged status of inadequate caloric intake
➢ Failure to Thrive	➢ Caregiver abuse or neglect ➢ Primary or secondary caused by limited food exposure in early development
➢ Food Allergies/ Associated Pain with Eating	➢ Celiac Disease ➢ Eosinophilic Esophagitis (EoE) ➢ Food Protein-Induced Enterocolitis Syndrome (FPIES) ➢ GERD ➢ H. Pylori (Bacterial Infection) ➢ Short Gut Syndrome
➢ Sensory	➢ Autism Spectrum Disorder (ASD) ➢ Intellectual Deficits with difficulty with motor planning & flexibility[14] ➢ Muscle weakness in face and/or neck ➢ Neurological/Sensory Memory with past experiences ➢ Over-respond to presence of foods that trigger avoidance ➢ Sensory processing deficits: Auditory/ visual/ gustatory/ olfactory/tactile/ vestibular/ proprioceptive. Research showed tactile and taste/ smell were main factors.[22] Sensory deficits affect pre-oral phase/ swallow.[12] ➢ TBI
➢ Social/ Emotional/ Environmental ➢	➢ Avoidant Restrictive Food Intake Disorder (ARFID) ➢ Child that experiences a trauma such as: infantile anorexia ➢ possibly secondary to force feeding/anxiety ➢ Difficult parent-child interactions at meal times ➢ Food Neophobia[23] ➢ Peer/Social Influence[23]
➢ Medication Side Effects	➢ Lethargy/Decreased Appetite

Typical vs Atypical Characteristics

Typical (Picky Eater)	Feeding Aversions
➢ Limitations in number of foods; likes specific foods but will eat at least one food from most food texture or nutrition groups	➢ Restricted range or variety of foods ➢ Significantly reduced food repertoire – refuses to eat entire categories of food types or textures (Less than 20)
➢ Slow to try new foods	➢ Avoids one or more food groups ➢ May avoid all vegetables which may be perceived as having a bitter flavor (genetic difference in ability to detect bitter flavor)[23]
➢ Like some food in particular ways (brand specific/ restaurant specific)	➢ Unusual aversions or fear surrounding foods
➢ Food jag (eats one particular food/ or small group of food preferences at each meal). The food jag will end on its own after a short period of time. Following food jag, will return to previously eaten foods. (*ASHA Leader Blog 6/12/14 Melanie Potock- Preventing Food Jags what's a parent to do*) http://blog.asha.org/2014/06/12/preventing-food-jags-whats-a-parent-to-do/)	➢ Foods lost to food jags are NOT regained after taking a break
➢ Can tolerate new food on their plate (may be reluctant and/or respond with negative behaviors	➢ Demonstrates sensory aversion to new/ non-preferred foods on plate or table ➢ (Complete refusal/ "cries & falls apart")
➢ Can usually touch or taste new foods	➢ Will not tolerate sensory input related to new foods
➢ Will not typically starve themselves or make themselves ill	➢ May starve themselves or make themselves ill, may find comfort in a hungry state[11]
➢ May eat different foods than family but will eat with the family	➢ May refuse to eat meals with family and almost always eats different foods than the family. Altered eating schedule or patterns

Normal Development:

Swallowing Phases: (http://www.asha.org/Practice-Portal/Clinical-Topics/Pediatric-Dysphagia/)

- **Oral Preparation Stage**—preparing the food or liquid in the oral cavity to form a bolus including sucking liquids, manipulating soft boluses, and chewing solid food.
- **Oral Transit Phase**—moving or propelling the bolus posteriorly through the oral cavity.
- **Pharyngeal Phase**—initiating the swallow; moving the bolus through the pharynx.
- **Esophageal Phase**—moving the bolus through the cervical and thoracic esophagus and into the stomach via esophageal peristalsis.
  - Dysphagia can occur in any phase of the swallow. Although there are differences in the relationships between anatomical structures and in the physiology of the swallowing mechanism across the age range (i.e., infants, young children, adults).
- Three developmental feeding periods:[23]

- Nursing period
- Transitional feeding period
- Modified adult feeding period

General Feeding Information:

- "Feeding and swallowing disorders (also known as dysphagia) include difficulty with any step of the feeding process—from accepting foods and liquids into the mouth to the entry of food into the stomach and intestines. A feeding or swallowing disorder includes developmentally atypical eating and drinking behaviors, such as not accepting age-appropriate liquids or foods, being unable to use age-appropriate feeding devices and utensils, or being unable to self-feed. A child with dysphagia may refuse food, accept only a restricted variety or quantity of foods and liquids, or display mealtime behaviors that are inappropriate for his or her age." (http://www.asha.org/Practice-Portal/Clinical-Topics/Pediatric-Dysphagia/)
- "In the second year, toddlers consume a diet that resembles their families' preferences. Introduction of a variety of nutritious foods and flavors is important during both the transitional and modified adult periods as younger toddlers are initially more accepting of novel foods compared to preschool children, who may be reluctant to try new foods. The reluctance to try new foods is low at weaning and rapidly rises to a peak between 2 and 6 years, with considerable variability."[23]
- "The most important phase for learning food preferences and appetite control may be the beginning of complementary feeding (CF). Infants discover the sensory (texture, taste and flavor) and nutritional properties (energy density) of foods that will ultimately compose their adult diet."[13]
- "Learning to eat has to occur quickly, in particular because the mode of feeding evolves dramatically during the first thousand days (3 years) of life, from "tube" feeding through the cord in utero, through oral feeding with milk after birth, complementary feeding (CF) around mid-course of the first year, until eating family foods by the end of the first year. After this period, Neophobia/ fussiness starts peaking and introduction of new foods becomes more difficult."[13]
- "About a quarter of infants experience difficulties with pieces in foods, but such difficulties should not drive parents to delay introduction of more solid textures, since delaying introduction to lumpy foods beyond 10 months is associated with texture acceptance problems at later ages."[13]
- "Mild feeding difficulties occur in up to 25–45% of healthy children and 80% of children with developmental delays or chronic disease. Serious feeding difficulties requiring medical intervention occur in 3–10% of children."[22]

Findings

Goals of a Feeding Aversion Evaluation

- Examination for possible causes or contributing factors to the complaint. A referral to appropriate medical professional if the patient presents with signs or symptoms of behavioral or physiological factors that impact the patient's swallowing/ feeding

status. Common diagnoses are Gastroesophageal Reflux Disease, Developmental Delays, Sensory Disorders, and Surgeries or procedures affecting swallowing such as a tracheotomy.

- To determine how feeding aversion impacts the patient's ability to maintain adequate nutrition and hydration.

Scope of a Feeding Aversion Evaluation

- The evaluation and subsequent treatment must be conducted by a licensed Speech-Language Pathologist.
  - Case/Feeding History including reports from a team approach of family members, teachers, and medical professionals involved in the patient's care. Case history should also include if inadequate caloric intake was reported by a treating physician.
  - Observation of the patient eating and drinking with age appropriate or developmentally appropriate utensils. A narrative including strengths and weaknesses of the observed feeding/swallowing skills should be included.
  - Oral motor assessment including an assessment of muscles and structures needed for appropriate feeding/swallowing skills to determine if oral motor deficiencies are present.
  - Collect detailed information about home environment and various factors related to feeding.
  - Consultation from a registered dietician/nutritionist as needed to determine nutrition and hydration needs.

Objective Measures	- Mealtime Behavior Questionnaire* - About Your Child's Eating -R* - Child Development Inventory - Pediatric Symptom Checklist - The Behavioral Pediatrics Feeding Assessment Scale (BPFAS) - The Child Eating Behavior Inventory (CEBI) - The Children's Feeding Assessment Questionnaire (CFAQ) - The Feeding Scale - Mealtime Observation Schedule (MOS) - Brief Autism Mealtime Behavior Inventory (*BAMBI)* - Examples of parent-friendly feeding checklists can be found in Bahr's (2010) parent book, Nobody Ever Told Me (or My Mother) That!: Everything from Bottles and Breathing to Healthy Speech Development. - The Developmental Pre-Feeding Checklist (Morris & Klein, 2000, pp. 697–711) is widely used by feeding specialists. It is research-based and reflects typical feeding development from birth to 2-years of age - Sensory Profile - PEDI - REAL
Feeding Observation	- Type of food presented - Quantity of solids & liquids consumed daily - Method of presentation - Meal process/structure - Child reaction to food presentation - Parent response to feeding behaviors - Outcome of feeding behaviors
Team Collaboration	- Pediatrician, Developmental Pediatrician - Occupational Therapist - Gastroenterologist, Otolaryngologist, ENT/Allergist/Pulmonologist - Behavioral Therapist, Psychologist

	➢ Nutritionist, Dietician ➢ Nursing, Social Workers ➢ Teachers, Paraprofessionals ➢ Parent Participation- Key factor for progress & carryover[16]

Admission Criteria

Birth to 6 years[16]

- If the caloric intake is not sufficient, the following factors should be considered:
  - Oral motor weakness or structural impairment
  - Conditions that may cause consistent loss of calories through vomiting
  - Conditions that may cause muscle weakness
- If the patient's caloric intake is sufficient, but growth deficiency is still evident, the following factors should be considered:
  - Medical conditions that affect caloric absorption
  - Not consuming a balanced diet
- If caloric intake is sufficient, and growth is appropriate for development, one or more the following conditions must be present for approval of feeding/ swallowing therapy:
  - The patient currently has a G-tube or is participating in a G-tube weaning program
  - The patient is at risk for placement of a G-tube secondary to falling below the 10th percentile on the Growth Chart for the National Academy of Pediatrics
  - The patient currently consumes supplemental nutrition
  - Chronic food refusal with limited variety of food group consumption[15]
  - Failure to advance textures[15]
  - Inappropriate mealtime behaviors (ex: throwing food, grazing patterns of eating, etc.)[15]
  - Sensory disorders that affect typical developmental feeding progression or swallowing phases[12]

7 - 18 years[16]

- Indication for skilled intervention is dependent on multiple documented factors:
  - Prior treatment received: Duration, intensity, progress, carry over, number of episodes of treatment, gaps in episodes of treatment, etc.
  - Severity of the nutritional deficit, as documented by a physician or dietician
  - Current potential for progress: Rationale that indicates client potential for progress that differs from prior status
  - Patient commitment/ desire to participate
  - Family participation and carryover
  - Community support

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Management

Requirements for Speech Therapy Visits

- In order to establish medical necessity for speech therapy services, the following criteria must be met.
  - The treatment must be considered specific and effective for the patient's condition under evidence based practice guidelines.
  - Frequency and Duration must be considered acceptable under established standards of practice.
  - The complexity of the condition must be such that the skills of a speech therapist are required for the frequency requested.
  - Habilitative and Rehabilitative services- A positive prognosis must established that the patient's condition is expected to improve from the services provided.
  - Maintenance-Services are required to maintain the member's current condition or to prevent or slow deterioration of the member's condition. Coverage of maintenance service is health plan specific.
  - Continuation of care is supported by functional progress resulting from a positive response to skilled treatment.

Frequency and Duration

- Treatment frequency and duration must be based on:
  - Severity of objective clinical findings,
  - Presence of and number of complicating factors and comorbidities,
  - Natural history and chronicity of condition,
  - Expectation for functional improvement with skilled intervention,
  - Response to treatment provided
  - Patient's level of independence

Treatment Considerations

- Management of this condition will vary depending upon the patient's individual need.
  - Development of a treatment plan to increase the types, textures, and amounts of food and liquids accepted by the patient.
  - Development of age appropriate feeding skills/ mealtime routines in the least restrictive environment possible.
  - Behavior and sensory modification techniques to extinguish unwanted behavioral responses toward feeding.
  - Team collaboration between a variety of disciplines including Occupational Therapist, Behavioral Therapist, Nutritionist/Dietician, primary care physician, Gastroenterologist, and other treating providers.
  - The provider MUST clearly document extensive caregiver training, participation, and carryover into the patient's daily living activities. (Food intake journal, environmental adaptations, behavioral response chart, etc).

Treatment Options	Approaches to Treatment
Evidence Based Techniques	➢ Pre-Chaining and Food Chaining© Therapy Programs ➢ Pre-chaining focuses on a treatment program to keep the child as close to the developmental progression of oral skills as possible during the first year of life ➢ Food chaining© is a systematic method for the treatment of children with food selectivity and aversive eating behaviors ➢ Sequential Oral Sensory Approach to Feeding (The S.O.S. Approach): Children proceed hierarchically, tolerating, interacting with, smelling, touching, tasting, and eventually eating novel foods ➢ Talk Tools Oral Placement Therapy®: focuses on techniques to add a tactile component to feeding and therapy, enabling clients to "feel" the movements necessary for the development of feeding and speech clarity [32] ➢ The Transdisciplinary Effect Assessment and Treatment (TR-eat™) model: a collaborative treatment model for children with complex feeding problems that blend behavioral principles with oral motor therapeutic skills to address difficult feeding problems [33]
Intervention Strategies	➢ Provide visuals ➢ Reduce linguistic load ➢ Offer choices

Feeding Aversion

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Treatment Options	Approaches to Treatment
	➢ Address sensory processing concerns ➢ Offer reinforcers to increase motivation ◆ Behavior Strategies: Differential attention, Positive reinforcement, Escape extinction/ escape prevention, Stimulus fading, Simultaneous presentation, Differential reinforcement of alternative behavior (DRA), Use of a flipped spoon as a presentation method,[15] shaping, modeling, first/ then token system. Research shows that escape extinction and differential reinforcement significantly increase acceptance of non-preferred food[16] ➢ Oral motor and oral placement strategies[15] ➢ Repeated exposure to novel/non-preferred food.[15] Being exposed repeatedly to a food is the primary factor that determines its acceptance.[13] It is recommended that a child be exposed 10 to 15 times to a previously unfamiliar or non-preferred food to increase intake for children with feeding difficulties.[15]

Considerations:

- A proactive, family-centered approach (particularly in the first three years[5] could prevent many feeding disorders because parents, caregivers, and professionals will know what skills to encourage, when to encourage them, when a child is going "off track," and when to refer a child to a feeding specialist.[13]
- Research indicates that the optimal time for feeding aversion intervention is by age 6.[16]
- Treatment should be:
  - Multi-disciplinary approach. The Speech and OT treatment plans must focus on different aspects of care.
  - Episodic & periodic in nature
  - Progress should be reported at least every 3 months
  - Typical duration of up to 1 year. (If has G-tube status with no prior oral intake may take up to 2 years).
  - Ongoing parent involvement is required
  - Frequency and intensity of skilled services should vary along with care moving from direct to indirect services over the continuum of care

Discharge Criteria

- The patient has acquired age appropriate feeding/swallowing skills. Patient is consuming adequate amount and variety of food groups to support developmentally appropriate growth.
- The patient has not shown progress towards reasonable goals, and has reached a plateau.
- Caregivers are able to independently carryover the treatment plan in the home environment to support continued progress.
- The goals do not require the skills of a certified therapist. (The strategies are now repetitive in nature without needing ongoing changes to the treatment plan).
- The goals are duplicative in a nature to another therapist's current treatment plan.

References

1. American Speech Language and Hearing Association Pediatric Dysphagia (Practice Portal). http://www.asha.org/PRPSpecificTopic.aspx?folderid=8589934965&section=Assessment. Accessed September 7, 2018.
2. Arvedson JC. Assessment of pediatric dysphagia and feeding disorders: clinical and instrumental approaches. Developmental Disabilities Research Reviews. 2008;14(2):118-127.
3. Bajaj L, Hambridge S, Nyquist A, Kerman G. Berman's Pediatric Decision Making. 5th ed. Maryland Heights, MO: Mosby; 2006.
4. Kakodkar K, Schroeder JW. Pediatric dysphagia. Pediatric Clinics of North America. 2013;60(4): 969-977.
5. McCarty J, Hasselkus A. Pediatric swallowing treatment coverage issues and advocacy. The ASHA Leader. 2009;14:3-8
6. Prasse JE, Kikano GE. An overview of pediatric dysphagia. Clinical Pediatrics. 2009;48(3):247-251.
7. Pressman H, Berkowit M.Treating children with feeding disorders. The ASHA Leader.2003;8:10-11.
8. Wilken M, Cremer V, Berry J, Bartmann P. Rapid home-based weaning of small children with feeding tube dependency: positive effects on feeding behavior without deceleration of growth. Archives of Disease in Childhood. 2013;98(11):856-861.
9. Younesian S, Yadegari F, Soleimani F. Impact of oral sensory stimulation on feeding performance, length of hospital stay, and weight gain of preterm infants in NICU. Iranian Red Crescent Medical Journal. 2015;17(7):e13515.
10. Dobbelsteyn C, Marche DM, Blake K, Rashid M. Early oral sensory experiences and feeding development in children with CHARGE syndrome: A report of five cases. Dysphagia. 2005;20(2):89-100.
11. Toomey KA, Sundseth Ross E. SOS Approach to feeding. Perspectives on Swallowing and Swallowing Disorders (Dysphagia). 2011;20(3):82-87. doi:10.1044/sasd20.3.82.
12. Shune SE, Moon JB, Goodman SS. The Effects of age and preoral sensorimotor cues on anticipatory mouth movement during swallowing. Journal Of Speech, Language, And Hearing Research. 2016;59(2):195-205.
13. Nicklaus S. The role of dietary experience in the development of eating behavior during the first years of life. Annals of Nutrition & Metabolism. 2017;70(3):241-245.
14. Crasta JE. Benjamin TE, Suresh APC, et al. Feeding problems among children with autism in a clinical population in India. The Indian Journal of Pediatrics. 2014;81(Suppl 2):169.
15. Best evidence statement (BESt). Behavioral and oral motor interventions for feeding problems in children. Cincinnati Children's Hospital Medical Center. http://ahrqguideline.careset.com/www.guideline.gov/Best-evidence-statement-BESt-Behavioral-and-oral-motor-interventions-for-feeding-problems-in-children. Accessed September 17, 2018.
16. Gosa MM, Carden HT, Jacks, CC, Threadgill AY, Sidlovsky TC. Evidence to support treatment options for children with swallowing and feeding disorders: A systematic review. Journal of Pediatric Rehabilitation Medicine;2017:10(2)107-136.
17. Johnson SL. Developmental and environmental influences on young children's vegetable preferences and consumption. Advances in Nutrition. 2016;7(1):220S-231S.
18. Tanner K, Case-Smith J, Nahikian-Nelms M, Ratliff-Schaub K, Spees C, Darragh AR.Behavioral and physiological factors associated with selective eating in children with Autism Spectrum Disorder. American Journal of Occupational Therapy. 2015;69(6):6906180030p1-8. Doi: 10.5014/ajot.2015.019273.
19. Edwards S, Davis AM, Ernst L, et al. Interdisciplinary strategies for treating oral aversions in children. Journal of Parenteral and Enteral Nutrition. 2015;39:899-909. doi:10.1177/0148607115609311.
20. Johnson SL, Davies PL, Boles RE, Gavin WJ, Bellows LL. Young children's food neophobia characteristics and sensory behaviors are related to their food intake. The Journal of Nutrition. 2015;145(11):2610-6.
21. Suarez MA. Multicomponent treatment for food selectivity in children: description and case report. Nutrition in Clinical Practice. 2015;30(3):425-31. doi: 10.1177/0884533614553638.

22. Davis AM, Bruce AS, Khasawneh R, Schulz T, Fox C, Dunn W. Sensory processing issues in young children presenting to an outpatient feeding clinic. J Pediatr Gastroenterol Nutr. 2013;56(2):156-60. doi: 10.1097/MPG.0b013e3182736e19.PMID: 22986370
23. Gahagan S. Development of eating behavior: biology and context. J Dev Behav Pediatr. 2012;33(3):261-71. doi: 10.1097/DBP.0b013e31824a7baa.
24. Addison LR, Piazza CC, Patel MR, Bachmeyer MH, Rivas KM, Milnes SM, Oddo J. A comparison of sensory integrative and behavioral therapies as treatment for pediatric feeding disorders. Journal of Applied Behavioral Analysis. 2012;45(3):455-471.
25. Americal Speech-Language Hearing Association. Knowledge and Skills Needed by Speech-Language Pathologists Providing Services to Individuals With Swallowing and/or Feeding Disorders. https://www.asha.org/policy/KS2002-00079/. Accessed September 17, 2018.
26. American Speech-Language-Hearing Association. Preferred Practice Patterns for the Profession of Speech-Language Pathology http://www.asha.org/policy/PP2004-00191/. Accessed September 5, 2018.
27. Sanchez K, Spittle AJ, Allinson L, Morgan A. Parent questionnaires measuring feeding disorders in preschool children: a systematic review. Dev Med Child Neurol, 2015;57(9): 798–807. doi:10.1111/dmcn.12748.
28. Fraker C, Walbert L. Treatment of selective eating and dysphagia using pre-chaining and food chaining therapy programs. Perspectives on Swallowing and Swallowing Disorders (Dysphagia). 2011;*20*(3):75–81.
29. Fishbein M, Fraker C, Co S, Walbert L. Food Chaining: A systematic approach for the treatment of children with eating aversion. Journal of Pediatric Gastroenterology and Nutrition. 2004;*39*(1):S51.
30. Elliott C, Clawson E. Mealtime Miseries: Management of Complex Feeding Disorders. 2012.
31. Overland L, Merkel-Walsh R. A Sensory Motor Approach to Feeding. Talk Tools. 2013
32. Talk Tools. https://www.talktools.com. Accessed September 18, 2018.
33. The Transdisciplinary Effect Assessment and Treatment (TR-eat™) model http://www.pediatricfeedinginstitute.com. Accessed September 18, 2018.
34. American Speech-Language-Hearing Association. Admission/discharge Criteria in Speech-Language Pathology. http://www.asha.org/policy/GL2004-00046/ Accessed September 5, 2018.
35. American Speech-Language-Hearing Association. Scope of Practice in Speech-Language Pathology http://www.asha.org/policy/SP2016-00343/. Accessed September 5, 2018.
36. American Speech-Language Hearing Association. Speech Language Pathology Medical Review Guidelines. https://www.asha.org/practice/reimbursement/SLP-medical-review-guidelines/ Accessed September 5, 2018

Fluency Disorder

Related Terms

- Fluency disorder
- Disfluency
- Stuttering
- Cluttering
- Dysfluency
- Stammering

Definitions

- Fluency Disorder: A fluency disorder is a "speech disorder" characterized by deviations in continuity, smoothness, rhythm, and/or effort with which phonologic, lexical, morphologic, and/or syntactic language units are spoken.
- "Disorders in the rhythm of speech, in which the individual knows precisely what he wishes to say, but at the same time is unable to say it because is an involuntary, repetitive prolongation or cessation of a sound." [28]
- "Stuttering is a communication disorder characterized by excessive involuntary disruptions in the smooth and rhythmic flow of speech, particularly when such disruptions consist of repetitions or prolongations of a sound or syllable, and when they are accompanied by emotions such as fear and anxiety, and behaviors such as avoidance and struggle.
- Stuttering is a "temporary overt or covert loss of control of the ability to move forward fluently in the execution of linguistically formulated speech." [20]
- Stuttering is likely the result of disturbances in the neural timing required for speech
- "Cluttering is a fluency disorder with underlying language and thought-organization disabilities."[27]

History

Goals of Complaint History

- Identify co-morbidities that affect general management or which require medical management.
- Determine if trauma-related or congenital; determine nature and extent of event.
- Determine primary medical condition, (cerebral vascular accident, traumatic brain injury, or other neurological event or disease process.)

Presentation

Symptomatology

The table below contains some of the more common symptoms. Clinical judgment should be used to identify and react to case specific circumstances.

Clinical Symptoms	Functional Effects
➢ Multiple part-word repetitions-repeating the first letter or syllable of a words, such as “t-t-t-table” or “ta-ta-ta-table” ➢ Prolongations-stretching out a sounds, such as rrr-abbit ➢ Schwa vowel-Use of the weak (“uh”) vowel. For example, instead of saying “bay-bay-bay-baybe” the client substitutes “buh-buh-buh-baby.” ➢ Struggle and tension-the client struggles and forces in the attempt to say a word. ➢ Pitch and loudness rise- As the client repeats and prolongs sounds, part words, whole words or whole phrases the pitch and loudness of his or her voice may increase. ➢ Tremors-Uncontrolled quivering of the lips or tongue may occur as the client repeats or prolongs sounds or syllables. ➢ Avoidance-An unusual number of pauses; substitutions of words; interjection of extraneous sounds, words or phrases; avoidance of talking ➢ Fear- As the client approaches a sound that gives him or her trouble, he or she may display an expression of fear. ➢ Habitual eye closure, rolling, or glazing during dysfluencies ➢ Avoidance of speaking situations, words, or sounds ➢ Fear of speaking ➢ Difficulty in starting or sustaining airflow or voicing speech-This is heard most often when the client begins sentences or phrases. Breathing may be irregular and speech may occur in spurts as the client struggles to keep the voice “on”. ➢ Rapid Speaking Rate ➢ Overarticulation ➢ Inappropriate word segmentation ➢ Excessively dysrhythmic or monotone speech ➢ Excessively garbled or ungrammatical syntax ➢ Insertion of a very high number of inappropriate words or sounds ➢ Excessive number of whole word or phrase repetitions ➢ Poorly organized thinking (speaks before clarifying thoughts) ➢ Short attention span and poor concentration ➢ Lack of complete awareness of the problem	➢ Child may not follow the typical development or acquisition of speech sounds. ➢ Client may incorrectly be assumed to be resistant or stubborn due to stuttering symptoms. Client has difficulty expressing needs, wants, thoughts, and ideas. Frustration on the part of the child and the parent may manifest. ➢ Listeners have difficulty understanding the message. ➢ The pressure of having to produce a grammatically complex sentence using words that are difficult to produce ➢ Struggling when speaking or attempting to speak due to difficulty coordinating respiration, phonation and articulation ➢ Speech production becomes more unintelligible in stressful situations and during periods of anxiousness. Speech production becomes more stressful as familiarity with communication partners and situations become more demanding. ➢ Modification of complexity of expressive language to avoid high-stress speech demands ➢ Cluttering Component may be present

Findings

Goal of Fluency Disorder Evaluation

- Rule out other possible causes, differential diagnosis
  - Muscle weakness or paralysis of oral musculature or speech mechanism, phonological or articulation disorder
- Identify strengths, weaknesses, severity level, secondary characteristics, and any contributing factors that may be affecting communication.
- The evaluation process may include the selection and administration of standardized tests, portions of standardized test, and/or non-standardized tests.
- Assess risk factors for chronic fluency disorders
- Determine the need for mental health management to prepare client for ST treatment and/or enhance ST fluency treatment.

Components of Fluency Disorder Evaluation

- The evaluation process may include the selection and the administration of standardized tests, portions of standardized tests, non-standardized tests and speech samples.
  - Obtain medical history from the individual's medical records, interview the individual if age-appropriate, and interview the individual's family members, teachers, coworkers, employers, friends, caregiver or guardian to determine the effect of fluency disorder on communication interactions. Identify family history of fluency disorders in blood relatives.
  - Obtain the individual's speech, language and educational history.
  - Identify any cultural or linguistic differences and any behavioral factors that may be contributing to the breakdown in functional communication.
  - Hearing history, audiological screening and/or assessment if needed.
  - Assessment of the oral mechanism
    - Muscle function of the jaw, lips and tongue and the integrity of the oral structures (hard and soft palate, jaw, lips and tongue).
  - Articulation/phonology tests
  - Receptive and Expressive Language Tests
  - Pragmatic Tests
  - Standardized Tests of Stuttering
  - Self-Rating Forms to determine the patients speech-language planning and production experience and assessment of patient's emotional reactivity and emotion regulation to stuttering
  - Direct Observation and description of the person's speech and language in structured as well as natural conversational environment
  - Obtain Speech Samples for Contextual vs. Noncontextual Speech, Speaking vs. Reading (nonreaders may be substituted with structured verbal tasks such as picture or object description).
  - Analysis of accessory behaviors (verbal interjections, eyebrow raising, eye blinking, rolling, closure, head/jaw jerking and/or hand/arm movement).

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- Identification of the locus of tension; upper chest and torso, the laryngeal area, articulators in the mouth and facial area, particularly the jaw).
- Inventory of stuttering events (core behaviors: sound/syllable repetition, whole-word repetition, phrase or sentence repetition, sound prolongation, inaudible prolongations or blocks).
- Objective data collection for stuttering words per minute (SW/M) and speaking rate.
- Video recording to capture and document verbal and nonverbal components of a fluency disorder.

Results if Fluency Disorder

- Determine an appropriate plan of care based upon the individual's medical history, cultural and linguistic differences and functional impact.
- Interpret the clinical findings of the fluency disorder evaluation that will include:
  - A clinical diagnosis of fluency disorder based upon a combination of characteristics identified during the assessment process.
  - Stuttering is considered abnormal to the extent that it handicaps an individual's ability to fluently communicate effectively and efficiently during all possible speaking environments.
  - Cluttering may be combined with stuttering and contribute to slower progress and less favorable outcomes due to the underlying language issues and general poor awareness of speech errors.
  - Determine the needs and abilities of the individual, family concerns, parental concerns, impact of stuttering on emotional health and functional ability to communicate ideas across all environments. Determine potential for attitudinal, compensatory and functional improvement within a reasonable time frame.

ST Management

Requirements for Speech Therapy Visits

- In order to establish medical necessity for speech therapy services, the following criteria must be met.
  - The treatment must be considered specific and effective for the patient's condition under evidence based practice guidelines.
  - Frequency and Duration must be considered acceptable under established standards of practice.
  - The complexity of the condition must be such that the skills of a speech therapist are required for the frequency requested.
  - Habilitative and Rehabilitative services- A positive prognosis must established that the patient's condition is expected to improve from the services provided.
  - Maintenance-Services are required to maintain the member's current condition or to prevent or slow deterioration of the member's condition. Coverage of maintenance service is health plan specific.
  - Continuation of care is supported by functional progress resulting from a positive response to skilled treatment.

Frequency and Duration

- Treatment frequency and duration must be based on:
  - Severity of objective clinical findings,
  - Presence of and number of complicating factors and comorbidities,
  - Natural history and chronicity of condition,
  - Expectation for functional improvement with skilled intervention,
  - Response to treatment provided
  - Patient's level of independence

Treatment Considerations

(The following management will vary depending on the specific needs of the individual.)

- Develop an individual program designed to address the complex interaction of language, speech, emotional reactivity, observable stuttering, covert stuttering behaviors reported by client and relevant individuals.
- Develop an individual program designed to address symptoms and secondary characteristics of stuttering.
- Develop a treatment plan that emphasizes implementation of strategies in a variety of communication situations within his/her home, school and/or community.
- Provide family members, caregivers, guardian, siblings, school teachers and/or other communication partners training in communication techniques and strategies to facilitate effective communication. With early childhood stuttering, the most effective interventions are delivered by parents/caregivers with SLP support.
- Provide individuals and parents with information regarding community support groups and/or programs.

- Continue to assess the individual because symptoms will change over time.
- Cluttering symptoms are best treated using kinesthetic and proprioceptive techniques.
- Select and implement appropriate equipment and computer software to communicate effectively and efficiently in a variety of communication situations within his/her home, school and/or community. Altered Auditory Feedback (AAF) including delay (DAF) and pitch shift (FAF) to achieve effective communication in a variety of situations is an effective treatment option.
- Treatment intensity is variable and may include intense outpatient or inpatient residential programs.
- Provide suggestions and resources for follow-up
- Provide home program to continue to progress and/or to maintain gains
- If discharged due to medical issues and/or plateau in progress, indicate under what future conditions a new referral would be warranted.
- Some current evidenced-based programs for management of stuttering include:
  - The Lidcombe Program- most extensively researched treatment program
  - The Westmead Program- clinical studies have reported successful outcomes
  - Multifactorial programs- address environmental factors (DCM Model)
  - The Camperdown Program- a speech restructuring/prolonged speech technique for adolescents and adults

Documentation

- Provide summary of course of treatment and progress
- Notes for each encounter to include type of treatment and patient's response to it.
- Show measurable progress toward goals and reason not attained such as: fluctuations in abilities and/or motivation.
- Show evidence that education was provided and response to it
- Include attainment, updates or changes in short or long-term goals and/or changes in intensity or type of treatment.

Referral Guidelines for Fluency Disorder

- If improvement does not meet the above guidelines or improvement has reached a plateau:
  - Refer HMO patients to Primary Care Physician to explore other alternatives; PPO patients may be referred to family physician or appropriate specialist.
  - Consult with a mental health specialist for treatment of depression or other mental health issues which may reduce or prevent ST management.
  - Referral to local support groups both during treatment and after treatment for long term practice and support.

Home Medical Equipment

- Altered Auditory Feedback (AAF) including delay (DAF) and pitch shift (FAF) device to achieve effective communication in a variety of situations.

Self-Management/Home Management Techniques

- Individual and/or parents to follow home therapy program

Role of Caregiver	Home Practice
➢ To understand the nature of stuttering ➢ To understand the goals of treatment ➢ To serve as the child's speech partner ➢ To consult with SLP regularly ➢ To learn and model all speech targets ➢ To carry out home practice with child ➢ To create a home conducive to fluency ➢ To educate family members ➢ To liaise with teachers	➢ Instructions for practice should be clear and written down ➢ Practice sheets should be provided ➢ Recording devices should be used ➢ Data taken in order to allow SLP to determine accuracy and completeness of home practice ➢ Practice should occur daily ➢ Practice sessions should be from 20-30 minutes in duration

Alternatives to ST Management

- Mental health management to prepare the client for subsequent speech pathology treatment.

Treatment Plan Timeline

Frequency and duration of services is based upon specific needs of the individual at the time of the evaluation. Individuals with fluency disorder tend to have periods where they plateau then will go on to make functional improvements. In addition, the symptoms will change over time. Therefore, discharge planning will involve consideration of maximum potential achieved and the individual family circumstances.

Discharge Criteria

- Medical/psychological or other issues interfering with goals of treatment program
- Able to continue with a home management or other supplemental program
- Goals have been reached, no further intervention indicated
- Insurance benefit has ended
- Non-response to treatment justifies discharge
- Patient is at functional levels in all aspects of disorder

Skilled Maintenance Care

- Maintenance care is defined as services required to maintain the member's current condition or to prevent or slow deterioration of the member's condition.
- Services are covered for maintenance care if the specialized skill, knowledge and judgment of a qualified therapist are required:

- To establish or design a maintenance program appropriate to the capacity and tolerance of the member
- To educate/instruct the member or appropriate caregiver regarding the maintenance program
- For periodic re-evaluations of the maintenance program
- When skilled services are required in order to provide reasonable and necessary care to prevent or slow further deterioration, coverage will not be denied based on the absence of potential for improvement or restoration as long as skilled care is required.

References

1. ABanerjee S, Casenhiser D, Hedinger T, et al. The perceived impact of stuttering on personality as measured by the NEO-FFI-3. Logopedics Phoniatrics Vocology. 2017;42(1):22-28
2. American Speech-Language-Hearing Association. Admission/discharge Criteria in Speech-Language Pathology. http://www.asha.org/policy/GL2004-00046/ Accessed September 5, 2018.
3. American Speech-Language-Hearing Association. Childhood Fluency Disorders Practice Potal. https://www.asha.org/Practice-Portal/Clinical-Topics/Childhood-Fluency-Disorders/. Accessed September 5, 2018.
4. American Speech-Language-Hearing Association. Preferred Practice Patterns for the Profession of Speech-Language Pathology http://www.asha.org/policy/PP2004-00191/. Accessed September 5, 2018.
5. American Speech-Language-Hearing Association. Scope of Practice in Speech-Language Pathology http://www.asha.org/policy/SP2016-00343/. Accessed September 5, 2018.
6. American Speech-Language Hearing Association. Speech Language Pathology Medical Review Guidelines. https://www.asha.org/practice/reimbursement/SLP-medical-review-guidelines/ Accessed September 5, 2018.
7. Bridgman K, Onslow M, O'Brian S, et al. Lidcombe program webcam treatment for early stuttering: A randomized controlled trial. Journal of Speech, Language, and Hearing Research. 2016;58:932-939
8. Brutten GJ, Vanryckeghem M. Behavior Assessment Battery for School-Age Children Who Stutter. San Diego, CA: Plural Publisher; 2007
9. Cooper E, Gregory H, Zebrowski P et al. Effective Counseling in Stuttering Therapy: Memphis, TN; Stuttering Foundation of America; 2013
10. Curlee RF, Siegel GM. Nature and Treatment of Stuttering New Directions. 1996. London, England: Pearson Publishing Company; 1996:431.
11. Dahye C, Conture TA, Walden RM, et al. Emotional diathesis, emotional stress, and childhood stuttering. Journal of Speech, Language, and Hearing Research. 2016;59:616-630
12. Daly A. The Source for Stuttering and Cluttering. East Moline, IL: LinguiSystems Inc; 1996:158-159
13. Donaghy MA, Smith KA. Management options for pediatric patients who stutter: Current challenges and future directions. Pediatric Health Medicine and Therapeutics. July 2016;7:71-77
14. Guitar B McCauley R. Treatment of Stuttering: Established and Emerging Interventions. Philadelphia, PA: Lippiincott Williams & Wilkins; 2010
15. Hollister J, et al. The relationship between grammatical development and disfluencies in preschool children who stutter and those who recover. America Journal of Speech-Language Pathology.2017;26(1):44-56
16. Kalinowski J, Saltuklaroglu T. Stuttering. San Diego, CA: Plural Pub; 2006
17. Millard S, Davis D. The palin parent rating scales: Parents' perspectives of childhood stuttering and its impact. Journal of Speech, Language, and Hearing Research. 2016;59:950-963
18. Neef N, Anwander A, Friederici A. The neurobiological grounding of persistent stuttering: From structure to function. Current Neurology and Neuroscience. 2015;15(9):63
19. O'Neill J, Dong Z, Bansal R, et al. Proton chemical shift imaging of the brain in pediatric and adult developmental stuttering. JAMA Psychiatry. 2017;74(1):85-94
20. Qiao J, Wang Z, Zhao G, Huo Y, Herder CL, Sikora CO, et al. Functional neural circuits that underlie developmental stuttering. PLoS ONE. 2017;12(7). https://doi.org/10.1371/journal.pone.0179255
21. Ramig PR, Dodge DM. The Child and Adolescent Stuttering Treatment and Activity Resource Guide. Clifton Park, NY; 2005:81-85
22. Riley D. Stuttering Severity Instrument-3 for Children and Adults.1994
23. Silverman FH. Stuttering and Other Fluency Disorders. Long Grove, IL; 1992
24. Smith A, Weber C. How stuttering develops: The multifactorial dynamic pathways theory. Journal of Speech, Language, and Hearing Research. 2017;60:2483-2505
25. Speech Foundation of America. Stuttering Words Publication No. 002:1986:56

26. Unicomb R, Hewat S, Spencer E, Harrison E. Evidence for the treatment of co-occurring stuttering and speech sound disorder: A clinical series. International Journal of Speech-Language Pathology. 2017;19(3):251-264
27. Usler E, Smith A, Weber C. A lag in speech motor coordination during sentence production is associated with stuttering persistence in young children. Journal of Speech, Language, and Hearing Research. 2017;60:51-61
28. World Health Organization. Manual of the international classification of diseases, injuries and the causes of death (volume 1) 1997
29. Yaruss SJ, Quesal RW. Oases: Overall Assessment of the Speaker's Experience of Stuttering; 2008
30. Yaruss SJ,Quesal RW. Oases-Test. Minneapolis, MN: NCS Pearson Inc; 2008
31. Yaruss SJ. A Parent-Child Training Program for Preschool Children Who Stutter, General Overview. Stuttering Center of Western Pennsylvania. 2014. www.stutteringcenter.org/Forms/SCWP%202014%20PCTP%20Overview.pdf
32. Zebrowski PM. Assisting young children who stutter and their families: Defining the role of the speech-language pathologist. American Journal of Speech-Language Pathology.1997;6(2):19-28

Hearing Loss and Aural Rehabilitation

Hearing loss is a congenital or acquired condition with the result of impaired auditory sensitivity and/or diminished speech intelligibility of the physiological auditory system. Individuals with hearing loss are sometimes described as deaf or hard of hearing based on the type, degree, and configuration of hearing impairment.

Related Terms

Aural Rehabilitation

Aural Rehabilitation refers to services and procedures for facilitating adequate receptive and expressive communication in individuals with a hearing impairment. These services and procedures are intended for those persons who demonstrate a loss of hearing sensitivity or function in communication situations as if they possess a loss of hearing sensitivity"

Aural Habilitation

Often with children, aural rehabilitation services would more appropriately be called "habilitative" rather than "rehabilitative." "Rehabilitation" focuses on restoring a skill that is lost. In children, a skill may not be there in the first place, so it has to be taught -- hence, the services would be "habilitative," not "rehabilitative."

Synonyms (Hearing Loss)

Sensorineural hearing loss (SNHL) is hearing loss due to cochlear (sensory) or VIIIth nerve (neural) auditory dysfunction. Most of the time, SNHL cannot be medically or surgically corrected. Presbycusis is a sensorineural hearing loss that occurs gradually, later in life, affecting hearing in both ears over time. The loss associated with presbycusis is usually greater for high-pitched sounds.

Conductive hearing loss occurs when there is a problem conducting sound waves easily through the outer ear canal, tympanic membrane, or middle ear (ossicles). Conductive hearing loss makes sounds softer and more difficult to hear. This type of hearing loss may be responsive to medical or surgical treatment.

Mixed hearing loss is the result of damage to conductive pathways of the outer and/or middle ear and to the nerves or sensory hair cells of the inner ear. ASHA PP

- The most common cause of intermittent, mild-to-moderate acquired hearing loss in infants and young children is conductive hearing loss associated with otitis media.
- Noise-induced hearing loss is an increasing concern for children and adolescents.
- In adults, noise and aging are the primary causes of hearing loss.
- Approximately one-third of Americans between ages 65 and 74 and nearly half over the age of 75 have hearing loss PP

Degree of Hearing Loss

Degree of hearing loss refers to the severity of the loss.

Configuration of Hearing Loss

The configuration, or shape, of the hearing loss refers to the degree and pattern of hearing loss across frequencies (tones), as illustrated in a graph called an audiogram.

Type of Hearing Loss	Possible Causes
Conductive Hearing Loss (temporary)	➢ fluid in the middle ear (e.g., from upper respiratory infections, otitis media, or serous otitis media); ➢ poor eustachian tube function; ➢ perforated tympanic membrane; ➢ benign tumors; ➢ head trauma-physical head injury can lead to skull fractures, a hole in the tympanic membrane, and damage to middle ear structures; ➢ otosclerosis; ➢ impacted cerumen; ➢ infection in the ear canal (external otitis); ➢ swimmer's ear (otitis externa); ➢ presence of a foreign body; ➢ absence or malformation of the outer ear, ear canal, or middle ear.
Mixed Hearing Loss	➢ Mixed hearing loss is caused by a combination of one or more causes of conductive hearing loss and one or more causes of sensorineural hearing loss.
Sensorineural Hearing Loss (Permanent)	➢ Noise Induced Hearing loss (NIHL) ➢ Genetics and Genetic Disorders ➢ Ototoxicity with medications or chemicals ➢ Head Trauma or TBI & damage to inner ear ➢ Autoimmune Inner Ear Disease (AIED) ➢ Bacterial, viral, or parasitic infections ➢ Acoustic Neuroma ➢ Large Vestibular Aqueduct ➢ Meniere's disease ➢ Vascular deficits
Stable or Progressive	➢ Stays the same or Better/worse over time
Unilateral or Bilateral	➢ Left Ear/Right Ear/Both Ears
Varying Severities	➢ Mild/Moderate/Severe/Profound

Signs & Symptoms

Symptoms will range both in number, intensity, and level of severity and ultimately to their functional effect on an individual's communication. Even if a child has passed a hearing screening before, it is important to look out for the following signs.

Babies & Infants

- Does not startle at loud noises.
- Does not turn to the source of a sound.
- Does not say single words, such as "dada" or "mama" by 1 year of age.

- Turns head when he or she sees you but not if you only call out his or her name. This sometimes is mistaken for not paying attention or just ignoring, but could be the result of a partial or complete hearing loss.
- Seems to hear some sounds and not others.

Toddlers & Children

- Speech production development and language are delayed.
- Speech is not clear.
- Does not follow directions. This is sometimes mistaken for not paying attention or just ignoring, but could be the result of a partial of complete hearing loss.
- Often says, “Huh?”
- Turns the TV volume up too high.

Adolescents

- Asking for repetition
- Behavioral concerns
- Difficulty attending
- Difficulty understanding speech in noise
- Turning the volume up on the TV/Music
- Poor academic performance
- Auditory processing problem
- Impaired social and emotional development

Adults

- Thinking other people are mumbling or not speaking clearly
- Difficulty understanding speech in noise or on the telephone
- Difficulty understanding speech of women & children or high pitched sounds (i.e /s/ and /f/).
- Speaking too loudly or too softly
- Not participating in activities/isolating one’s self
- Difficulty understanding conversation in a variety of settings
- Employment performance, personal relationships and interaction with people in the community may be negatively affected

Scope of Aural Rehabilitation Evaluation

- The scope of the aural rehabilitation evaluation may vary depending on child versus adult.
- A hearing screening will be provided to children during the initial speech and language evaluation unless results of a comprehensive audiological assessment has been completed.
- Accurate diagnosis of hearing loss relies on the audiologist's interpretation of a test battery within the context of the individual's medical and/or developmental history. The following should be included:
  - Consultation with the audiologist who performed the hearing evaluation.
  - The degree of hearing loss in each ear across frequencies
  - The type of hearing loss in each ear
- Additional Testing may include results from the following: Tympanometry, Acoustic Reflex testing, Otoacoustic Emmissions, Pure Tone Audiometry to include air and bone conduction tests, Speech Audiometry (Speech Detection Threshold-SDT/Speech Awareness Threshold – SAT), Word recognition, Self Assessments for adults and parent/caregiver report for the pediatric population, Auditory Brainstem response (ABR)
- Document the extent to which the disorder has impacted daily life, and academic progress
- Identify the severity of the receptive and expressive language deficits, speech production and/or voice disorder related to the hearing loss
- Plan, develop and implement a habilitation/rehabilitation program based upon the individual's medical history, results of the audiological evaluation, and prior level of function
- Implement audition or a combination of audition and visual cues to address the individual's specific needs
- Determine if treatment is necessary and include the potential for functional gains

Criteria for Assessment – Comprehensive assessment typically includes:

Components of Case History for the Pediatric Population

- Hearing History
  - Newborn hearing screening results
  - Results of Audiological Assessment
  - Age of hearing loss identification
  - Age at amplification
  - Type of amplification and how often used – (Hearing Aids, Cochlear Implants)
  - History of recurrent otitis media/PE tubes
  - Etiology of hearing loss
  - Associated syndromes/diagnoses

- Pregnancy and birth history/complications/NICU stay
- Early speech and language milestones
- Other known diagnoses
- Language exposure at home
- Collaboration with other professionals for treatment planning

Case History for the Adult Population:

- Priorities and communication goals of the person receiving services and/or their family/significant others
- Primary communication modality
- Medical history, including medication use (both prescribed and natural/homeopathic)
- History/etiology of hearing loss (pre-lingual or post-lingual)
- Type and duration of hearing loss including use and type of hearing device
- Challenging communication situations and current cognitive status
- Results from any client and/or family surveys or questionnaires
- Hearing technology expectations of the person receiving services and/or their family/significant others
- Educational/vocational implications

Speech-Language Assessment and Plan of care if Treatment is Recommended:

- Auditory Skills – Speech sound detection and production
- Standardized comprehensive receptive and expressive language assessment
- Non-Standardized or informal speech-language assessment language/speech samples, or a descriptive analysis of informal findings.
- Speech Sound Assessment or phonetic inventory
- Use of verbal and non-verbal communication
- Parent report/clinical observation of pragmatic language skills and functional communication skills with family and peers
- Use of hearing technology
- Alternative communication skills such as auditory, visual or a combination of auditory-visual communication skills, lip-reading, listening skills
- Include plan of care with long and short-term goals and estimated time for attainment
- Frequency and intensity of treatment recommended
- Prognosis for Improvements
- Referral to other professionals and services as appropriate

- The evaluation process may include the selection and administration of standardized tests, portions of standardized tests, non-standardized tests and/or static and dynamic procedures. Ongoing assessment of communication skills is important because these skills are dynamic and may change over time.

ST Management

Requirements for Speech Therapy Visits

- In order to establish medical necessity for speech therapy services, the following criteria must be met.
  - The treatment must be considered specific and effective for the patient's condition under evidence based practice guidelines.
  - Frequency and Duration must be considered acceptable under established standards of practice.
  - The complexity of the condition must be such that the skills of a speech therapist are required for the frequency requested.
  - Habilitative and Rehabilitative services- A positive prognosis must established that the patient's condition is expected to improve from the services provided.
  - Maintenance-Services are required to maintain the member's current condition or to prevent or slow deterioration of the member's condition. Coverage of maintenance service is health plan specific.
  - Continuation of care is supported by functional progress resulting from a positive response to skilled treatment.

Frequency and Duration

- Treatment frequency and duration must be based on:
  - Severity of objective clinical findings,
  - Presence of and number of complicating factors and comorbidities,
  - Natural history and chronicity of condition,
  - Expectation for functional improvement with skilled intervention,
  - Response to treatment provided
  - Patient's level of independence

Treatment Considerations

- Management will vary depending on the specific needs of the individual. It may include treatment approaches to include:
  - Listening and Spoken Language - The Listening and Spoken Language approach to language development teaches infants and young children with hearing loss to listen and talk with the support of hearing technology such as hearing aids, assistive listening devices (such as an FM system) or cochlear implants.
  - Cued speech or Cued Language – The approach combines the natural mouth movements of speech and eight hand movements near your mouth as you

speak. These movements show sounds and words. They help with understanding what others say.

- American Sign Language, or ASL uses hand and body movements in place of speaking. The rules for how to put words together in ASL are different than spoken English. For example, you say, "Do you want a drink?" In ASL, it is, "Drink you want?"
- Total communication – Uses a combination of methods to teach adults and children to communicate including a form of sign language, finger spelling, speech reading speaking and amplification
- Auditory-Verbal Therapy: Auditory-Verbal Therapy is an evidence based treatment program that facilitates optimal acquisition of spoken language through listening by newborns, infants, toddlers, and young children who are deaf or hard of hearing. Auditory-Verbal Therapy promotes early diagnosis, one-on-one therapy, and state-of-the-art audiologic management and technology. Parents and caregivers actively participate in therapy. Through guidance, coaching, and demonstration, parents become the primary facilitators of their child's spoken language development. Ultimately, parents and caregivers gain confidence that their child can have access to a full range of academic, social, and occupational choices. Auditory-Verbal Therapy must be conducted in adherence to the Principles LSLS of Auditory-Verbal Therapy" (AG Bell Academy, 2012).

Treatment Plan Timeline

- Frequency and duration of services is based upon the specific needs of the individual at the time of the evaluation. In addition, symptoms will change over time. Therefore, discharge planning will involve consideration of maximum potential achieved and individual family circumstances.

Major Stages of Auditory Development

- Detection- The ability to indicate the presence of sound in the environment
- Discrimination- The ability to differentiate between two sounds (same/different)
- Identification/Recognition- The ability to attach meaning to a sound. Ex: Identify the correct picture when a word is spoken
- Comprehension- The ability to understand conversational speech with only auditory input.

Early Intervention

The American Academy of Pediatrics recommends beginning the process for early intervention at birth for children diagnosed with hearing loss. The following goals were developed by the American Academy of Pediatrics to support access to early intervention for this population.

American Academy of Pediatrics (AAP) Early Hearing Detection and Intervention (EHDI) Goals

- Ensure every child with hearing loss is diagnosed and receives appropriate, timely intervention.
- Enhance pediatricians', other physicians', and non-physician clinicians' knowledge about the EHDI 1-3-6 guidelines—screening by 1 month of age, diagnosis of hearing loss by 3 months of age, and entry into early intervention (EI) services by 6 months of age.
- Ensure newborn hearing screening results are communicated to all parents and reported in a timely fashion according to state laws, regulations, and guidelines. Incorporate EHDI into an integrated, medical home approach to child health. Cited from: https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/PEHDIC/Pages/Early-Hearing-Detection-and-Intervention.aspx.
- Children with hearing loss have the potential to maintain development with same age peers if appropriate amplification and intervention services are pursued. A selection of devices such as Bone anchored hearing aids (BAHA), Cochlear Implants (CI), and hearing aids are utilized for amplification. The earlier appropriate amplification is fit and monitored, the better the prognosis for speech and language development in infants and toddlers. Children with hearing loss may not reach full maturity in speech sound development without early intervention with appropriate amplification. Infants and young children with a pre-linguistic onset of hearing loss can exhibit noticeable delays in their entire speech production system.
- Speech and language intervention along with appropriate amplification is critical to communication development. Actively involving a child's caregivers in early intervention can lead to better outcomes for treatment. An interdisciplinary approach ensures that both components for successful outcomes are present. Amplification must be monitored at intervals to verify that the patient is receiving adequate input from his or her device. Speech and language intervention is needed to focus on auditory skills to support the patient's ability to understand and interpret the sound being received. The elimination of either of these factors can lead to significant delays in development and the lack of appropriate use of the technology available.
- The auditory stages of development include a hierarchy of four levels of auditory skill. Some auditory development will develop naturally, particularly with early, high quality, monitored amplification. However, skilled therapy is critical to address those skills that need direct instruction in both early invention and school age children.

School Age

As children progress into school age years, the expectations for language utilization in both academic and social settings increases. Children who have not received the benefits of both early intervention and appropriate amplification often need speech and language services at an increased intensity as they attempt to play "catch up" with their peers. Children who have received these services however, can be on level with peers and need less frequent or possibly maintenance level support. Ongoing collaboration with teachers, caregivers, and community members (coaches, counselors, and organization leaders) to support effective communication is needed consistently

throughout the school years. Services to support success in social and academic settings is often needed throughout the school age years.

Adolescent/Young Adult

An increase in the incidence of acquired hearing loss versus congenital hearing loss occurs in this age group. Speech therapy services include support and maintenance care for patients who were born hearing impaired, and then those who have experienced acquired hearing loss due to a medical issues, trauma, or abusive behaviors such as drugs or excessive loud noise. Noise Induced Hearing Loss is the leading cause of acquired hearing loss in the adolescent/young adult population. Personal listening devices used without monitoring decibel levels have resulted in an increase in hearing loss.

Adult

Hearing loss in the adult population is primarily due to aging, but trauma and other medical conditions are factors as well. A skilled audiologist is able to provide appropriate amplification to support activities of daily living. Speech therapy for this population is primarily maintenance to support the utilization of new amplification. Aural rehabilitation is typically not a primary cause of concern, as a consistent foundation of auditory skill has already been established.

Providing family members, caregivers, employers, co-workers, and other communication partners training in communication techniques and strategies to facilitate effective communication with the hearing impaired individual is critical part of the speech therapist role. Counseling and support may be needed as patients adjust to the knowledge of their hearing loss and the impact on activities of daily living. Services should focus on a program designed to treat the specific areas of weakness with focus on improving functional communication so that the individual may participate in a variety of communication situations within his or her community or employment.

Skilled Maintenance Care

Maintenance care is defined as services required to maintain the member's current condition or to prevent or slow deterioration of the member's condition.

Referral Guidelines

- If improvement does not meet the above guidelines or improvement has reached a plateau:
  - Refer patients to the referring physician or specialist to explore other alternatives.
  - Refer individual or the individual's family to an audiologist to monitor and evaluate changes in hearing acuity, modifications to hearing aids, other assistive listening devices, or cochlear implant.
  - Refer individual or the individual's family to the appropriate resources available for early intervention programs, special education needs and school support personnel.
  - Refer individual or the individual's family to professionals experienced with guidance and counseling for hearing impaired individuals.
  - Refer individual or the individual's family to community based services for vocational counseling or organizations dealing with the hearing impaired population.

Discharge Criteria

- The patient has acquired age appropriate communication skills
- The patient has not shown progress towards reasonable goals, and has reached a plateau.
- Caregivers are able to independently carryover the treatment plan in the home environment to support continued progress.
- The goals do not require the skills of a skilled speech language therapist. Goals that can be implemented and carried out by a caregiver are not considered medically necessary.
- The goals are duplicative in a nature to another therapist's current treatment plan
- The patient has met all goals. No further treatment is indicate

References

1. American Academy of Pediatrics. Early Hearing Detection and Intervention. https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/PEHDIC/Pages/Early-Hearing-Detection-and-Intervention.aspx . Accessed July 13, 2018
2. Alexander Graham Bell Association for the Deaf and Hard of Hearing. https://www.agbell.org/. Accessed June 12, 2018
3. American Speech-Language-Hearing Association. Admission/discharge Criteria in Speech-Language Pathology. http://www.asha.org/policy/GL2004-00046/ Accessed September 5, 2018
4. American Speech-Language-Hearing Association. Preferred Practice Patterns for the Profession of Speech-Language Pathology http://www.asha.org/policy/PP2004-00191/. Accessed September 5, 2018
5. American Speech-Language-Hearing Association.The Roles of Speech-Language Pathologists and Teachers of Children Who Are Deaf and hard of Hearing in the Development of Communicative and Linguistic Competence 2004 https://www.asha.org/policy/GL2004-00202/ Accessed May 22, 2018.
6. American Speech-Language-Hearing Association. Hearing Loss - Beyond Early Childhood (Practice Portal). Accessed May 22, 2018. https://www.asha.org/Practice-Portal/Clinical-Topics/Hearing-Loss/
7. American Speech-Language Hearing Association. Permanent Childhood Hearing Loss (Practice Portal) Accessed May 22, 2018. https://www.asha.org/Practice-Portal/Clinical-Topics/Permanent-Childhood-Hearing-Loss/
8. American Speech-Language Hearing Association. Hearing Loss-Adults (Practice Portal) Accessed May 22, 2018. https://www.asha.org/public/hearing/Hearing-Loss-in-Adults/
9. American Speech-Language Hearing Association. Cochlear Implants (Practice Portal). Accessed May 22, 2018. https://www.asha.org/public/hearing/cochlear-implant/
10. American Speech-Language-Hearing Association. Scope of Practice in Speech-Language Pathology http://www.asha.org/policy/SP2016-00343/. Accessed September 5, 2018.
11. American Speech-Language Hearing Association. Speech Language Pathology Medical Review Guidelines. https://www.asha.org/practice/reimbursement/SLP-medical-review-guidelines/ Accessed September 5, 2018.
12. Bowers L. Auditory-Verbal therapy as an intervention approach for children who are deaf: a review of the evidence. Evidenced Based Practice Briefs. 2017;11(6):1-8
13. Conner CM, Craig H, Raudenbush S, Heavner K., Zwolan T. The age at which young deaf children receive cochlear implants and their vocabulary and speech-production growth: Is there an added value for early implantation? Ear & Hearing. 2006;27(6):628-644
14. Dettman S, Pinder D, Briggs R, Dowell R, Leigh J. Communication development in children who receive the cochlear implant younger than 12 months: risks versus benefits. Ear & Hearing. 2007;28(2)11S–18S
15. Forli F, Arslan E, Bellelli S, et al. Systematic review of the literature on the clinical effectiveness of the cochlear implant procedure in paediatric patients. Acta Otorhinolaryngologica Italica. 2011;31(5):281-298.
16. Fulcher A., Purcell A., Baker E., Munro N. Listen up: Children with early indentified hearing loss achieve age appropriate language outcomes by 3 years-of-age. International Journal of Pediatric Otorhinolaryngology. 2017;76:1785-1794
17. Greaver L, Eskridge H,Teagle HF. Considerations for pediatric cochlear implant recipients with unilateral or asymmetric hearing loss: Assessment, device fitting, and habilitation. American Journal of Audiology. 2017;26(2):91-98. doi: 10.1044/2016_AJA-16-005
18. Kaipa R, Danser M. The efficacy of auditory-verbal therapy in children with hearing impairment: A systematic review from 1993-201. International Journal of Pediatric Otorhinolaryngology. 2016;86:124-134
19. Nordvik O, Heggdal P, Brännström J, Vassbotn F, Aarstad A, Aarstad H. Generic quality of life in persons with hearing loss: a systematic literature review. BMC Ear, Nose and Throat Disorders. 2018;18:1-13

20. Pimperton H, Kennedy C. The impact of early identification of permanent childhood hearing impairment on speech and language outcomes. Archives of Disease in Childhood. 2012;97:648-653
21. Pratt S. Aural Habilitation update: The role of speech production skills of infants and children with hearing loss. The ASHA Leader. 2005;10:8-33
22. Punch J, Elfenbein J, James R. (2011). Targeting Hearing Health Messages for Users of Personal Listening Devices. American Journal of Audiology. 2011;20(1):69-82. doi: 10.1044/1059-0889(2011/10-0039
23. Rosenzweig E. Auditory verbal therapy: A family-centered listening and spoken language intervention for children with hearing loss and their families. Perspectives of the ASHA Special Interest Groups. 2017;2(9):54-65
24. Yoshinaga-Itano C, Baca RL, Sedey AL. Describing the trajectory of language development in the presence of severe to profound hearing loss: A closer look at children with cochlear implants versus hearing aids. Otology & neurotology : official publication of the American Otological Society, American Neurotology Society [and] European Academy of Otology and Neurotology. 2010;31(8):1268-1274. doi:10.1097/MAO.0b013e3181f1ce07.

Hearing Screening

Hearing screening will be provided to children or adults during the initial Speech and Language Evaluation unless results of a comprehensive audiologic assessment completed within a month of the initial speech language evaluation have been received by the provider. Follow up hearing screening is mandated when progress has not been achieved or is minimal and evidence suggests risk for hearing impairment affecting body structure/function, activities, or participation.

The Newborn Hearing Screening program has been cited as successfully screening the hearing of 97.9% babies born in the United States each year. However, these screenings may not adequately detect a variety of diagnoses for hearing thresholds are outside the typical range. ASHA states by the time children reach school age that approximately 15% of children in the United States display some type of hearing thresholds outside the typical range of 16dB or greater.

The optimum means of identification and management of children found to have hearing thresholds outside the typical range through Hearing Screenings. Reduced hearing thresholds may result in difficulties in learning speech and language, poor school performance, development of social skills and emotional problems. Speech Language Pathologists are mandated by ASHA to practice their role in the identification of hearing thresholds outside the typical range and ensure the appropriate referrals and management for their patients as stated in ASHA's Scope of Practice in Speech-Language Pathology (ASHA, 2016b).

Clinical Process

These screening services are limited to pure-tone air conduction screening for initial identification and/or referral purposes. These are pass/fail procedures to identify individuals who require referral for further audiologic assessment or other professional and/or medical services. Results of this testing must be included in any speech-language comprehensive evaluation report

Screening for hearing impairment consists of pure tones presented via earphones at 1000, 2000, and 4000 Hz at 20 dB HL for children (ages 3–18) via conventional or conditioned play audiometry, and at 25 dB HL for adults.

- Patients/clients who do not respond at any frequency in either ear are rescreened.
- Patients/clients who fail the original screening or rescreen are referred to an audiologist for an audiologic evaluation.
- Children ages 6 months to 3 years must have screening completed through OAEs and AABRs. These require referral to and testing by an accredited Audiologist. Results of this testing must be included in any comprehensive speech language evaluation report.
- When screening the hearing of children with a diagnosis of Autism Spectrum Disorder, ASHA recommends the following suggestions and compensations screening their hearing.
  - “minimizing distractions in the test suite;
  - using visual schedules to support audiological testing sequence;
  - partnering with parents and the managing SLP, who are more familiar with the individual's behaviors, interests, and needs;
  - using the individual's primary/preferred language form (e.g., spoken language, sign, AAC devices, or picture symbols);
  - increasing the individual's familiarity with assessment procedures prior to testing, such as through the use of social stories (Gray, White, & McAndrew, 2002), a visual schedule, and/or practicing with a favorite doll or stuffed animal;
  - allowing the individual to touch and explore earphones that will be used during testing to help him or her overcome tactile sensitivity and related anxiety;
  - incorporating flexibility in the assessment situation (e.g., testing order or earphone type);
  - practicing appropriate motor movements in response to test stimuli;
  - knowing what is reinforcing to the individual (e.g., food, clips from favorite videos, playing with a favorite toy) and using these reinforcers to reward appropriate behavioral responses to test stimuli;
  - considering the use of multiple sessions to obtain complete results;
  - being aware of the individual's signs of distress and terminating testing before the situation escalates (Brueggeman, 2012; Davis & Stieger, 2010);
  - considering the need for auditory brainstem response (ABR) testing when behavioral audiometry is not possible” (The ASHA Leader 2012, January 17))*

*Taken from the ASHA Practice Portal. Autism: Assessment; Speech and Language Assessment; Special Considerations: Audiologic Assessment

Individuals Providing Service

The hearing screening is conducted by appropriately credentialed and trained speech-language pathologists, possibly supported by speech-language pathology assistants under appropriate supervision.

Hearing screening identifies those persons who are likely to have hearing impairments or disorders that may interfere with body function/structure and/or activity/participation as defined by the World Health Organization (WHO) (see *Fundamental Components and Guiding Principles*).

Screening may result in recommendations for rescreening, or referral for comprehensive audiologic assessment or other medical examinations or services.

Risk Indicators Associated with Hearing Loss in Childhood

- The following are risk indicators that are associated with permanent congenital, delayed-onset, or progressive hearing loss in childhood. Risk indicators that are marked with an asterisk "*" are of greater concern for delayed-onset hearing loss.
  - Caregiver concern* regarding hearing, speech, language, or developmental delay.
  - Family history* of permanent childhood hearing loss.
  - New hospital protocol for newborn Hearing Screening. Too many babies are lost to follow up for abnormal hearing screening in hospital. These babies must be tracked to ensure follow up. The follow up hearing tests for these babies MUST BE OAE or AABR, NOT behavioral. Audiologic diagnosis is to be completed by 3 months of age with enrollment in Early Intervention by 6 months if hearing thresholds are outside the typical range.
  - Neonatal intensive care of more than 5 days or any of the following regardless of length of stay: ECMO,* assisted ventilation, exposure to ototoxic medications (Gentamycin and Tobramycin) or loop diuretics (Furosemide/Lasix), and hyperbilirubinemia that requires exchange transfusion.
  - In utero infections, such as Cytomegalovirus (CMV*), Zika Virus, herpes, rubella, syphilis, and toxoplasmosis. CMV requires testing every 6 month to age 3 and annually to age 6 MONITOR hearing
  - Craniofacial anomalies, including those that involve the pinna, ear canal, ear tags, ear pits, and temporal bone anomalies.
  - Physical findings, such as white forelock, associated with a syndrome known to include a sensorineural or permanent conductive hearing loss.
  - Syndromes associated with hearing loss or progressive or late-onset hearing loss,* such as neurofibromatosis, osteopetrosis, and Usher syndrome; other frequently identified syndromes include Waardenburg, Alport, Pendred, and Jervell and Lange-Nielson.
  - Neurodegenerative disorders,* such as Hunter syndrome, or sensory motor neuropathies, such as Friedreich ataxia and Charcot-Marie-Tooth syndrome.
  - Culture-positive postnatal infections associated with sensorineural hearing loss,* including confirmed bacterial and viral (especially herpes viruses and varicella) meningitis. Any infection of brain or ears, must have hearing follow up within 3 months of occurrence

- Asphyxia or Head trauma, especially basal skull/temporal bone fracture* that requires hospitalization.
- Chemotherapy.*

Setting

Screening is conducted in a clinical or natural environment conducive to obtaining valid screening results. Settings for screening may include hospitals, clinics, schools, homes, or hospice facilities. Ambient noise levels may not always meet ANSI standards for pure-tone threshold testing but are sufficiently low to allow accurate screening.

Equipment

All equipment is used and maintained in accordance with the manufacturer's specifications. Electroacoustic equipment meets ANSI and manufacturer's specifications.

Documentation

Documentation includes a statement of identifying information, screening results, and recommendations, indicating the need for rescreening, assessment, or referral within the initial speech language evaluation. If a rescreening is mandated during treatment services then the documentation will be within the progress report.

Results of screening are reported to the individual and family/caregivers, as appropriate. Reports are distributed to referral source and other professionals when appropriate and with written consent.

References

1. American Academy of Audiology, American Academy of Pediatrics, American Speech-Language-Hearing Association, Directors of Speech and Hearing Programs in State Health and Welfare Agencies. Joint committee on infant hearing; Year 2000 position statement: Principles and guidelines for early hearing detection and intervention programs. Pediatrics.2000;106 :798– 817 https://www.ncbi.nlm.nih.gov/pubmed/11015525. Accessed September 5, 2018.
2. American Speech-Language-Hearing Association. Guidelines for audiologic screening. Rockville, MD;1997 A
3. American Speech-Language-Hearing Association. Guidelines for the Audiologic Assessment of Children From Birth to 5 Years of Age. Rockville, MD;2004
4. American Speech-Language-Hearing Association. Scope of Practice in Audiology. 2004 http://www.asha.org/policy/SP2004-00192/ Accessed September 5, 2018..
5. American Speech-Language-Hearing Association. Scope of Practice in Speech-Language Pathology. 2016. http://www.asha.org/policy/SP2016-00343/ . Accessed September 5, 2018.
6. American Speech-Language-Hearing Association. Clinical Practice by Certificate Holders in the Profession in Which They are Not Certified. 2004. ASHA Supplement 24, 39–42
7. Boudewyns et al. Auditory neuropathy spectrum disorder (ANSD) in referrals from neonatal hearing screening at a well-baby clinic. Eur J Pediatr, 2016 175(7):993-1000. Doi: 10.1007/s00431-016-27355.
8. Brueggeman, P. M. 10 tips for testing hearing in children with autism. The ASHA Leader. Januanry 2012.
9. Guidelines for rescreening in the medical home after a “do not pass”. JPediatr 2014.
10. Hunter LL, Meinzen-Derr J, Wiley S, Horvath CL, Kothari R, Wexelblatt S. Influence of the WIC program on loss to follow-up for newborn hearing screening. JPediatr. 2016. 138 (1).
11. Joint Committee on Infant Hearing position statement directory: http://www.jcih.org/posstatemts.htm. Accessed September 5, 2018.
12. Lieu, J. E. C. Speech-language and educational consequences of unilateral hearing loss in children. Arch Otolaryngol Head Neck Surg. 2004. 130(5), 524-530.
13. Morton, C.C., Nance, W.E. Current concepts: Newborn hearing screening- a silent revolution. N Engl J Med. 2006. 354:2151-64.
14. Maximum Permissible Ambient Noise Levels for Audiometric Test Rooms. American National Standards Institute. Acoustical Society of America. New York, NY 1991.
15. Principles and Guidelines for Early Hearing Detection and Intervention Programs: Position statement. JPediatr. 2007. 120 (4): 2007 898 -921 https://www.cdc.gov/ncbddd/hearingloss/documents/JCIH_2007.pdf . Accessed September 5, 2018.
16. Principles and Guidelines for Early Intervention After Confirmation that a Child is Deaf or Hard of Hearing. Supplement to the JCIH 2007 Position statement: JPediatr. 2013 (131) 4. http://pediatrics.aappublications.org/content/131/4/e1324. Accessed September 5, 2018.
17. Specifications for Instruments to Measure Aural Acoustic Impedance and Admittance (aural acoustic immittance). American National Standards Institute. Acoustical Society of America. New York, NY 1987.
18. Specifications for Audiometers. American National Standards Institute. Acoustical Society of America. New York, NY. 1996
19. National Institute on Deafness and Other Communication Disorders (NIDCD). Age at which hearing loss begins. 2010.
20. Niskar AS, Kieszak SM, Holmes A, Esteban E, Rubin C, Brody DJ. Prevalence of hearing loss among children 6 to 19 years of age: JAMA, 1998. *279*(4), 1071-1075.
21. Roeser RJ, Valente M & Hosford-Dunn H. Audiology: Diagnosis Vol. 1, 2nd ed. 2007. New York, NY: Thieme.
22. Sininger YS, Grimes A & Christensen E. Auditory development in early amplified children: Factors influencing auditory-based communication outcomes in children with hearing loss. Ear Hear. 2010. *31*(2),166-185.

23. Smith, RJH, Shearer AE, Hildebrand MS & Van Camp G. Deafness and Hereditary Hearing Loss overview. In R. A. Pagon (Ed.). GeneReviews 2014. www.ncbi.nlm.nih.gov/books/NBK1116/.. Accessed September 5, 2018.
24. Yoshinaga-Itano C. Efficacy of early identification and early intervention. Semin Speech Lang.1995;16 :115– 123
25. Yoshinaga-Itano C, Sedey AL, Coulter DK, Mehl AL. Language of early- and later-identified children with hearing loss. Pediatrics.1998;102 :1161– 1171

Pediatric Spoken Language Evaluation

Definition

A comprehensive spoken language evaluation assesses speech, language, cognitive-communication in children, including identification of impairments, associated activity and participation limitations, and context barriers and facilitators.

Criteria for Evaluation

"Children of all ages are eligible for speech-language pathology assessment when their ability to communicate effectively is reduced or impaired or when there is reason to believe (e.g., risk factors) that treatment would prevent the development of a speech, language, or communication, reduce the degree of impairment; lead to improved functional communication or prevent the decline of communication."

- Eligibility for evaluation is indicated if one or more of these factors are present:
  - Referral from the individual, family member, audiologist, physician, teacher, other speech-language pathologist, or interdisciplinary team because of a suspected speech, language, or communication, disorder.
  - Failure to pass a screening assessment for communication and/or swallowing function.
  - The individual is unable to communicate functionally across environments and communication partners.
  - The individual's communication abilities are not comparable to those of others of the same chronological age, gender, ethnicity, or cultural and linguistic background.
  - The individual's communication skills negatively affect health, safety, social or vocational status.
  - The individual, family, and/or guardian seek services to achieve and/or maintain functional communication (including alternative and augmentative means of communication).

Provider Requirements

- A speech-language pathologist (SLP) has a master's or doctoral degree and is licensed, if applicable, as a speech-language pathologist by the state in which he or she is practicing. The SLP possesses a Certificate of Clinical Competence (CCC) from ASHA or has met all the educational requirements leading to the CCC, and is in the clinical fellowship (CF) year or is otherwise eligible for the CCC.
  Licensed and provisionally licensed speech-language pathologists; and
  Home health agencies that employ or contract with licensed speech-language pathologists.
- Speech-Language evaluations may not be performed by speech language therapy assistants

Evaluation Tests

- Standardized for a specific disorder identified; or
- Consist of a standardized caregiver report format; or
- Composed of professionally acceptable therapeutic observational techniques utilizing a formalized
- Checklist or observational tools
- Age equivalent score reporting does not report a standard score and is not an acceptable evaluation test.

Commonly Used Assessment Tools for Language			
Language Test	**Ages**	**Description**	**Average**
Clinical Evaluation of Language Fundamentals-5 (CELF-5), Wiig, Semel, & Secord, 2013	5:0-21-11	Identifies deficits in content and form that characterize mature language use (semantics, morphology, syntax, memory, reading, writing, and pragmatics)	85-115
Clinical Evaluation of Language Fundamentals-Preschool-2 (CELF-Preschool-2) English and Spanish, Wiig, Secord, & Semel, 2004	3:0-6:11	Used to identify, diagnose and perform follow-up evaluations of language deficits in preschool children (receptive, expressive, content, structure and pragmatics are assessed)	85-115
Preschool Language Scale-5 (PLS-5), Zimmerman, Steiner, & Pond, 2011	Birth-7:11	Identifies auditory comprehension, expressive language and total language deficits through assessment with manipulatives	85-115
Comprehensive Assessment of Spoken Language-2 (CASL-2), Carrow-Woofolk, 2017	3-0-21-11	Assesses comprehension, expression and retrieval in 4 areas; lexical/semantic, syntactic, supralinguistic, and pragmatic	85-115
The Listening Comprehension Test-2, Bowers and Wilkins, 2006	6:0-11:11	Listening processing and comprehension for main idea, details, reasoning, vocabulary, and understanding messages	85-115
Oral and Written Language Scales-II (OWLS-II), Carrow-Woolfolk, 2011	3:0-21:11	Assesses listening comprehension and oral expression; reading and writing are also assessed for ages 5-21	85-115
Rossetti- Infant and Toddler Scale, Rossetti, 2006	Birth- 3-11	Evaluates pragmatics, language comprehension, language expression, gesture, play, interaction-attachment	Age Performance Rating Scale
Developmental Assessment of Young Children-2 (DAYC-2), Voress & Maddox, 2012	Birth-5-11	Various domains are assessed including the communication domain containing expressive and receptive language assessments	85-115
Test of Auditory Comprehension of Language-4 (TACL-4), Carrow-Woolfolk, 2014	3:0-12:11	Assesses receptive spoken vocabulary, grammar, and syntax	85-115

➢ Receptive-Expressive Emergent Language-3 (REEL-3), Bzoch, League, et al, 2003	Birth-3:11	➢ Assesses receptive, expressive language and inventory of vocabulary	85-115
➢ Test of Early Language Development-4 (TELD-4), Hammill, Reid, & Hresko, 1999	3:0-7:11	➢ Evaluates receptive, expressive, and spoken language	85-115
➢ Illinois Test of Psycholinguistic Abilities-3 (ITPA-3), Hammill, Mather, & Roberts, 2001	5:0-12:11	➢ Assesses oral language, writing, reading, and spelling	85-115
➢ Structured Photgraphic Expressive Language Test-3 (SPELT-3), Dawson, Stout, and Eyer, 2003	4:0-9:11	➢ Assesses morphosyntactic development including grammar, syntax, morphology	85-115
➢ Test of Language Development-Primary-4 (TOLD-P:4), Hammill & Newcomer, 2008	4:0-8:11	➢ Evaluates semantics, grammar, listening, organizing, speaking and overall language	85-115
➢ Test of Language Development-Intermediate-4 (TOLD-I:4), Newcomer & Hammill, 2008	8:0-17:11	➢ Assesses semantics, grammar, listening, organizing, speaking and total language	85-115
➢ Test of Auditory Processing (TAPS-3), Martin & Brownell, 2005	4:0-18:11	➢ Assessed are phonological skills, auditory memory, and auditory comprehension and reasoning	85-115
➢ Test of Language Competence-E (TLC-E), Wiig & Secord, 1989	5:0-18:11	➢ Assesses expressive, receptive, and pragmatic language	85-115
➢ Test of Adolescent and Adult Language-4 (TOAL-4), Hammill & Brown, et al, 2007	12:0-24:11	➢ Measures spoken, written, and general language are assessed	85-115
➢ Test of Word Finding-3 (TWF-3), German, 2015	4:6-12:11	➢ Assesses expressive language, word finding	85-115
➢ Test of Adolescent/Adult Word Finding-2 (TAWF-2), German, 2016	12:0-80-11	➢ Assesses expressive language, specifically word retrieval	85-115
➢ Test of Early Communication and Emergent Language (TECEL), Huer & Miller, 2011	2 weeks-24 months	➢ Assesses earliest communication behaviors and emerging language abilities	85-115
➢ Comprehensive Test of Phonological Processing-2 (CTOPP-2), Torgesen, Rashotte, & Pearson, 2013	4:0-24:11	➢ Assesses phonological awareness, phonological memory, and rapid naming.	85-115
➢ Peabody Picture Vocabulary Test-4	2:6-90+	➢ Assesses single word receptive vocabulary	85-115

(PPVT-4), Dunn & Dunn, 2007			
➢ Expressive Vocabulary Test-2 (EVT-2), Williams, 2007	2:6-90+	➢ Assesses single word expressive vocabulary	85-115
➢ Receptive One Word Picture Vocabulary Test-4 (ROWPVT-4), Martin & Brownell, 2011	2:0-80+	➢ Assesses single word receptive vocabulary	85-115
➢ Expressive One Word Picture Vocabulary Test-4 (EOWPVT-4), Martin & Brownell, 2011	2:0-70+	➢ Assess single word expressive vocabulary	85-115
➢ Batelle Developmental Inventory-2 (BDI-2), Newborg, 2014, 2016	Birth-7:11	➢ Measures personal-social, adaptive, motor, communication, and cognitive	85-115
➢ Bayley Scales of Infant and Toddler Development-3 (Bayley-111), Bayley, 2005	1-42 months	➢ Assesses across five domains: cognitive, language, motor, social-emotional, and adaptive	85-115
➢ Functional Communication Profile-R (FCP-R), Kleiman, 2003	3:0-Adult	➢ Assesses receptive, expressive, pragmatic language, and speech, motor, sensory	Age-equivalents and level of delay
➢ Augmentative/Alternative Communication Profile, Kovach, 2009	2.0-21:11	➢ Measures skills for developing functional communication through use of AAC includes operation, language, social, and strategic	Frequency score
➢ Sequenced Inventory of Communication Development-Revised (SICD-R), Hedrick and Prather, 1975	4 -48 months	➢ Assesses receptive and expressive language including awareness, understanding, imitation, initiating, and responding	Age levels
➢ Social Language Development Test, Elementary and Adolescent, Huisingh, Loguidice, & Bowers, 2008	6:0-11:11 12:0-17:11	➢ Measures language to infer and express what another person is thinking or feeling within a social context	85-115
➢ Test of Pragmatic Language-2 (TOPL-2), Phelps-Terasaki, & Phelps-Gunn, 2007	6:0-18:11	➢ Assesses social communication in context	85-115
➢ Childhood Autism Rating Scales (CARS-2), Schopler & Van Bourgondien, 2010	2:0-Adult	➢ Helps to identify children with autism and determines symptom severity	
➢ Pragmatic Language Observation Scale (PLOS), Newcomer & Hammill, 2008	8:0-17:11	➢ Assesses spoken language disorders, including attention, and ability to express thoughts clearly	Rating scale
➢ Children's Communication Checklist-2, Bishop, 2006	4:0-16:11	➢ Assesses receptive, expressive, and pragmatic language	85-115 and rating scale

➢ Pragmatic Language Skills Inventory (PLSI), Gilliam & Miller, 2006	5:0-12:11	➢ Assesses initiating, asking for help, participating in games, knowing when to talk, figurative language, predicting consequence	85-115
Commonly Used Assessment Tools for Speech			
➢ (KSPT) Kaufman Speech Praxis Test for Children Kaufman, 1995	2:0-5:11	➢ Items organized from simple to complex motor-speech movements, using meaningful words whenever possible; Imitative, stimulus/response format	85-115
➢ Verbal Motor Production Assessment for Children (VMPAC) Hayden and Square, 1999	3:0-12:11	➢ Identifies children with motor issues that have negative effects on the development of normal speech motor control; assesses three main areas: global motor control, focal oromotor control, and sequencing	Percentiles
➢ The Apraxia Profile, Hickman, 1997	3:0-13:11	➢ Identifies the presence of oral apraxia, and reveal the most problematic oral-motor sequences and movements	Severity level
➢ Moving Across Syllables, Kirkpatrick, Stohr, Kimbrough, 1990	3:0-10:11	➢ Assesses syllable sequencing problems	85-115
➢ Screening Test for Developmental Apraxia of Speech-2 (STDAS-2), Blakely, 2000	4:0-12:11	➢ Measures difference between receptive and expressive language, prosody, verbal sequencing, and articulation	Age discrepancy and # of incorrect productions
➢ Goldman-Fristoe Test of Articulation-3 (GFTA-3), Goldman, & Fristoe, 2015	2:0-21:11	➢ Assesses articulation	85-115
➢ Fisher-Logemann Test of Articulation Competence, Fisher, & Logemann, 1971	3:0-Adult	➢ Assesses phonology-syllable function-prevocalic, intervocalic, and postvocalic	Age-based scores and patterns
➢ Clinical Assessment of Articulation and Phonology-2 (CAAP-2), Secord, & Donohue, 2013	2:6-11:11	➢ Assessed articulation and pho2:6-5:5nology	85-115
➢ Spanish Preschool Articulation Test, Tsugawa & Gomez, 2006	2:6-5:5	➢ Assesses articulation assessment for Spanish speaking preschoolers	85-115
➢ Arizona Articulation and Phonology Scale-4 (Arizona-4), Fudala & Stegall, 2017	18 months-21:11	➢ Measures articulation and phonology	85-115
➢ Hodson Assessment of Phonological Patterns-3 (HAPP-3), Hodson, 2004	3:0-8:0	➢ Assesses phonological deviations	85-115
➢ Bilingual Articulation and Phonological Assessment (BAPA) English and Spanish,	3:0-10:11	➢ Assesses articulation and phonology	85-115

Fernandes & Pratt, et al, 2017			
➢ Photo Articulation Test-3 ➢ (PAT-3), Lippke & Dickey, et al, 1997	3:0-8:11	➢ Assesses articulation	85-115
➢ LinguiSystems Articulation Test (LAT), Bowers & Huisingh, 2010, 2011	3:0-21:11	➢ Assesses articulation; screens for apraxia	85-115
➢ Stuttering Severity Instrument-4 (SSI-4), Riley & Bakker, 2009	2:10-Adult	➢ Assesses stuttering	Severity
➢ Fluency Rating Severity Scale, Thomas, 1974	All Ages	➢ Assesses stuttering, speaking rate	Severity

Goal of Speech Language Evaluation

These evaluations determine the child's level of function and competencies through therapeutic observation and standardized testing measures appropriate to speech and language limitation and specific to the therapeutic services required.

Comprehensive speech-language assessment is conducted to identify and describe

- Underlying Strengths And Weaknesses Related To Speech, Language, And Cognitive Factors That Affect Communication Performance. Differential Diagnosis Should Include The Following
- Effects Of Speech, Language, And Cognitive-Communication On The Individual's Activities (Capacity And Performance In Contexts) And Participation;
- Contextual Factors That Serve As Barriers To Or Facilitators Of Successful Communication And Participation For Individuals With Speech, Language, And Cognitive-Communication Impairments.
- The Accurate Differential Diagnosis Between Communication Disorders And Normal Linguistic Variations (From Life Experiences, Including Bilingual/Multilingual Backgrounds),

Comprehensive speech-language assessment may result in the following:

- Diagnosis of a speech, language, cognitive-communication delay or disorder.
- Clinical description of the characteristics of speech, language, cognitive-communication delay or. disorder
- Identification of a communication difference, possibly co-occurring with a speech, language, and cognitive-communication disorder or delay. Determine if speech and language patterns are the result of a normal phenomenon of dual language acquisition or are the result of a communication disorder
- Prognosis for change (in the individual or relevant contexts).
- Recommendations for intervention and support.

- Identification of the effectiveness of intervention and supports.
- Referral for other assessments or services.

Clinical Process

- Assessment may be static (i.e., using procedures designed to describe current levels of functioning within relevant domains) and/or dynamic (i.e., using hypothesis testing procedures to identify potentially successful intervention and support procedures) and includes the following:
- Relevant case history, including medical status, education, and socioeconomic, cultural, and linguistic backgrounds.
- Review of auditory, visual, motor, and cognitive status.
- Patient/client and family interview.
- Standardized and/or non-standardized measures of specific aspects of speech, spoken and nonspoken language, and cognitive-communication.
- Analysis of associated medical, behavioral, environmental, educational, and social factors.
- Identification of potential for effective intervention strategies and compensations;
- Selection of standardized measures for speech, language, and/or cognitive-communication with consideration for documented ecological validity.
- Follow-up services to monitor communication status and ensure appropriate intervention and support for individuals with identified speech, language, and cognitive-communication disorders.

Scope of Speech Language Evaluation

- Assessment typically includes the following, with consideration made for the age and linguistic development of the child:
  - Relevant case history, including
    - birth and medical history;
    - family history of speech, language, reading, or academic difficulties;
    - family's concerns about the child's language (and speech),
    - languages and/or dialects used in the home, including
      - age and manner of acquisition of the language(s),
      - dialect of the language used,
      - language of choice with peers,
      - progress in receiving English as a second language (ESL) services or adult English language learning classes,
      - academic performance in each language,
      - circumstances in which each language is used;
    - teachers' concerns regarding the impact of child's language difficulties in the classroom;

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- Hearing screening, if audiologic evaluation, dated within the previous year, not available;
- Oral mechanism examination;
  - Muscle development of the jaw, lips and tongue and the integrity of the oral structures (hard and soft palate, jaw, maxilla, lips and tongue).
  - Oral motor reflexes as well as purposeful movement through imitation of non-speech actions.
  - Diadokokinetic rate: muscle movement for coordination and sequencing a repetitive string of sounds rapidly (i.e., puh, tuh, kuh or buttercup).

- Respiratory examination;
  Duration and control of inhalation and exhalation,
  Coordination of expiration with speaking.
- Subjective judgment of function for voice and fluency
  Voice pitch, quality, resonance and volume,
  Fluency of speech production.
- Administer spoken language testing using standardized tests and/or professionally acceptable therapeutic observational techniques utilizing a formalized checklist or observational tools. When evaluating bilingual children use culturally and linguistically adapted test equivalents in both languages to compare potential deficits.
- Phonology at word level through conversation, including identification of phonological processes, apraxia or dysarthria and phonological awareness,
- Receptive and expressive language skills, including
  - Semantics,
  - Morphology,
  - Syntax,
  - Pragmatics, including discourse-level language skills (conversation, narrative, expository).
  - Literacy, if chronologically and/or functionally appropriate when a language learning disorder is present.
- Analysis of Results
  - Interpret the clinical findings of the speech/language evaluation. If the performance measure falls more than 1 standard deviation below the mean for their primary language on one or more standardized spoken language test, a child may be diagnosed with a speech or language disorder.
  - Determine the needs and abilities of the child, parental concerns and the potential for functional improvement within a reasonable time frame,
  - Determine an appropriate plan of care based upon the child's medical history, cultural and linguistic differences, analysis of test results and functional impact,
- Plan of Care development
  - Develop an individual program designed to address the child's immediate communication needs so that the child may participate in a variety of communication situations within his/her home, school and/or community. Utilize

the communication strengths of the child and the expectations of the family when developing this program.
- State the types of therapy to be provided (articulation, phonological processes, receptive language, expressive language, pragmatics, etc.)
- Develop objective, achievable and measureable long and short term goals targeting delayed or disordered skills identified through analysis of test results.
- Provide a baseline measure for each short term goal presented.
- Emphasize practice and repetition to ensure acquisition of new sounds, syllables and words which can be enhanced with tactile, kinesthetic, auditory and visual prompts.
- Develop a home program to facilitate carry-over of skills learned in treatment to all environments in the child's world
- Provide family members, caregivers, guardian, siblings, educators and/or other communication partners training in communication techniques and strategies to facilitate effective communication with child including recognition and acknowledgement of the child's communication attempts and identify and respond appropriately to the child's communicative attempts.
- Provide parents with information regarding community support groups and/or programs.
- Continue to dynamically assess the child each session and formally re-test once a year because symptoms will change over time.
- Select and implement appropriate Augmentative or Alternative Communication system for those children with significant speech and/or language difficulties.

Outcomes

Assessment is conducted to identify and describe —

- Underlying strengths and weaknesses related to factors that affect communication performance such as play, pre-speech, babbling, jargon, early words and sentences, and communicative intent;
- Effects of preschool communication impairments on the infant's/toddler's activities (capacity and performance in everyday communication contexts) and participation; such as day care and family/caretaker interaction;
- Contextual factors that serve as barriers to or facilitators of successful communication and participation for infants/toddlers with communication development risks.

Assessment may result in the following:

- Diagnosis of a communication disorder or high risk of developmental difficulties.
- Identification of a communication difference.
- Clinical description of the characteristics of the current level of communication development and/or impairment.
- Prognosis for change (in the infant/toddler and/or relevant contexts).
- Recommendations for intervention and support.

- Identification of the effectiveness of intervention and supports.
- Referral for other assessments (e.g., swallowing and feeding) or services.

Documentation

- The initial assessment establishes the baseline data necessary for evaluating expected habilitation or rehabilitation potential, setting realistic goals, and measuring communication status at periodic intervals. It should include objective or subjective baseline diagnostic testing (standardized or non-standardized), interpretation of test results, and clinical findings. If baseline testing cannot be accomplished for any reason, this should be noted in the initial assessment or progress notes, along with the reason(s). Reassessments are appropriate when the patient exhibits a change in functional speech and language communication skills.
- Documentation includes pertinent background information, assessment results and interpretation, prognosis, and recommendations, and indicates the need for further assessment, follow-up, or referral. When intervention services are recommended, information is provided concerning frequency, estimated duration, and type of service (e.g., individual, group, home program).
- Documentation addresses the type and severity of the communication impairment, or risks of impaired communication development, and associated conditions (e.g., medical diagnoses).
- Documentation includes summaries of previous services in accordance with all relevant legal and agency guidelines.
- Speech-language pathologists prepare, sign, and maintain documentation that describes the professional service. Pertinent background information, results and interpretation, prognosis, and recommendations should be included. Recommendations may include the need for further assessment, follow-up, or referral. When intervention is recommended, frequency, estimated duration, and type of service (e.g., individual, group) must be specified.
- Documentation should include:
  - Findings of the speech-language evaluation
  - Objective and subjective measurements of functioning
  - Short-term and long-term measurable goals, with expectations for progress
  - Expected frequency of treatment
  - Reasonable estimate of the time needed to reach the goals
  - Expected rehabilitation potential

References

1. American Speech-Language-Hearing Association. Admission/discharge Criteria in Speech-Language Pathology. http://www.asha.org/policy/GL2004-00046/ Accessed September 5, 2018.
2. American Speech-Language-Hearing Association. Knowledge and skills needed by speech-language pathologists providing services to individuals with swallowing and/or feeding disorders. https://www.asha.org/policy/KS2002-00079/ Accessed September 5, 2018
3. American Speech-Language-Hearing Association. Preferred Practice Patterns for the Profession of Speech-Language Pathology http://www.asha.org/policy/PP2004-00191/. Accessed September 5, 2018.
4. American Speech-Language-Hearing Association. Scope of Practice in Speech-Language Pathology http://www.asha.org/policy/SP2016-00343/. Accessed September 5, 2018.
5. American Speech-Language Hearing Association. Speech Language Pathology Medical Review Guidelines. https://www.asha.org/practice/reimbursement/SLP-medical-review-guidelines/ Accessed September 5, 2018.
6. American Speech-Language Hearing Association. Spoken Language Disorders (Practice Portal). https://www.asha.org/Practice-Portal/Clinical-Topics/Spoken-Language-Disorders Accessed September 10, 2018
7. Denman D, Speyer R, Munro N. et al. Psychometric properties of language assessments for children aged 4-12 years: A systematic review. Frontiers in Psychology. September, 2017;8:1-28
8. World Health Organization. International classification of functioning, disability and health. Geneva, Switzerland: Author. 2001

Orofacial Myofunctional Disorders

Related Terms

- Abnormal tongue fronting
- Frontal Lisp
- Reverse Swallow
- Immature Swallow

Definition

A pattern involving oral and/orofacial musculature that interferes with normal growth, development, or function of structures through inappropriate or excessive lingual contacts against or between the teeth at rest or during vegetative or communicative functions. It may have a negative effect on the development of the dentition, particularly dental eruption patterns and/or alignment of the teeth and jaws. Speech patterns may become distorted or misarticulated. Parafunctional habit patterns may have a negative influence on the functioning of the temporomandibular joint

International Association of Orofacial Myology defines OMDs as "behaviors and patterns created by inappropriate muscle function and incorrect habits involving the tongue, lips, jaw, and face.[7]

- Orofacial myofunctional disorders (OMDs) include:
  - Tongue Thrust- an anterior protrusion of the tongue during swallow
  - Ankyloglossia- an abnormally short lingual frenulum which reduces lingual movement during speech, mastication, and deglutition

Presentation

- A disorder of tongue and lip posture and movement. Speech misarticulations can co-occur with this condition in some patients. Chewing and swallowing skills may also be affected.
- It is often difficult to correct the speech problems through traditional speech therapy.
- Orofacial myofunctional disorders may result from the following:
  - Improper oral habits such as thumb or finger sucking, cheek/nail biting, tooth clenching/grinding.
  - Restricted nasal airway due to enlarged tonsils/adenoids and/or allergies.
  - Structural or physiological abnormalities such as a short lingual frenum (tongue-tie) or abnormally large tongue.
  - Neurological or developmental abnormalities.
  - Hereditary predisposition to some of the above factors.

History

Goals of Complaint History

- Identify possible structural and/or functional co-morbidities which require medical management such as enlarged tonsils and/or adenoids, allergies and craniofacial abnormalities.
- Identify possible functional co-morbidities that can impede progress of intervention such as developmental abnormalities and/or improper oral habits.
- Determine if speech production is impacted.
- Determine if swallowing performance is impacted.

Symptomatology

Symptoms of tongue thrust in children of 4-7 years may benefit from an evaluation with preventative measures prescribed. Children of 8 years through adults benefit from intervention services when their ability to communicate and swallow effectively is impaired because of an orofacial myofunctional disorder and when there is a reasonable expectation of benefit to the individual in body structure/function and/or activity/participation.

Clinical Symptoms	Functional Effects
➢ Tongue protruding between or against the upper and/or lower incisors. ➢ Frequent open-mouth resting posture with the lips parted. ➢ Imprecise, distorted speech sounds ➢ Chewing of solid food with lips open, taking large bites and swallowing without completely chewing the food.	➢ Results in misalignment of teeth, which may return after orthodontic treatment. Also, may have a negative influence on the functioning of the temporomandibular joint ➢ Tongue does not rest with hard palate often causing maxillary insufficiency. ➢ A frontal lisp during production of speech. The /s/ sound is the most noticed speech error; others are /z/, /sh/, /ch/, /j/, /d/, /t/, /n/, /l/ and /r/. ➢ Loss of food particles from mouth, noisy chewing and swallowing (smacking and gulping) and upset stomach from swallowing too much air.

Scope of Myofacial/Tongue Thrust Evaluation

- Obtain medical history from the child's medical records, interview the child if age-appropriate, and interview the child's family member, caregiver or guardian.
- Obtain the developmental, feeding and eating abilities, management of secretions and speech history.
- Assessment of the oral mechanism
  - Muscle development of the jaw, lips, and tongue and
  - Integrity of the oral structures [hard and soft palate, jaw, lips and tongue].
- Assess oral and nasal airway functions as they pertain to orofacial myofunctional patterns

- Assess the preparatory phase, oral phase and clinical signs of a pharyngeal phase disorder.
- Assess articulation at the word to conversation level.

SLP Management

Requirements for Speech Therapy Visits

- In order to establish medical necessity for speech therapy services, the following criteria must be met.
  - The treatment must be considered specific and effective for the patient's condition under evidence based practice guidelines.
  - Frequency and Duration must be considered acceptable under established standards of practice.
  - The complexity of the condition must be such that the skills of a speech therapist are required for the frequency requested.
  - Habilitative and Rehabilitative services- A positive prognosis must established that the patient's condition is expected to improve from the services provided.
  - Maintenance-Services are required to maintain the member's current condition or to prevent or slow deterioration of the member's condition. Coverage of maintenance service is health plan specific.
  - Continuation of care is supported by functional progress resulting from a positive response to skilled treatment.

Frequency and Duration

- Treatment frequency and duration must be based on:
  - Severity of objective clinical findings,
  - Presence of and number of complicating factors and comorbidities,
  - Natural history and chronicity of condition,
  - Expectation for functional improvement with skilled intervention,
  - Response to treatment provided
  - Patient's level of independence.

Goal of the evaluation

- Establish a differential diagnosis based on clinical findings.
- Document changes from premorbid abilities, the extent to which the disorder has impacted daily life, and current level of functioning.
- Determine if treatment is necessary and potential for functional gains.

Evaluation should address:

- Relevant past medical history with cause and onset of disorder
- Past treatment, if any, for dysarthria
- Diagnosis of current condition including impact on daily life

- Description of disorder(s) including extent and severity as determined from objective measures
- Concurrent conditions with complexities and their impact on prognosis
- Recommendations if treatment is warranted or not and why

Orofacial Myofunctional Assessment Tools	
Tongue Thrust Checklist	Holloway, 2013
Lingual Frenulum Protocol	Marchesan, 2012
Lingual Frenulum Protocol with Scores for Infants	Martinelli, 2012
Orofacial Myofunctional Evaluation Protocol with Scores (OMES)	Felício, C.M. & Ferreira, CL.
Tongue Thrust Rating Scale	Arslan, Serel, Demir, N. & Karaduman, A., 2017

Plan of Care if treatment is warranted

- Long-term goals and estimated time frame for attaining them
- Frequency and intensity of treatment; justification for intensive or long-term treatment
- Prognosis for improvements and why
- Referrals to other professionals and services as appropriate

Treatment

- Treatment for Tongue Thrust with no clinical signs of swallowing or speech sound errors Depending on assessment results, intervention addresses the following:
  - alteration of lingual and labial resting postures
  - Muscle retraining exercises, which do not require skilled services of a SLP other than 3-4 training and teaching sessions over a 2 month duration. These exercises need to be performed daily through a Home Education Program for 60 days duration period.
  - Modification of handling and swallowing of solids, liquids, and saliva, if present, may be completed during the 3-4 training sessions over 60 day duration period.
  - Speech sound production errors, if present, requires 8-10 treatment sessions over 60 day duration period.

Documentation

- Notes for each encounter to include type of treatment and patient's response to it
- Show measurable progress toward goals or reasons not attained such as: fluctuations in abilities and/or alertness, motivation, caregiver or home programming issues
- Show evidence that education was provided and response to it
- Include attainment, updates, or changes in short or long-term goals and/or changes in intensity or type of treatment

Discharge Criteria

- Patient is at functional levels in all aspects of disorder
- No progress is noted after 2-4 typical sessions
- Patient is able to continue with a home management program
- All goals are reached; no further intervention indicated

References

1. American Speech-Language-Hearing Association. Admission/discharge Criteria in Speech-Language Pathology. http://www.asha.org/policy/GL2004-00046/ Accessed September 5, 2018.
2. American Speech-Language-Hearing Association. Orofacial myofunctional disorders: Knowledge and skills 1993. ASHA Suppl.;35(10):21–23.
3. American Speech-Language-Hearing Association. Preferred Practice Patterns for the Profession of Speech-Language Pathology http://www.asha.org/policy/PP2004-00191/. Accessed September 5, 2018.
4. American Speech-Language-Hearing Association. Report: Ad hoc committee on labial-lingual posturing function 1989. ASHA Suppl.;31(11):92–94.
5. American Speech-Language-Hearing Association. Scope of Practice in Speech-Language Pathology http://www.asha.org/policy/SP2016-00343/. Accessed September 5, 2018.
6. American Speech-Language Hearing Association. Speech Language Pathology Medical Review Guidelines. https://www.asha.org/practice/reimbursement/SLP-medical-review-guidelines/ Accessed September 5, 2018.
7. American Speech-Language-Hearing Association. The role of the speech-language pathologist in assessment and management of oral myofunctional disorders 1991. ASHA Suppl.;33(5):7.
8. Arslan, SS, Demir, N. Reliability and validity of a tool to measure the severity of tongue thrust in children: The tongue thrust rating scale. Journal of Oral Rehabilitation. 2017;44(2):119-124.
9. Inal, O, Arslan, S, et al. Effect of functional chewing training on tongue thrust and drooling in children with cerebral palsy: A randomised controlled trial. Journal of Oral Rehabilitation. 2017;44(11):843-849.
10. Mason, RM. A retrospective and prospective view of orofacial myology. International Journal of Orofacial Myology. 2005; Nov;31:5-14
11. Mantie-Kozlowski, A, Pitt, K. Treating myofunctional disorders: A multiple-baseline study of a new treatment using electropalatography. American Journal of Speech-Language Pathology. 2014; Nov;23:520-529.
12. Ray, J. Effects of orofacial myofunctional therapy on speech intelligibility in individuals with persistent articulatory impairments. International Journal of Orofacial Myology. 2003; Nov;29:5-14.
13. Seikel, CU, Evers, D, et al. Etiologic Relation Between Orofacial Myofunctional Disorders and Oropharyngeal Dysphagia. Idaho State University. ASHA Conference 2016.Van Lierde, KM, Luyten, A, et al. Articulation and oromyofunctional behavior in children seeking orthodontic treatment. Oral Diseases. 2015;21(4):483-492.

Selective Mutism

Related Terms

- Mutism
- Anxiety Disorder
- Social Phobia
- Muteness
- Panic Disorder
- Generalized Anxiety Disorder

Definition

Selective mutism is the inability to speak and communicate effectively in specific social settings.

Presentation

- The individual will not speak in specific social situations such as school, but speaks without difficulty in other situations.
- The disorder may impact achievement in educational, occupational, social areas.
- Symptoms have persisted for at least 1 month
- The failure to speak is not related to an inability to use or understand the spoken language in the social context.
- The disturbance does not occur exclusively during the course of ASD, or another psychotic disorder, and is not a result of a communication disorder (i.e. fluency).
- Prevalence- <1%.

Differential Diagnosis Considerations

- In certain new or stressful situations, shyness or unwillingness to speak may be temporary and resolve spontaneously without intervention
- Other disorders to rule out include developmental speech and language delays, fluency disorders, ASD, PDD, mood disorders
- Testing should be done to rule out hearing impairment
- Other neurogenic disorders or neurological diseases.

Specific Treatment Considerations

- Individuals will often benefit initially from individualized treatment sessions in order to become more familiar with the therapists, techniques and strategies to increase speaking confidence in familiar settings

- Group treatment with individuals identified with selective mutism may offer another treatment alternative. The group members should be chosen by including those with skills and grade level. The tasks may start with nonverbal gesturing and advance to whispering or more verbal behaviors. Treatment can be structured to include scripts or role-playing among peers.
- Small group interventions involving peers may assist with carryover and generalization of skills and learned strategies.

Symptomatology

- The symptoms associated with selective mutism are often attributed to the presence of psychological disorders including social anxiety and social phobia.

Clinical Symptoms	Functional Effects
➢ Eye contact is poor or nonexistent ➢ Avoidance or running away from others in social settings ➢ Appear "frozen" in certain social situations ➢ Crying or throwing a tantrum if pressured to speak socially ➢ Avoiding public areas ➢ Will not initiate or maintain conversation ➢ May use nonverbal gestures or whispering to communicate	➢ The individual is unable to functionally communicate needs, wants, ideas in social situations due to promote anxiety/phobia ➢ Impacts the individual's confidence and ability to develop and maintain relationships with peers and others ➢ The behavior is reinforcing by allowing the individual to reduce their anxiety, however results in social withdrawal over time ➢ The disorder may result in loss of personal achievement socially, academically, and vocationally

SLP Management

Requirements for Speech Therapy Visits

- In order to establish medical necessity for speech therapy services, the following criteria must be met:
  - The treatment must be considered specific and effective for the patient's condition under evidence based practice guidelines.
  - Frequency and Duration must be considered acceptable under established standards of practice.
  - The complexity of the condition must be such that the skills of a speech therapist are required for the frequency requested.
  - Habilitative and Rehabilitative services- A positive prognosis must established that the patient's condition is expected to improve from the services provided.
  - Maintenance-Services are required to maintain the member's current condition or to prevent or slow deterioration of the member's condition. Coverage of maintenance service is health plan specific.
  - Continuation of care is supported by functional progress resulting from a positive response to skilled treatment.

Frequency and Duration

- Treatment frequency and duration must be based on:
  - Severity of objective clinical findings,
  - Presence of and number of complicating factors and comorbidities,
  - Natural history and chronicity of condition,
  - Expectation for functional improvement with skilled intervention,
  - Response to treatment provided
  - Patient's level of independence
- Effective management of selective mutism requires collaboration between the SLP, the child's family, teachers and behavioral health specialists (psychiatrist, school or clinical psychologist).

Alternatives to ST Management

- Refer for psychiatric assessment, management and treatment
- Individual and parents to follow home exercise program established by a qualified professional.

Completing the Comprehensive Evaluation

- Obtain adequate case history through:
  - Interviewing parents/teachers to identify whether ASD, schizophrenia, or other psychological disorder is suspected
  - Identifying symptom onset, behaviors, and to whom, when and where the child talks
  - Identifying the child's current communication (verbal expression, gestures, writing, sounds whispering)
  - Obtaining family, speech-language, educational history
  - If bilingual, identify which languages child truly understands, who child speaks to and when

SLP Assessment Components

- The comprehensive speech-language should assess language comprehension, expression, nonverbal communication, oral-motor functioning, articulation, voice, cognition, and pragmatics.
- Because selective mutism is categorized as an anxiety disorder, outside referral to a psychiatrist is appropriate and collaboration for intervention should also include parents, teachers and school psychologist/counselor.

Selective Mutism Evaluation Considerations:

- A child with selective mutism may not fully participate and may use gestures or pointing instead of verbalizations. This diagnostic information supports social communication disturbance, in the event the parent/teacher descriptions or even home audio/video recordings indicate communication in nonpublic situations is consistently different.
- Children with this disorder may report their speech sounds funny; this may be related to difficulty with tightness or control of the vocal mechanism due to anxiety.
- Articulation, spoken language, auditory comprehension and cognition may be normal, however, reliable information may be difficult to obtain due to anxiety resulting in lack of responsiveness. In most cases, underlying unidentified speech and/or language delays are present. Over time, further assessment may be able to uncover these hidden deficits that can contribute to ongoing mutism.
- Typically, social/pragmatic skills appear **impaired** even in familiar environments.

Plan of care if treatment is warranted

- Include reasonable, functional, patient centered short and long-term goals and estimated time frame for attaining them
- Recommend frequency and intensity of treatment; justification for intensive or long-term treatment
- Establishing IEPs for school age children with selective mutism
- Prognosis for improvements and why
- Referrals to other professionals and services as appropriate.

Treatment Interventions and Techniques

Intervention/ Technique	Description
AAC	Using photos, objects, pictures, symbols, writing to supplement speech. This may be used short term to facilitate social communication interaction.
Stimulus Fading	Individual is engaged in a comfortable social situation with one or more people they speak to without difficulty. A new person is brought into the room and slowly introduced into the social group.
Shaping	All communicative attempts are reinforced positively (e.g.: nonverbal gestures, whispering) until the individual is able to speak normally.
Self-Modeling	The individual views video tape of himself/herself speaking without difficulty in a relaxed environment; goal is to encourage confidence to speak in other less comfortable settings.
Augmented Self-Modeling	The individual views a video of himself/herself speaking in familiar environment; and the video is edited to show the individual speaking in a setting in which he/she will not speak. The video is viewed with others present. The goals is to reinforce positive thoughts about speaking in public situations (Viana et al, 2009).

➢ Social-Pragmatic Approach	➢ The individual begins involvement in joint activities that involve a social component, such as play that does not require verbalization. Next, nonverbal communication such as pointing, gesturing, facial gesturing is added during the activity. Finally, the individual begins producing non-speech sounds and moves toward speech sound production, then words. ◆ Once at word level or beyond-ask the individual non-invasive questions (such as, "What color is your watch?") ◆ Gradually move on to more personal such as habits/preferences. Progress to having the individual ask noninvasive questions, then work up to multiple conversational turns. ◆ When new partners/situations are introduced- the tasks should be more concrete because the anxiety may be increased with less comfortable places or less familiar people. ◆ (Hungerford et al., 2003).
➢ Vocal Control Approach	➢ This technique uses nonverbal approaches such as humming and pitch variation to allow the individual to practice voicing. Gradually, the individual is asked to produce animal or environmental sounds animal sounds to practice voice initiation. Then, he/she will start with a hum and convert it to the /m/ sound. Next, a vowel is added to the /m/ sound for a syllable, progressing to /m/ initial at word, then phrase, then sentence level. Later, progress to speech sounds, syllables, words that do not begin with the /m/ phoneme.
➢ (RSA) Ritual Sound Approach	➢ Social Communication Anxiety Treatment® (S-CAT®) is the evidenced-based philosophy of treatment developed by Dr. Elisa Shipon-Blum. This treatment technique is part of Social Communication Anxiety Treatment (S-CAT). The mechanics of sound production is learned, then oral-motor movements are progressed to the phoneme, syllables, and words levels. The SLP will describe non-speech sounds such as blowing or coughing and explains how voiceless phonemes are produced. The child then begins to produce voiceless phonemes (e.g., /h/, /k/, /t/, and /p/). The child will mark any sounds that he/she can produce using an alphabet board. Searching the alphabet board may allow the child to focus on something else rather than feeling the stress associated with making eye contact with the SLP. This approach may encourage the child to make non-speech sounds and progress to production of speech sounds and words while reducing anxiety. (Klein, Armstrong, Skira, and Gordon (2016)

Documentation

- Document why the service require the skills and knowledge of an SLP
- Daily notes and progress notes should include type of treatment and patient's response to treatment
- Document how treatment supports a functional change in the patient's communication
- Document measurable progress toward goals or reasons not attained such as: fluctuations in abilities and/or alertness, reason for decreased participation , caregiver or home programming concerns
- Document evidence that patient/caregiver education was provided and response to the education, including need for re-education
- Document update/changes to short/long-term goals and/or rationale for changes in intensity or type of treatment.

Discharge Criteria

- Patient is at functional levels in all aspects of disorder
- The interventions or tasks provided are repetitive in nature and no longer skilled; or the patient requires ongoing cueing to complete tasks
- The patient's condition has stabilized; and care no longer requires the skills of a therapist
- Caregivers, family members, support personnel have been trained to use communicative strategies and other approaches to improve or maintain functional levels
- Patient is able to continue with a home management or maintenance program
- All goals are reached; no further intervention indicated
- Patient's response/nonresponse to treatment justifies discharge
- Medical reasons dictate break from or termination of sessions.

References

1. American Speech-Language-Hearing Association. Admission/discharge Criteria in Speech-Language Pathology. http://www.asha.org/policy/GL2004-00046/ Accessed September 5, 2018.
2. American Speech-Language-Hearing Association. Preferred Practice Patterns for the Profession of Speech-Language Pathology http://www.asha.org/policy/PP2004-00191/. Accessed September 5, 2018.
3. American Speech-Language-Hearing Association. Scope of Practice in Speech-Language Pathology http://www.asha.org/policy/SP2016-00343/. Accessed September 5, 2018.
4. *American Speech-Language-Hearing Association. Selective Mutism (Practice Portal). https://www.asha.org/Practice-Portal/Clinical-Topics/Selective-Mutism/. Accessed June 11, 2018*
5. American Speech-Language Hearing Association. Speech Language Pathology Medical Review Guidelines. https://www.asha.org/practice/reimbursement/SLP-medical-review-guidelines/ Accessed September 5, 2018.
6. Beidel DC, Turne SM, Morris TM. Psychopathology of child social phobia. Journal of the American Academy of Child and Adolescent Psychiatry.1999;38: 643-650.
7. Hungerford SH, Edwards E, Lantosca A. A socio-communication intervention model for selective mutism. Paper presented at the American Speech-Language-Hearing-Association Convention. 2003
8. Klein ER., Armstrong SL, Skira K, Gordon J. Social Communication Anxiety Treatment (S-CAT) for children and familes with selective mutism: A pilot study. Clinical Child Psychology and Psychiatry. 2017;22(1):90-108
9. *Viana AG., Beidel DC, Rabian B. Selective mutism: A review and integration of the last 15 years. Clinical Psychology Review. 2009;29:57-67.*

Speech Sound Disorders: Articulation and Phonology

Related Terms

- Speech sound disorders
- Articulation disorders
- Phonological process disorders
- Intelligibility.

Definition(s)

- Speech sound disorders is the preferred term for describing difficulties that young children have with speech intelligibility.
- Speech sound disorders include sound substitutions, omissions, distortions and additions. In addition, there can be errors that affect the word level and/or the rhythm and intonation characteristics of running speech.
- Speech sound omissions impact intelligibility the most and speech sound substitutions also frequently occur.
- Speech sound disorders result from difficulties with speech, motor production and coordination of speech movements, as well as the lack of phonological knowledge or misapplication of the phonological rules associated with the child's native language. All languages are governed by phonological rules which determine the appropriate speech sounds (or phonemes) and phoneme sequences that characterize a particular language.
- Bilingualism has not been shown to be a cause for speech sound disorders. Young children are able to learn the phonemic differences across languages.
- Dialectal differences result in phoneme substitutions (like *dose* for *those*) and can be mistaken for speech sound errors.
- Perceptual difficulties and motor incoordination may contribute to the development of speech sound disorders.
- Cognitive impairments will influence the child's ability to learn the phonological rules of a language. While neurological impairments and structural differences can impair speech production.

Presentation

- The cause of speech sound disorders in most children is unknown. The cause of some speech sound problems is known and can be the result of motor speech disorders (e.g., Apraxia and Dysarthria), structural differences (e.g., cleft-palate), syndromes (e.g., Down Syndrome) or sensory deficiencies (e.g., hearing loss).
- Risk factors include:

- Gender-males being higher risk
- Ear, nose and throat problems
- Family history of speech and language problems
- Limited parental education/learning support at home.

Symptomatology

Speech sound disorders are identified on a continuum from mild or very severe. The symptoms will also range in number, intensity and level of severity. More severe disorders will have a greater functional effect on the individual's speech intelligibility.

Clinical Symptoms	Description
Omissions/deletions	Specific sounds are omitted or deleted (e.g., *boo* for *book* and *geen* for *green*)
Substitutions	One or more sounds are substituted (e.g., *wed* for *red* and *dut* for *duck*, *widuh* for *rider*)
Additions	One or more extra sounds are added into a word (e.g., *bulack* for *black*)
Distortions	Sounds are modified or altered (e.g., a slushy /s/)
Whole-word/syllable-level errors	Weak syllables are deleted (e.g., *boon* for *balloon*); a syllable is repeated or deleted (e.g., *nana* for *candy*)
Prosody errors	Errors that occur in stress, rhythm and intonation

Goal of the evaluation

- Establish the effect of the speech sound disorder on speech intelligibility and identify the sounds that are affected.
- Document the extent to which the disorder has impacted daily life, and academic progress.
- Determine if treatment is necessary and include the potential for functional gains.

Criteria for Assessment

Comprehensive assessment for speech sound disorders typically includes:

- Case history
  - Family history of speech/language difficulties
  - Recurrent middle ear infections
  - Child's primary language used in the home
  - Family and teacher concerns
  - Age developmental milestones were met
  - Medical history
- Oral mechanism examination includes:
  - Assessment of dentition and alignment of teeth
  - Muscle movement as well as development of the jaw, lips and tongue and the integrity of the oral structures (hard and soft palate, jaw, maxilla, lips and tongue)
  - Oral motor reflexes as well as purposeful movement through imitation of non-speech actions
  - Diadokokinetic rate: muscle movement for coordination and sequencing

- Assessment of tongue and mouth resting posture to determine existence of tongue thrust

- Hearing screening
  - Will be provided to children during the initial Speech and Language Evaluation unless results of a comprehensive audiological assessment has already been completed. Follow up hearing screening is indicated when progress in speech development has not been achieved or is minimal and evidence suggests risk for hearing impairment.

- Speech Sound Assessment:
  - The evaluation process may include the selection of administration of standardized tests, language/speech samples, or a descriptive analysis of informal findings.
  - Assess articulation at the word, phrase and conversational levels.
  - Establish a phonetic inventory for the child (i.e., what sounds can the child produce?)
  - Identify the error patterns the child uses and look for phonological process use in children who are less intelligible.
  - Identify speech sound production inconsistencies. The child does not always misarticulate the error sound the same way in all words.
  - Evaluate stimulability of error sounds.
  - Evaluate intelligibility.

- Stimulability:
  - Child's ability to produce target sounds with cues
  - Used to select treatment targets based on the child's ability to utilize these cues
  - Assists in determining prognosis

- Intelligibility: refers to the listener's ability to understand the child's speech.
  - A guideline for expected conversational intelligibility levels of typically developing children talking to unfamiliar listeners is summarized below (Coplan & Gleason, 1988; Flipsen 2006):
    - 1 year- 25% intelligible
    - 2 year- 50% intelligible
    - 3 year- 75% intelligible
    - 4 year- 100% intelligible
  - Intelligibility can be impacted by several factors including:
    - Length of utterance
    - Familiarity with child's speech
    - Child's speech rate, intonation, loudness level, vocal quality and fluency
    - Contextual cues
    - Presence of ambient noise during conversation

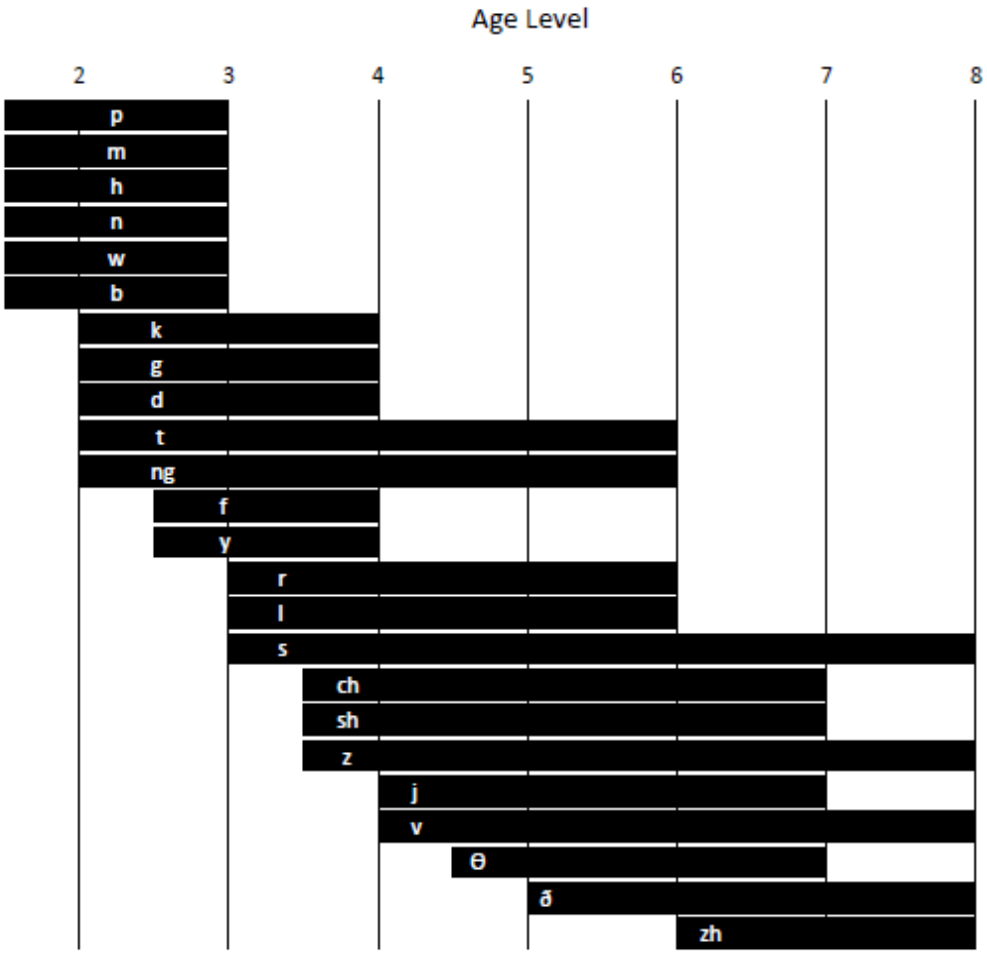
Speech Sound Developmental Norms

GFTA-2 (2000)

AGE	Initial Position of Word	Medial Position of Word	Final Position of Word
2 years	/b/ /d/ /h/ /m/ /n/ /p/	/b/ /m/ /n/	/m/ /p/
3 Years	/f/ /g/ /k/ /t/ /w/	/f/ /g/ /k/ ng /p/ / t/	/b/ /d/ /g/ /k/ /n/ /t/ /r/ /v/ /z/
4 Years	/kw/	/d/	/f/
5 Years	ch j /l/ /s/ sh y /bl/	ch j /l/ /s/ sh /z/	/l/ ng ch j /s/ sh /r/ /v/ /z/
6 Years	/r/ /v/ /br/ /dr/ /fl/ /fr/ /gl/ /gr/ /kl/ /kr/ /pl/ /st/ /tr/	/r/ /v/	
7 Years	/z/ /sl/ /sp/ /sw/ th (voiced) th (voiceless)	th (voiced)	th (voiceless)
8 Years		th (voiceless)	

The information used to create this chart was obtained from the Goldman Fristoe Test of Articulation-2 (GFTA-2) 2000. The table represents when 85% of the GFTA-2 study sample correctly produced the speech sounds and blends above. Please remember that this is just a general guide and that all children may develop sounds at different ages.

Age of Customary Consonant Production



Average age estimates and upper age limits of customary consonant production. The solid bar corresponding to each sound starts at the median age of customary, articulation; it stops at an age level at which 90% of all children are customarily producing the sound (from Templin, 1957; Wellman et al., 1931). Source: Sander © 1972 American Speech-Language-Hearing Association.

Sander, E. K. (1972). When are speech sounds learned? *Journal of Speech and Hearing Disorders, 37*(1), 55–63.

Templin, M. (1957). *Certain language skills in children: Their development and interrelationships.* Minneapolis, MN: University of Minnesota Press.

Wellman, B., Case, I., Mengert, I., & Bradbury, D. (1931). Speech sounds of young children. *University of Iowa Study, Child Welfare, 5*(2), 1–82.

Selected Phonological Processes (Patterns)

Assimilation (Consonant Harmony) One sound becomes the same or similar to another sound in the word		
Process	**Description**	**Example**
Velar Assimilation	non-velar sound changes to a velar sound due to the presence of a neighboring velar sound	*kack* for *tack*
Nasal Assimilation	non-nasal sound changes to a nasal sound due to the presence of a neighboring nasal sound	*money* for *funny*
Substitution One sound is substituted for another sound in a systematic way		
Process	**Description**	**Example**
Fronting	sound made in the back of the mouth (velar) is replaced with a sound made in the front of the mouth (e.g., alveolar)	*tar* for *car*; *date* for *gate*
Stopping	fricative and/or affricate is replaced with a stop sound	*tee* for *see*; *chop* for *shop*
Gliding	liquid (/r/, /l/) is replaced with a glide (/w/, /j/)	*wabbit* for *rabbit*
Deaffrication	affricate is replaced with a fricative	*shop* for *chop*
Syllable Structure Sound changes that affect the syllable structure of a word		
Process	**Description**	**Example**
Cluster Reduction	consonant cluster is simplified into a single consonant	*top* for *stop*
Weak Syllable Deletion	unstressed or weak syllable in a word is deleted	*nana* for *banana*
Final Consonant Deletion	deletion of the final consonant of a word	*bu* for *bus*

References

Bauman-Waengler, J. A. (2012). *Articulatory and phonological impairments.* New York, NY: Pearson Higher Education.

Bernthal, J., Bankson, N. W., & Flipsen, P., Jr. (2013). *Articulation and phonological disorders.* New York, NY: Pearson Higher Education.

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Plan of care if treatment is warranted

- Long-term goals and estimated time frame for attaining them
- Frequency and intensity of treatment; justification for intensive or long-term treatment
- Prognosis for improvements and why
- Referrals to other professionals and services as appropriate.

Requirements for Speech Therapy Visits

- In order to establish medical necessity for speech therapy services, the following criteria must be met.
  - The treatment must be considered specific and effective for the patient's condition under evidence based practice guidelines.
  - Frequency and Duration must be considered acceptable under established standards of practice.
  - The complexity of the condition must be such that the skills of a speech therapist are required for the frequency requested.
  - Habilitative and Rehabilitative services- A positive prognosis must established that the patient's condition is expected to improve from the services provided.
  - Maintenance-Services are required to maintain the member's current condition or to prevent or slow deterioration of the member's condition. Coverage of maintenance service is health plan specific.
  - Continuation of care is supported by functional progress resulting from a positive response to skilled treatment.

Frequency and Duration

- Treatment frequency and duration must be based on:
  - Severity of objective clinical findings,
  - Presence of and number of complicating factors and comorbidities,
  - Natural history and chronicity of condition,
  - Expectation for functional improvement with skilled intervention,
  - Response to treatment provided.
  - Patient's level of independence.

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Treatment Interventions: Clinical Process

- Target Selection: Approaches used for selecting therapy targets for children with speech sound disorders include:
  - Developmental approaches-sounds are targeted based on typical age of acquisition.
  - Non-developmental approaches include:
    - Complexity approach-target later developing sounds, those not in the child's speech sound system to expose the child to unfamiliar distinctive features with the intent of generalizing these features to other sounds that the child does not produce (i.e., feature generalization then leading to the production of new sounds) (Geirut, 2007).
    - Dynamic systems approach-target specific features of sounds to stabilize their production. The intent is to transfer this knowledge to improve production of sounds that share the same features (Rvachew & Bernhardt, 2010).
    - Systemic approach-target selection focuses on the function of the sound with the intent of reorganizing the sound system. Multiple sounds are selected that are maximally distinct (in terms of place, voice, manner) based on the child's phonemic collapse (i.e., the error sound substitutes for several phonemes) (Williams, 2003). The goal is to expand the child's phonetic inventory by presenting a variety of phonemic features.
  - Other approaches include: selecting targets based on stimulability, personal relevance (e.g., child's name) and/or impact on intelligibility.

Treatment Approaches:

Contextual Utilization	Treatment starts with practicing syllable based contexts in which the sound is produced correctly. That syllable is used to train more difficult productions. For example, a /s/ may be more easily produced in the syllable with a high front vowel (MacDonald, 1964; Bleile, 2002).
Contrast Therapy	Targets focus on a specific phoneme feature using contrasting word pairs. Minimal pairs are different by one feature or phoneme that changes the word meaning (*tip* vs. *ship*). Maximal pairs use a sound target differing by several distinctive features which affect phoneme placement and manner to introduce sounds that the child cannot produce (*beat* vs. *cheat*) (Geirut, 1989, 1990, 1992).
Core Vocabulary Approach	Used with children who are highly unintelligible due to inconsistent misarticulations and may not respond well to traditional therapy. This is a word-based approach as opposed to a phoneme-based technique. Words the child commonly uses are selected for practice and feedback is provided to reinforce the most accurate production of each word (Dodd, Holm, Crosbie, & McIntosh, 2006).
Cycles Approach	Focuses on improving phonological patterns with a strategy similar to normal sound acquisition. It is used with children who have poor intelligibility, characterized by numerous omissions and limited phonemic inventories. Each cycle targets all phonological patterns in error until they emerge in spontaneous speech (Hodson & Paden, 1983).
Distinctive Features Therapy	Focuses on sound features the child cannot produce (nasals, fricative, voicing, placement) and is usually used with children who substitute sounds. Error patterns are targeted using tasks such as minimal pair contrasts; usually once a contrast pattern emerges, it can be generalized

	to other sounds that share the same feature (Blache & Parsons, 1980; Blache et al., 1981).
➢ Metaphon Therapy	➢ Used with children who appear to have not mastered phonological system rules. Examples are descriptive and provide information about how a sound is produced, e.g., voiced (noisy) vs. voiceless (quiet). Sounds most impacting intelligibility are selected first (Howell & Dean, 1994).
➢ Naturalistic Speech Intelligibility Intervention	➢ Uses everyday activities to elicit the target sound frequently during the session. For example, the child is asked about a toy that involves responses using the targeted sound. (i.e., "What color is the car?" "Red.") Appropriate productions are recast (i.e., casually modeled by the clinician or parent) (Camarata, 2010).
➢ Speech Sound Perception Training	➢ Speech perception tasks are used to help the child gain a consistent perception of the target sound. Tasks may include auditory bombardment and sound identification tasks. Usually used prior to or at the same time as speech production intervention (Rvachew, Rafaat, & Martin, 1999).

Referral Guidelines for Speech Sound Disorders

- If speech intelligibility does not improve or improvement has reached a plateau:
  - Refer patients to the referring physician or specialist (i.e., neurologist, audiologist, etc.) to explore other reasons for difficulties in speech sound production, such as structural abnormalities or hearing loss.
  - Consult with a specialist in the field of augmentative and assistive communication systems
  - Refer to local support groups

Home Medical Equipment

- Augmentative and assistive communication device

Self-Management Techniques

- Train the individual and parents to follow a home program

Alternatives to Speech Sound Disorders Treatment

- Use of alternative and assistive communication device.

Treatment Plan Timeline

- Frequency and duration of services is based upon the specific needs of the individual at the time of the evaluation. In addition, symptoms will change over time. Therefore, discharge planning will involve consideration of maximum potential achieved and individual family circumstances.

➢ Early stages of treatment	➢ Explore factors that could impact outcomes now and in the future ➢ Explore strengths and weaknesses; breakdowns in production, stimulability, self-monitoring, and other components for best treatment outcomes ➢ Explore patient and family understanding, challenges, and capabilities to develop education and training program ➢ Develop treatment program based on findings and best practices for this patient

	➢ Develop an individualized supplemental home program to monitor and change as needed ➢ Document findings, techniques, responses to treatment
➢ Ongoing treatment	➢ Provide patient/family ongoing education and training ➢ Assess response to and feedback from home program to modify and update, as needed ➢ Document measurable gains and modify plan of care if indicated ➢ Assess ongoing response to treatment, gains, lack of progress, other factors; modify program as needed ➢ Assess if intelligible verbalization or supplemental and/or ➢ alternative means of communication will be necessary; develop these or refer as needed ➢ Determine other factors impacting the condition requiring intervention or referral
➢ Later stage of ➢ treatment / ➢ discharge planning	➢ Provide suggestions and resources for follow-up ➢ Provide home program to maintain gains ➢ Provide summary of course of treatment and progress ➢ If discharged due to medical issues and/or plateau in progress, indicate under what future conditions new referral would be warranted
➢ Discharge criteria	➢ Medical/psychological or other issues interfering with goals of treatment program ➢ Goals have been reached ➢ Plateau has been reached ➢ Insurance benefit has ended

References

1. American Speech-Language-Hearing Association. Admission/discharge Criteria in Speech-Language Pathology. http://www.asha.org/policy/GL2004-00046/ Accessed September 5, 2018.
2. American Speech-Language-Hearing Association. Preferred Practice Patterns for the Profession of Speech-Language Pathology http://www.asha.org/policy/PP2004-00191/. Accessed September 5, 2018.
3. American Speech-Language-Hearing Association. Scope of Practice in Speech-Language Pathology http://www.asha.org/policy/SP2016-00343/. Accessed September 5, 2018.
4. American Speech-Language-Hearing Association Speech Sound Disorders: Articulation and Phonology. (Practice Portal). www.asha.org/Practice-Portal/Clinical-Topics/Articulation-and-Phonology. Accessed September 5, 2018
5. American Speech-Language Hearing Association. Speech Language Pathology Medical Review Guidelines. https://www.asha.org/practice/reimbursement/SLP-medical-review-guidelines/ Accessed September 5, 2018.
6. Baker, E., & McLeod, S. (2011). Evidence-Based Practice for Children with Speech Sound Disorders: Part 1 Narrative Review. Language, Speech & Hearing Services in Schools, 42(2), 102-139.
7. Gillam, S. L., & Kamhi, A. G. (2007). Intervention for Preschool Children with Moderate-Severe Phonological Impairment. EBP Briefs, 1, 59-68.
8. Goldman,R., & Fristoe., M. (2000). Goldman-Fristoe 2 Test of Articulation. Minneapolis, MN: Pearson Assessments.
9. Hassink, J. M., & Wendt, O. (2010). Remediation of Phonological Disorders in Preschool Age Children: Evidence for the Cycles Approach. EBP Briefs, 5(2), 1-7.
10. Law, J., Garrett, Z., et al. (2003). Speech and Language Therapy Interventions for Children with Primary Speech and Language Delay or Disorder. Cochrane Database of Systematic Reviews, 3, CD004110.
11. Lee, A.S.-Y., & Gibbon, F.E. (2015). Non-Speech Oral Motor Treatment for Children With Developmental Speech Sound Disorders. Cochrane Database of Systematic Reviews, 3, CD009383.
12. Rvachew, S., & Nowak, M. (2001). The Effect of Target-Selection Strategy on Phonological Learning. Journal of Speech, Language & Hearing Research, 44(3), 610-623.
13. Siu, A. L. (2015). Screening for Speech and Language Delay and Disorders in Children Aged 5 Years or Younger: US Prevention Services Task Force Recommendation Statement Pediatrics, 136(2), e474-e481.
14. Tambyraja, S. R., & Dunkle, J. T. (2014).Target Selection in Speech Therapy: Is a Non-Developmental Approach More Efficient Than a Developmental Approach? EBP Briefs, 8 (5), 1-9.
15. Taylor-Goh, S. (ed.). (2005).Royal College of Speech & Language Therapists Clinical Guidelines: 5.2 Pre-School Children with Communication, Language & Special Needs. Bicester (United Kingdom): Speechmark Publishing Ltd., 19-23.
    Taylor-Goh, S. (ed.). (2005). Royal College of Speech & Language Therapists Clinical Guidelines: 5.3 School-Aged Children with Communication, Language & Special Needs. Bicester (United Kingdom): Speechmark Publishing Ltd., 25-33.

Spoken Language Disorders: Pediatrics

Synonyms

- Developmental language disorder
- Receptive language disorder
- Expressive language disorder
- Mixed expressive receptive language disorder
- Oral language disorder
- Specific Language Impairment.
- Spoken language disorder.

Definition

Spoken language disorders in children are characterized as deficiencies in the understanding and/or use of spoken language. The impairment may involve the form of language (phonology, morphology, and syntax), the content of the language (semantics), the function of the language in communication (pragmatics), or any combination of the above. Language disorders can be present with other conditions such as Fragile X Syndrome, Down's syndrome, Autism Spectrum Disorder (ASD), intellectual disabilities, Attention Deficit Hyperactivity Disorder (ADHD), developmental delays, , toxins, hearing loss or Traumatic Brain Injury (TBI), and psychological/emotional disorders.[11] Learning disabilities in academic settings are correlated with language disorders particularly reading and writing skills.[11]

History

Goals of Complaint History

- Identify co-morbidities that affect general management or which require medical management.
- Determine if trauma-related or congenital; determine nature and extent of event.
- Identify speech and language deficits in functional communication.

Determine primary medical condition for insurance coverage purposes.

Presentation

Symptomatology

Because speech and language delays can be mild or very severe, the symptoms will range both in number of intensity.**Symptomatology**	**Possible Consequence or Cause**
➢ Suspect a hearing loss ➢ Absence of cooing or babbling ➢ Absence of vocal play ➢ Absence of jargon-like utterances ➢ Absence of imitation of sounds or words ➢ Difficulty expressing simple needs or wants with gestures ➢ Absence of telegraphic speech ➢ Difficulty naming familiar objects or pictures ➢ Delays in development of first words and phrases ➢ Difficulty expressing simple needs, wants or thoughts with single, meaningful words increasing to a 4-word utterance by 3 years of age ➢ Oral motor difficulties related to neuro-musculature or structural anomalies ➢ Evidence of frustration, aggressive or passive behaviors due to difficulty effectively communicating needs, wants, thoughts, and ideas ➢ Reduced MLU for age	➢ Early interventions for infants and toddlers with expressive language delays-birth to 48 months
➢ Suspect hearing loss ➢ Difficulty following simple commands, such as “sit” ➢ Difficulty pointing to familiar objects or pictures upon verbal command ➢ Difficulty understanding simple words ➢ Difficulty pointing to body parts upon verbal command ➢ Difficulty following 2- to 3-step related verbal commands ➢ Difficulty following 2- to 3-step unrelated verbal commands ➢ Evidence of frustration and behavioral outbursts due to difficulty understanding basic information ➢ Delayed vocabulary acquisition in comparison to same age peers[11] ➢ Additional support needed to understand new words	➢ Early intervention for infants and toddlers with receptive language delays-birth to 48 months
➢ Suspect hearing loss ➢ Difficulty communicating at expected level for age: ➢ Difficulty using meaningful single words ➢ Difficulty combining 2 to 3 words to create a meaningful sentence ➢ Difficulty communicating with a grammatically correct sentence ➢ Word finding difficulties ➢ Limited use of various verb forms (verb + ing, irregular and regular past tense) ➢ Limited use of adjectives, plurals, and irregular plurals ➢ Difficulty repeating sentences. ➢ Difficulty initiating communication in a structured environment	➢ Language Expression Delay in children older than 4 years

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➢ Difficulty organizing thoughts and ideas into a cohesive sentence ➢ Difficulty describing a procedure ➢ Difficulty retelling a story ➢ Difficulty taking turns during a conversation ➢ Responses during a conversation may be redundant or tangential ➢ Difficulty transitioning from one topic to another ➢ Difficulty maintaining relationships due to poor communication skills ➢ Increased frustration and behavioral outbursts when unable to effectively express needs, wants, thoughts, and ideas ➢ Reduced MLU for age	
➢ Suspect hearing loss ➢ Difficulty understanding and following instructions expected for age ➢ Difficulty pointing to body parts or common objects following a verbal command ➢ Difficulty comprehending age appropriate questions ➢ Difficulty understanding spatial concepts (under, next to, in front of, behind) ➢ Difficulty understanding descriptive, time, quantity or time/sequence concepts ➢ Difficulty understanding a passive voice sentence ➢ Increased frustration and behavioral outbursts when unable to understand and follow instructions ➢ Delayed vocabulary acquisition compared to same age peers[11]	➢ Receptive Language Delay in children older than 4 years
➢ Suspect hearing loss ➢ Difficulty producing speech sounds correctly for expected age ➢ Delayed phonological development including errors of younger, typically developing children[11] ➢ Incorrect use of consonant sounds ➢ Speech is difficult to understand and conversational intelligibility is affected. ➢ Delayed acquisition of phonological awareness skills (rhyming, sound/syllable deletion, segmentation, and blending)[11]	➢ Phonological Delays and Disorders

Findings

Goal of Speech and Language Evaluation

- Examination for possible causes or contributing factors to the complaint. Differential diagnoses should include the following:
- Hearing loss
- Muscle weakness or paralysis of oral musculature or speech mechanism

- Determine the severity of the impairment. If the performance measure falls more than 1 standard deviation below the mean on one or more standardized tests, the child may be diagnosed with a language disorder.
- Establish a differential diagnosis based on clinical findings.
- Determine if treatment is necessary and potential for functional gains.

Scope of Speech and Language Evaluation

- Obtain medical and birth history from the child's medical records,
- Interview the child if age-appropriate, and interview the child's family members, caregivers, classroom teacher, special education teacher, and other relevant personnel. .
- Obtain the child's developmental, feeding and eating abilities, management of secretions and speech and language history including prior speech therapy services.
- Hearing screening
- Identify any cultural or linguistic differences, including bilingual language learners, and any behavioral factors that may be contributing to the breakdown in functional communication.
- Identify the communication demands in the home.
- Assessment of the oral mechanism
  - Muscle development of the jaw, lips, and tongue and the integrity of the oral structures [hard and soft palate, jaw, lips and tongue].
  - Purposeful movement with imitation of non-speech actions.
  - Diadokokinetic rate: muscle movement for coordinating and sequencing a repetitive string of sounds rapidly (i.e., puh, tuh, kuh or buttercup).
- Assess phonology for the presence of phonological processes and phonological awareness skills
- Obtain and interpret a language sample if the child has sufficient verbal output.
  - Language testing in the areas of
    - Semantics
    - Morphology
    - Syntax
    - Pragmatics/Social communication skills.
- The evaluation process may include the selection and administration of standardized tests, portions of standardized tests, non-standardized tests, and language samples.

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Results if developmental speech or language disorder

- Determine an appropriate plan of care based upon the child's medical history, cultural and linguistic differences, and functional impact,
- Interpret the clinical findings of the speech/language evaluation. If the performance measure falls 1 standard deviation below the mean on one or more standardized test, a child may be diagnosed with a speech or language disorder.
- Determine the needs and abilities of the child, parental concerns and the potential for functional improvement within a reasonable time frame, and
- Communicate the results of assessment and the recommendations for intervention to the child, parents, and other involved professionals.

Management

Requirements for Speech Therapy Visits

- In order to establish medical necessity for speech therapy services, the following criteria must be met.
  - The treatment must be considered specific and effective for the patient's condition under evidence based practice guidelines.
  - Frequency and Duration must be considered acceptable under established standards of practice.
  - The complexity of the condition must be such that the skills of a speech therapist are required for the frequency requested.
  - Habilitative and Rehabilitative services- A positive prognosis must established that the patient's condition is expected to improve from the services provided.
  - Maintenance-Services are required to maintain the member's current condition or to prevent or slow deterioration of the member's condition. Coverage of maintenance service is health plan specific.
  - Continuation of care is supported by functional progress resulting from a positive response to skilled treatment.

Frequency and Duration

- Treatment frequency and duration must be based on:
  - Severity of objective clinical findings,
  - Presence of and number of complicating factors and comorbidities,
  - Natural history and chronicity of condition,
  - Expectation for functional improvement with skilled intervention,
  - Response to treatment provided
  - Patient's level of independence.

Treatment Considerations

- The following management will vary depending on the specific needs of the child.
  - Develop an individual program designed to address the child's immediate communication needs so that the child may participate in a variety of communication situations within his/her home, school and/or community.

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Constantino and Bonati (2014) report that "Communication is one of the fundamental human rights, and its impairment results in significant consequences in various areas of child development. Lack of functional communication is generally a life-long condition that severely impacts quality of life of subjects and their families, and is highly correlated with subsequent behavioral problems and high social and economic costs."[10]

- Develop an individual program utilizing the communication strengths of the child and the expectations of the family.
- Develop a treatment plan that emphasizes practice and repetition to ensure acquisition of language skills which can be enhanced with tactile, kinesthetic, auditory and visual prompts.
- Provide family members, caregivers, guardian, siblings, educators and/or other communication partners training in communication techniques and strategies to facilitate effective communication with child including recognition and acknowledgement of the child's communication attempts and identify and respond appropriately to the child's communicative attempts.
- Provide parents with information regarding community support groups and/or programs.
- Continue to assess the child because symptoms will change over time.
- Select and implement appropriate Augmentative or Alternative Communication system for those children with significant speech and/or language difficulties.
- Children with significant language impairments have an opportunity to reach their full communication potential with access to appropriate AAC technology.

Treatment Plan Timeline

Frequency and duration of services is based upon the specific needs of the child at the time of the evaluation. Children with speech and language disorders tend to have periods where they plateau then will go on to make functional improvements. In addition, the symptoms will change over time. Therefore, discharge planning will involve consideration of maximum potential achieved and the individual family circumstances.

Early Stages of Treatment	Explore factors that could impact outcomes now and in the future Explore strengths and weaknesses, and other components for best treatment outcomes Explore family understanding, challenges, and capabilities to develop education and training program Develop treatment program based on findings and best practices for this patient Develop an individualized supplemental home program to monitor and change as needed Document findings, techniques and responses to treatment
Ongoing Treatment	Provide patient/family ongoing education and training Assess response to and feedback from home program to modify, and update Document measurable gains and modify plan of care if indicated Assess ongoing response to treatment, gains, lack of progress, other factors; modify program as needed Assess if intelligible verbalization or supplemental and/or alternative means of communication will be probable; develop these or refer as needed Determine other factors impacting condition requiring intervention or referral (see referral guidelines)

➢ Later Stage of Treatment / Discharge Planning	➢ Provide suggestions and resources for follow-up ➢ Provide home program to continue to progress and/or to maintain gains ➢ Provide summary of course of treatment and progress ➢ If discharged due to medical issues and/or plateau in progress, indicate under what future conditions a new referral would be warranted
➢ Discharge Criteria	➢ Medical/psychological or other issues interfering with goals of treatment program ➢ Able to continue with a home management or other supplemental program ➢ Goals have been reached ➢ Insurance benefit has ended ➢ Non-response to treatment justifies discharge

Referral Guidelines

- If improvement does not meet the above guidelines or improvement has reached a plateau:
  - Refer patients to the referring physician or specialist to explore other alternatives.
  - Referral to an otolaryngologist, pediatric laryngologist, neuropsychologist, or audiologist as appropriate.
  - Consult with a specialist in the field of augmentative and assistive communication systems.
  - Consult with physical therapist, occupational therapist, home trainer or early childhood special educator.
  - Referral to school-based provider.
  - Referral to local support groups.

Home Medical Equipment

Augmentative and assistive communication device.

Self-Management Techniques

Child and parents to follow home exercise program.

Alternatives to ST Management

Use of alternative and assistive communication device.

References

1. American Speech-Language-Hearing Association. Admission/discharge Criteria in Speech-Language Pathology. http://www.asha.org/policy/GL2004-00046/ Accessed September 5, 2018.
2. American Speech-Language-Hearing Association. 2008. Core Knowledge and Skills in Early Intervention Speech-Language Pathology Practice. http://www.asha.org/policy/KS2008-00292/. Accessed September 5, 2018
3. American Speech-Language-Hearing Association. Preferred Practice Patterns for the Profession of Speech-Language Pathology http://www.asha.org/policy/PP2004-00191/. Accessed September 5, 2018
4. American Speech-Language-Hearing Association. 2008. Roles and Responsibilities of Speech-Language Pathologists in Early Intervention: Technical report. http://www.asha.org/policy/GL2008-00293/ . Accessed September 5, 2018
5. American Speech-Language-Hearing Association. Scope of Practice in Speech-Language Pathology http://www.asha.org/policy/SP2016-00343/. Accessed September 5, 2018.
6. American Speech-Language Hearing Association. Speech Language Pathology Medical Review Guidelines. https://www.asha.org/practice/reimbursement/SLP-medical-review-guidelines/ Accessed September 5, 2018
7. .American Speech-Language-Hearing Association. 2013. Supplement to the JCIH 2007 Position Statement: Principles and Guidelines for Early Intervention Following Confirmation that a Child is Deaf or Hard of Hearing ASHA Practice Policy. http://www.asha.org/policy/PS2013-00339/ . Accessed September 5, 2018
8. American Speech-Language and Hearing Association: Spoken Language Disorders: Practice Portal. https://www.asha.org/PRPSpecificTopic.aspx?folderid=8589935327&section=Overview . Accessed September 5, 2018
9. Constantino MA and Bonati M. A scoping review of Interventions to supplement spoken communication for children with limited speech or language skills. PLoS ONE. 2014 9(3) http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0090744. Accessed September 5, 2018
10. Ferguson M A, Hall R L, Riley A, Moore D R. Communication, listening, cognitive and speech perceptions skills in children with auditory processing disorder (APD) or specific language impairment (SLI). J Speech Lang Hear Res. 2011, 54 (211-227). http://jslhr.pubs.asha.org/article.aspx?articleid=1782588&resultClick=3mp . Accessed September 5, 2018
11. Rudolph, JM. Case history risk factors for specific language Impairment: A systematic review and meta analysis. Am J Speech Lang Pathol 2017, 26 (991-1010) (http://ajslp.pubs.asha.org/article.aspx?articleid=2643340. Accessed September 5, 2018.

Voice Disorders

Definition

- A **voice disorder** is characterized by the abnormal production and/or absences of vocal quality, pitch, loudness, resonance, and/or duration, inappropriate for an individual's age and/or sex.

Classification of Voice Disorders

- Organic — voice disorders that are physiological in nature and result from alterations in respiratory, laryngeal, or vocal tract mechanisms
  - **Structural**: voice disorders that result from physical changes in the voice mechanism (e.g., alterations in vocal fold tissues such as edema or vocal nodules; glottal stenosis, laryngopharyngeal reflux, structural changes or muscle atrophy in the larynx due to aging, trauma to the larynx)
  - **Neurogenic**: voice disorders that result from problems with the central or peripheral nervous system innervation to the larynx that affect functioning of the vocal mechanism (e.g., recurrent laryngeal nerve paralysis, vocal tremor, spasmodic dysphonia, Parkinson's Disease, Multiple Sclerosis)
- Functional: voice disorders that result from improper or inefficient use of the vocal mechanism when the physical structure is normal (e.g., vocal fatigue; muscle tension dysphonia or aphonia; diplophonia; ventricular phonation)
- Psychogenic voice disorders or psychogenic conversion aphonia/dysphonia – voice quality is affected when psychological stressors lead to habitual, maladaptive aphonia or dysphonia (chronic stress disorders, anxiety, depression.
- Paradoxical Vocal Fold Movement (PVFM): a condition in which there is intermittent adduction of the vocal folds that interferes with breathing.

Dysphonia:

Impairment of the voice caused by a disorder of phonation. The disorder may affect one or more of the subsystems of speech including respiration, vocal fold vibration, and/or resonance.

- Signs and symptoms of Dysphonia include:
  - Roughness (perception of aberrant vocal fold vibration);
  - Breathiness (perception of audible air escape in the sound signal or bursts of breathiness);
  - Strained quality (perception of increased effort; tense or harsh as if talking and lifting at the same time)
  - Strangled quality (as if talking with breath held);
  - Abnormal pitch (too high, too low, pitch breaks, decreased pitch range);
  - Abnormal loudness/volume (too high, too low, decreased range, unsteady volume);
  - Abnormal resonance (hypernasal, hyponasal, cul de sac resonance);
  - Aphonia (loss of voice);
  - Phonation breaks;
  - Asthenia (weak voice);
  - Gurgly/wet sounding voice;
  - Hoarse voice (raspy, audible aperiodicity in sound);
  - Pulsed voice (fry register, audible creaks or pulses in sound);
  - Shrill voice (high, piercing sound, as if stifling a scream); and
  - Tremulous voice (shaky voice; rhythmic pitch and loudness undulations).
  - Increased vocal effort associated with speaking;
  - Decreased vocal endurance or onset of fatigue with prolonged voice use;
  - Variable vocal quality throughout the day or during speaking;
  - Running out of breath quickly;
  - Frequent coughing or throat clearing (may worsen with increased voice use); and
  - Excessive throat or laryngeal tension/pain/tenderness.
- Signs and symptoms can occur in isolation or in combination. As treatment progresses, some symptoms may dissipate, and others emerge, as compensatory strategies are eliminated.
- Severity of the voice disorder cannot always be determined by auditory-perceptual voice quality alone.

Diagnoses Involving Laryngeal Movement, Airway Dysfunction and/or Laryngeal Sensory Dysfunction.

- Vocal fold paralysis
- Vocal fold paresis
- Chronic Cough
- Laryngospasm
- Spasmodic dysphonia
- Bronchitis
- Autosomal diseases
- Periodic Occurrences of Laryngeal Obstruction - POLO
- Intermittent Arytenoid Region Prolapse – IARP
- Exercise-Induced Laryngeal Obstruction – EILO
- Exercise-Induced Laryngomalacia – EIL
- Aerodynamic Supraglottic Collapse – ASC
- Supraglottic Tissue Collapse – STC
- Paradoxical Arytenoid Movement – PAM
- Functional Supraglottic Airway Obstruction - FSAO
- Functional Dyspnea
- Paradoxical Vocal Fold Motion (aka Vocal cord dysfunction) - PVFM
- Irritable larynx syndrome - ILS
- Pertussis
- Exercise-induced asthma
- Gastroesophageal reflux - GERD
- Laryngoesophageal reflux - LPR
- Idiopathic cough
- Unexplained hoarseness (Functional dysphonia)

Evaluation Should Identify:

- Relevant past medical history with cause and onset date of disorder
- Education
- Occupation
- Cultural and linguistic backgrounds

- The patient's self-assessment, preferences and goals - Voice Handicap Index (VHI), Pediatric Voice Handicap Index (pVHI), Voice-Related Quality of Life (V-RQOL), and Pediatric Voice-Related Quality of Life (pV-RQOL)
- The patient's perceived communication deficits and their impact on social interactions
- Level of functioning prior to the onset of the current condition. Areas being treated should be clearly described in objective, measurable terminology.
- Past treatment for voice. The level of functioning following discharge from prior treatment should be clearly documented using objective, measureable terminology.
- Diagnosis of current condition, including impact on daily life and barriers to success
- Oral-peripheral examination
- Respiration assessment – Coordination of respiration with phonation, Maximum Phonation Time (MPT), S/Z Ratio
- Instrumental assessment – Laryngeal Imaging, Acoustic Assessments, Aerodynamic Assessments
- SLP's subjective assessment (auditory perceptual) - Consensus Auditory Perceptual Evaluation of Voice (CAPE-V), Pediatric Voice Profile (PVP), GRABS Scale, audio recordings and informal observations
- Description of the communication impairments including extent and severity and the impact of communication impairments on the quality of life
- Concurrent conditions and the impact these deficits may have on prognosis.
- Treatment recommendations and description of participation limitations and impact on communicative activities of daily living
- Prognosis for improvement and rationale

Plan of Care

- Long-term goals and estimated time frame for attaining them
- Frequency and intensity of treatment;
- Justification for intensive or long-term treatment
- Prognosis for functional improvement and rationale
- Referrals to other professionals and services as appropriate

SLP Management

Requirements for Speech Therapy Visits

- In order to establish medical necessity for speech therapy services, the following criteria must be met.
  - The treatment must be considered specific and effective for the patient's condition under evidence based practice guidelines.

- Frequency and Duration must be considered acceptable under established standards of practice.
- The complexity of the condition must be such that the skills of a speech therapist are required for the frequency requested.
- Habilitative and Rehabilitative services- A positive prognosis must established that the patient's condition is expected to improve from the services provided.
- Maintenance-Services are required to maintain the member's current condition or to prevent or slow deterioration of the member's condition. Coverage of maintenance service is health plan specific.
- Continuation of care is supported by functional progress resulting from a positive response to skilled treatment.

Frequency and Duration

- Treatment frequency and duration must be based on:
  - Severity of objective clinical findings,
  - Presence of and number of complicating factors and comorbidities,
  - Natural history and chronicity of condition,
  - Expectation for functional improvement with skilled intervention,
  - Response to treatment provided
  - Patient's level of independence

Treatment Considerations

Norms within different settings are considered when determining vocal needs and establishing goals. For example, vocal norms and needs within the workplace may be different from those within the community (e.g., home and social settings).

SLPs often incorporate aspects of more than one therapeutic approach when developing a treatment plan.

- Approaches can be direct or indirect.
  - Direct approaches focus on manipulating the voice-producing mechanisms (e.g., phonation, respiration, and musculoskeletal function) in order to modify vocal behaviors and establishing healthy voice production
  - Indirect approaches modify the cognitive, behavioral, psychological, and physical environments in which voicing
  - Indirect approaches include the following two components:
    - **Patient education**—discussing normal physiology of voice production and the impact of voice disorders on function; providing information about the impact of vocal misuse and strategies for maintaining vocal health (vocal hygiene)
    - **Counseling**—identifying and implementing strategies such as stress management to modify psychosocial factors that negatively affect vocal health
    - A therapeutic plan typically involves the use of at least one direct approach and one or more of the indirect approaches, based on the patient's condition

and goals. Some clinicians concentrate on directly modifying the specific symptoms of the inappropriate voice. Others take a more holistic approach, with the goal of balancing the physiologic subsystems of voice production, respiration, phonation, and resonance.

Treatment Interventions and Clinical Process

- Develop an individual program designed to address all of the factors that are negatively impacting the voice.
- Identify behaviors that are contributing to the voice problems, including unhealthy vocal hygiene practices (e.g., shouting, talking loudly over noise, coughing, throat clearing, and poor hydration) and
- Implement healthy vocal hygiene practices (e.g., drinking plenty of water and talking at a moderate volume) and practices to reduce vocally traumatic behaviors (e.g., voice conservation).
- Develop a treatment plan that emphasizes implementation of strategies in a variety of communication situations within his/her home, work, school, and/or community.
- Provide family members, caregivers, guardian, siblings, and/or other communication partners training in communication techniques and strategies to facilitate effective voice use.
- Provide individuals and caregivers with information regarding community support groups and/or programs if appropriate in terms of the diagnosis.
- Continue to assess the individual because symptoms will change over time.
- Select and implement appropriate therapy techniques to achieve a “better voice” or “good voice”.
- Treatment intensity is variable but typically includes 1-2 x week x 10-20 sessions.
- Provide suggestions and resources for follow-up
- Provide home program to continue to progress and/or to maintain gains
- Provide summary of course of treatment and progress
- If discharged due to medical issues and/or plateau in progress, indicate under what future conditions a new referral would be warranted.

Physiologic Treatment Options:

- Lee Silverman Voice Treatment (LSVT)^{R}
- Expiratory Muscle Strength Training (EMST)
- Vocal Function Exercises (VFEs)

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- Semi-Occluded Vocal Tract (SOVT) Exercises
- Phonation Resistance Training Exercise (PhoRTE)
- Resonant Voice Therapy
- Manual Circumlaryngeal Techniques
- Yawn-Sigh
- Accent Method
- Cup Bubble/Lax Vox
- Straw Phonation
- Stretch and Flow Phonation
- Relaxation
- Lip Trill
- Posture
- Symptomatic Voice Therapy
- Amplification
- Auditory Masking
- Biofeedback
- Chant Speech
- Confidential Voice
- Glottal Fry
- Inhalation Phonation
- Twang Therapy.

Symptomatomic Treatment Options

Treatments aimed at modifying deviant vocal symptoms or perceptual voice components using a variety of facilitating techniques. Symptoms could include breathy phonation, glottal attacks or glottal fry, deviant pitch, or voice that is too soft or loud.

VOICE PROSTHESIS

- A voice prosthesis may be needed in the instance that results in the loss of functional voice. Types of speaking devices may include the following:
- Tracheoesophageal Puncture and Prosthesis
- Electrolarynx
- Speaking Valve.

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Discharge Criteria

- The patient has not shown progress towards reasonable goals, and has reached a plateau
- Patient is able to continue with a home management or maintenance program
- The tasks are repetitive in nature and are no longer skilled, or the patient requires ongoing cueing to complete tasks
- Goals have been reached
- Patient's response/non-response to treatment justifies discharge
- Patient has reached highest functional level of ability
- Medical reasons dictate break from/or termination of treatment

Possible Referrals

- Physician or neurologist for medical concerns
- Social worker for patient or family concerns
- Audiologist for suspected hearing loss
- Physical or occupational therapy for evaluation
- Neuropsychologist for depression and behavior concerns

Skilled Maintenance Care

- Maintenance care is defined as services required to maintain the patient's current condition or to prevent or slow deterioration of the patient's condition.
- Services are covered for maintenance care if the specialized skill, knowledge and judgment of a qualified therapist are required.
- To establish or design a maintenance program appropriate to the capacity and tolerance of the patient
- To educate/instruct the patient or appropriate caregiver regarding the maintenance program
- For periodic re-evaluations of the maintenance program.

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References

1. American Speech-Language-Hearing Association. Admission/discharge Criteria in Speech-Language Pathology. http://www.asha.org/policy/GL2004-00046/ Accessed September 5, 2018.
2. American Speech-Language Hearing Association. The Roles of Otolaryngologists and Speech-Language Pathologists in the Performance and Interpretation of Strobovideolaryngoscopy. 1998. https://www.asha.org/policy/RP1998-00132/ Accessed July 2, 2018
3. American Speech-Language Hearing Association. Vocal Tract Visualization and Imaging Position Statement. 2004. https://www.asha.org/policy/PS2004-00121/ Accessed July 2, 2018
4. American Speech-Language Hearing Association. Voice Disorders. Practice Portal. https://www.asha.org/Practice-Portal/Clinical-Topics/Voice-Disorders/ Accessed July 2, 2018
5. American Speech-Language-Hearing Association. Preferred Practice Patterns for the Profession of Speech-Language Pathology http://www.asha.org/policy/PP2004-00191/. Accessed September 5, 2018.
6. American Speech-Language Hearing Association. Vocal Cord Nodules and Polyps Practice Portal. https://www.asha.org/public/speech/disorders/NodulesPolyps/ Accessed July 2, 2018
7. American Speech-Language Hearing Association. Vocal Cord Paralysis. Practice Portal. https://www.asha.org/public/speech/disorders/vfparalysis/ Accessed July 2, 2018
8. American Speech-Language Hearing Association. Paradoxical Vocal Fold Movement (PVFM) Practice Portal. https://www.asha.org/public/speech/disorders/PVFM/ Accessed July 2, 2018
9. American Speech-Language Hearing Association. Spasmodic Dysphonia Practice Portal. https://www.asha.org/public/speech/disorders/SpasmodicDysphonia/ Accessed July 2, 2018
10. American Speech-Language Hearing Association. Frequently Asked Questions About Voice Therapy. https://www.asha.org/SLP/clinical/Frequently-Asked-Questions-About-Voice-Therapy/ Accessed July 2, 2018
11. American Speech-Language hearing Association. Evaluation and Treatment for Tracheoesophageal Puncture and Prosthesis: Technical Report. https://www.asha.org/policy/TR2004-00138/ Accessed July 2, 2018
12. American Speech-Language hearing Association. Knowledge and Skills for Speech-Language Pathologists With Respect to Evaluation and Treatment for Tracheoesophageal Puncture and Prosthesis. https://www.asha.org/policy/ks2004-00070/. Accessed August 30, 2018
13. American Speech-Language hearing Association. Prosthetic Devices for Voice, Speech, and Swallowing. https://www.asha.org/SLP/clinical/Prosthetic-Devices-Voice-Speech-Swallowing/. Accessed August 30, 2018
14. American Speech-Language-Hearing Association. Scope of Practice in Speech-Language Pathology http://www.asha.org/policy/SP2016-00343/. Accessed September 5, 2018.
15. American Speech-Language Hearing Association. Speech Language Pathology Medical Review Guidelines. https://www.asha.org/practice/reimbursement/SLP-medical-review-guidelines/ Accessed September 5, 2018.
16. Evidence-based clinical voice assessment: a systematic review. Roy N, Barkmeier-Kraemer J, EadieT, et al. M. Am J Speech Lang Pathol. May 2013; 22: 212–226. doi:10.1044/1058-0360(2012/12-0014
17. Van Stan JH, Roy N, Anwan S, Stemple J, Hillman RE. A taxonomy of voice therapy. Am J Speech Lang Pathol. May 2015; 24: 101-125. doi:10.1044/2015_AJSLP-14-0030.

Written Language- Disorders: Pediatrics

Synonyms

- Developmental written language disorder
- Reading and writing disorder
- Reading disorder
- Writing disorder
- Language learning disability
- Mixed Receptive and Expressive Language Disorder – Reading
- Mixed Receptive and Expressive Language Disorder – Writing.

Definition

Developmental written language disorders are characterized as delays or deficiencies in the reading comprehension and written expression of language. The impairment may involve difficulty understanding and expressing written information because of their pre-existing problems in knowledge and use of spoken language (vocabulary, grammar, syntax and non- literal language concepts). The correlation between spoken and written language is well established. Reading and writing require the foundational spoken language skills of phonological processing, vocabulary knowledge, spoken language comprehension and executive functioning. These disorders may manifest symptoms of dyslexia and/or dysgraphia, but diagnosis of dyslexia and/or dysgraphia alone do not qualify as a Developmental Written Language Disorder. Please note that the information contained in this guideline may be best understood in concurrence with the guideline for Spoken Language Disorders in Pediatrics.

History

Goals of Complaint History

- Identify co-morbidities affecting general management or require medical management.
- Determine if trauma-related or congenital; determine nature and extent of event.
- Determine primary medical condition for insurance coverage purposes.
- Differentiate Reading MRELD from Dyslexia
- Differentiate Writing MRELD from Dysgraphia.

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Presentation

A written language disorder presents as difficulty in understanding and expressing written information because pre-existing problems in knowledge and use of spoken language (vocabulary, grammar, syntax and non-literal language concepts). A prior or current diagnosis of spoken language disorder typically precedes the diagnosis of a written language disorder.

Symptomatology

Symptomatology	Possible Consequence or Cause
➢ Difficulty with phonological structure of words ➢ Difficulty with morphological structure of words ➢ Difficulty forming stable associations with orthographic representations of words in print ➢ Difficulty with word fluency and reading comprehension ➢ Impaired written spelling ➢ Impaired recognition of discourse planning, function, organization and effectiveness ➢ Problems with using syntax and cohesive devices to represent relationships among ideas ➢ Impaired formulation of written discourse (narrative and expository) ➢ Difficulty with social communication	➢ Spoken language disorder ➢ Attention-deficit hyperactivity disorder (ADHD) ➢ Emotional disability ➢ Intellectual disability (ID) ➢ Deaf or hard-of-hearing (DHH) ➢ Autism Spectrum disorder (ASD) ➢ Insufficient early oral language experience ➢ Limited early literacy experience ➢ Insufficient reading and writing instruction ➢ Negative consequences of low performance in reading and writing

Differentiating Dyslexia and/or Dysgraphia from Written Language Disorder

Differentiating Dyslexia Only from Written Language Disorder (Reading)

Reading Disorder Requires Skilled SLP Services	Dyslexia Only Not Requiring Skilled SLP Services
➢ Difficulty understanding and expressing written information because of their pre-existing problems in knowledge and use of oral language (vocabulary, grammar, syntax and non-literal language concepts). May demonstrate dyslexia and/ or dysgraphia as well.	➢ Trouble matching visually represented symbol (Letter) with the orally spoken phoneme (sound). ➢ May demonstrate dysgraphia as well.
◆ Typically evident in preschool.	◆ Typically evident in Kindergarten/1st grade
◆ Demonstrates an oral language impairment or a history of a spoken language impairment. Particularly evident in narrative retelling tasks.	◆ No preschool history of delayed oral language milestones or primary oral language disability. Oral language test scores are within normal limits.

◆ Scores on reading tests below normal limits with difficulty noted in the following areas:	◆ Scores on Reading Tests below normal limits with difficulty noted in some or all of the following areas:
➤ Impaired reading comprehension of oral or silent reading for: ◆ Words (vocabulary) ◆ Sentences ◆ Text (factual & inferential questions)	➤ Difficulty with: ◆ Naming letters ◆ Associating sounds with letters ◆ Storing written words in memory
➤ Impaired written composition: ◆ Word retrieval (finding right word) ◆ Morphology (grammar, (i.e., verb tense, word prefix or suffix) ◆ Syntax (i.e., word order in sentences) ◆ Narrative retelling	➤ Impaired: ◆ Accuracy and/or rate for sounding out and blending sounds in real words, pseudo words (i.e., fake words), and/or word spelling

Differentiating Dysgraphia Only from Written Language Disorder (Writing)

Writing Disorder Requires Skilled SLP Services	Dysgraphia Only Not Requiring Skilled SLP Services
➤ Difficulty understanding and expressing written information because of their pre-existing problems in knowledge and use of oral language (vocabulary, grammar, syntax and non-literal language concepts). May demonstrate dyslexia and/ or dysgraphia as well.	➤ Trouble matching fine motor patterns for writing visually represented symbol (letter) with the orally spoken phoneme (sound), impaired memory for storing words to analyze their sounds, poor sequencing of finger movements in order to write letters with or without a model.
◆ Typically evident in preschool.	◆ Typically evident in Kindergarten/1st grade
◆ Demonstrates an oral language impairment or a history of an oral language impairment in comprehension and/ or production of language.	◆ Demonstrates impaired handwriting for legibility and/or automatic retrieval of ordered letters from memory. Also, difficulty with letter production from memory or copying letters and words from a model.
◆ Scores on writing tests below normal limits with difficulty noted in the following areas:	◆ Scores on writing tests below normal limits with difficulty noted in some or all of the following areas:
➤ Difficulty with: ◆ Age appropriate vocabulary ◆ Knowledge of complex sentence types	➤ Difficulty with: ◆ Sequential finger movements ◆ Spelling and ◆ Timeliness of work completion or reduced complexity of com- position due to spelling and/or handwriting difficulties. ◆ Working memory tasks

➢ Impaired written composition: ◆ Word retrieval (finding right word) ◆ Morphology (grammar, (i.e., verb tense, word prefix or suffix) ◆ Syntax (i.e., word order in sentences) ◆ Spelling	➢ Impaired orthographic coding: ◆ Storing written words in working memory ◆ Processing written words in working memory ◆ Analyzing letters in words stored in working memory
➢ Impaired listening comprehension: ◆ Difficulty gaining meaning from orally presented language especially for questions that require the person to infer information ◆ Difficulty remembering orally spoken sentence and written sentences	➢ Impaired orthographic loop: ◆ Formulating internal codes for letters and written words ◆ Finger sequencing plans ◆ Integrating the internal codes with finger movements for letter and written word production

Findings

Goal of Written Language Evaluation

- Examination for possible causes or contributing factors to the complaint.
- Differential diagnoses should include the following:
- Diagnosis of written language disorder
- Identify characteristics and severity of the impairment. If the performance measure falls more than 1 standard deviation below the mean more than one of the standardized tests battery a disorder is present.
- Diagnosis of a spoken language disorder
- Determination of speech sound skills
- Determination of social communication skills
- Referral for assessment of suspected hearing or vision problems
- Recommendations for intervention, support and services in their educational curriculum
- Referral to and consultation with other professionals as needed

Scope of Written Language Evaluation

- Obtain medical history from the child's medical records, interview the child if age appropriate, and interview the child's family member, caregiver or guardian.
- Obtain history of speech, language, and/or literacy difficulties in the family
  - History of hearing or vision problems
- Obtain history of developmental milestones
- Identify any cultural or linguistic differences and any behavioral factors that may contribute to the breakdown in written communication.

- Identify the communication demands in the home.
- Identify language demands and gap between demands of task and skills of child for the classroom environment through teacher and parent checklists
- Assess speech sounds at the word to conversation level, if indicated
- Assess phonological processing
- Assess spoken Language impairment
- Assess social communication, if indicated
- Conduct a Literacy assessment of basic and higher-level reading, writing and spelling skills to include:
  - Reading:
    - print and phonological awareness
    - Sound symbol correspondence and use of knowledge in reading decoding
    - Word recognition
    - Reading automaticity and fluency
    - Knowledge of derivational, inflectional morphology
    - Knowledge of orthographic patterns
    - Knowledge of different variations and uses of text
    - Reading comprehension and strategies used to facilitate comprehension, demonstrate comprehension and managing different types
  - Writing:
    - Ability to make marks on paper, print alphabet, print first and last name and demonstrate intent to communicate by writing
    - Label pictures with text
    - Copy dictation and demonstrate fluency with text production
    - Assess writing process through planning, drafting, revising/editing, and publishing/presenting skills
    - Assess writing product in areas of text fluency, vocabulary and its diversity, morphological awareness, sentence formulation, grammaticality of sentences, sentence complexity, trueness to genre, organization of discourse, completeness, cohesiveness and writing conventions.
  - Spelling:
    - Using letters to spell words
    - Spelling of words as they sound
    - Identifying and correcting errors
    - Avoidance of specific words due to inability to spell them
    - Comprehension of phonemic, morphological and orthographic components of spelling.
- The evaluation process may include the selection and administration of standardized tests, portions of standardized tests, non-standardized tests, and language samples.

Test Instruments for evaluating literacy skills

Diagnosis of a written language disorder includes assessment of spoken language skills as well. Please see a list of evaluative tools in the Pediatric Spoken Language Evaluation Guideline. These lists are not comprehensive only suggestions.

Spoken Language and Literacy Test Instruments

- Emerging Literacy Language Assessment (ELLA) (Wiig & Secord)
- Oral and Written Language Scales II (OWLS II) (Carrow-Woolfolk)
- Test of Narrative Language (Gillam)
- TILLS Test of Integrated Language and Literacy Skills

Reading/ Literacy Test Instruments

- *Comprehensive Test of Phonological Processing-2 (*CTOPP-2*)*
- Dynamic Indicators of Basic Early Literacy Skills (DIBELS)
- *GORT-5: Gray Oral Reading Tests*−Fifth Edition
- *The Test of Reading Comprehension* – Fourth Edition (TORC-4)

Spelling Test Instruments

- Spelling Performance Evaluation for Language & Literacy-2 (SPELL-2)
- Test of Written Spelling – 5 (TWS-5)

Writing Test Instruments

- Test of Written Language-4 (TOWL-4)

Results if developmental speech or language disorder

- Determine an appropriate plan of care based upon the child's medical history, cultural and linguistic differences, and functional impact,
- Interpret the clinical findings of the speech/language evaluation. If the performance measure falls 1 standard deviations below the mean on more than one standardized test, a child may be diagnosed with a written language disorder and/or clinician's description of behavioral observations as well as use of checklists to indicated disordered skills based upon age level of child, if the child is not a candidate for standardized testing.
- Determine the needs and abilities of the child, parental concerns and the potential for functional improvement within a reasonable time frame, and
- Communicate the results of assessment and the recommendations for intervention to the child, parents, and other involved professionals.

Management

- The following management will vary depending on the specific needs of the child.
- Develop an individual program designed to address the child's immediate written communication needs with a balanced focus on all areas of difficulty. Using a balanced focus allows the child to learn and participate within the context of authentic language uses while they participate in a variety of written communication situations within his/her home, school and/or community.
- Develop an individual program utilizing the spoken and written communication strengths of the child and the expectations of the family.
- Provide family members, caregivers, guardian, siblings, educators and/or other communication partners training in written communication techniques and strategies to:
  - Facilitate effective communication with child including recognition and
  - Acknowledgement of the child's communication attempts and identify and
  - Respond appropriately to the child's communicative attempts
- Provide parents with information regarding community support groups and/or
- School based programs.
- Continue to assess the child because symptoms will change over time.

Requirements for Speech Therapy Visits

- In order to establish medical necessity for speech therapy services, the following criteria must be met.
  - The treatment must be considered specific and effective for the patient's condition under evidence based practice guidelines.
  - Frequency and Duration must be considered acceptable under established standards of practice.
  - The complexity of the condition must be such that the skills of a speech therapist are required for the frequency requested.
  - Habilitative and Rehabilitative services- A positive prognosis must established that the patient's condition is expected to improve from the services provided.
  - Maintenance-Services are required to maintain the member's current condition or to prevent or slow deterioration of the member's condition. Coverage of maintenance service is health plan specific.
  - Continuation of care is supported by functional progress resulting from a positive response to skilled treatment.

Frequency and Duration

- Treatment frequency and duration must be based on:
  - Severity of objective clinical findings,
  - Presence of and number of complicating factors and comorbidities,
  - Natural history and chronicity of condition,

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- Expectation for functional improvement with skilled intervention,
- Response to treatment provided
- Patient's level of independence.

Treatment Plan Approaches and Options

Click on link below to obtain further information on this topic.

https://www.asha.org/PRPSpecificTopic.aspx?folderid=8589942549&section=Treatment#Treatment_Approaches.

- Reading
  - Word structure approaches focus on reading decoding — systematic and explicit approaches that are designed to teach such elements as grapheme-phoneme correspondences (for reading and spelling regular words), irregular orthographic patterns, and associations of morphemic components of words and orthographic patterns.
  - Language comprehension approaches focus on identifying and closing gaps in comprehension that may be due to problems with discourse organization, understanding of cohesive devices, unpacking of syntactic complexity, recognition of unknown vocabulary, and the ability to make sense of words in context.
- Writing
  - Process-oriented approaches focus on the processes involved in writing, including developing ideas, planning (pre-writing), organizing, drafting, reflecting, revising, and editing.
  - Product-oriented approaches focus on the written form, including vocabulary, spelling, and grammar; use of cohesive devices; use of writing conventions; and effectiveness of intended communication.
  - Address both process and product simultaneously, when possible
- Spelling
  - Auditory (e.g., phonemic awareness)
  - Visual (e.g., attending to words in print—orthographic pattern awareness)
  - Kinesthetic (e.g., tracing letters of a new word)
  - Multisensory approaches that integrate auditory, visual, and kinesthetic approaches
  - Developmental sequence of spelling to facilitate acquisition of conventional spelling skills
  - Memorization and testing of selected words in list format and in composition
- Intervention with Deaf or Hard of Hearing
  - Visual phonics —a system that uses distinct hand shapes for each English phoneme to clarify sound–symbol relationships; hand shapes represent movements of the mouth, tongue, and throat during oral production that can be associated with the printed letter or letters
  - Fingerspelling —a system that uses hand shapes, each of which corresponds to a letter in the English alphabet
- See ASHA's Practice Portal pages on permanent childhood hearing loss and hearing loss - beyond early childhood.

Treatment Options:

There are a wide variety of EBP treatment options. ASHA has listed an inclusion list of these you may find on the link below.https://www.asha.org/PRPSpecificTopic.aspx?folderid=8589942549&section=Treatment#Treatment_Approaches.

Treatment Plan Timeline

Frequency and duration of services is based upon the specific needs of the child at the time of the evaluation. Children with written language disorders tend to have periods where they plateau then will go on to make functional improvements. In addition, the symptoms will change over time. Therefore, discharge planning will involve consideration of maximum potential achieved and the individual family circumstances.

Early Stages of Treatment

- Explore factors that could impact outcomes now and in the future
- Explore strengths and weaknesses, and other components for best treatment outcomes
- Explore family understanding, challenges, and capabilities to develop
- education and training program
- Develop treatment program based on findings and best practices for this
- patient
- Develop an individualized supplemental home program to monitor and change as needed
- Document findings, techniques and responses to treatment

Ongoing Treatment

- Provide patient/family ongoing education and training
- Assess response to and feedback from home program to modify, and update
- Document measurable gains and modify plan of care if indicated
- Assess ongoing response to treatment, gains, lack of progress, other factors; modify program as needed
- Assess if intelligible verbalization or supplemental and/or alternative means of communication will be probable; develop these or refer as needed
- Determine other factors impacting condition requiring intervention or referral (see referral guidelines)

Later Stage of Treatment/Discharge Planning

- Provide suggestions and resources for follow-up
- Provide home program to continue to progress and/or to maintain gains

- Provide summary of course of treatment and progress
- If discharged due to medical issues and/or plateau in progress, indicate under what future conditions a new referral would be warranted

Discharge Criteria

- Medical/psychological or other issues interfering with goals of treatment program
  - Insurance benefit has ended
  - Goals have been reached
  - Able to continue with a home management or other supplemental program
  - Non-response to treatment justifies discharge

Home Medical Equipment

Augmentative and assistive communication device.

Self-Management Techniques

Child and parents to follow home exercise program.

References

1. American Speech-Language-Hearing Association. (2016a). *Code of ethics* [Ethics]. Available from www.asha.org/policy. Accessed September 5, 2018.
2. American Speech-Language-Hearing Association. Admission/discharge Criteria in Speech-Language Pathology. http://www.asha.org/policy/GL2004-00046/ Accessed September 5, 2018.
3. American Speech-Language-Hearing Association. Preferred Practice Patterns for the Profession of Speech-Language Pathology http://www.asha.org/policy/PP2004-00191/. Accessed September 5, 2018.
4. American Speech-Language-Hearing Association. Scope of Practice in Speech-Language Pathology http://www.asha.org/policy/SP2016-00343/. Accessed September 5, 2018.
5. American Speech-Language Hearing Association. Speech Language Pathology Medical Review Guidelines. https://www.asha.org/practice/reimbursement/SLP-medical-review-guidelines/ Accessed September 5, 2018
6. Anderson, R. C. (1980). Study strategies and adjunct aid. In R. J. Spiro, B. C. Bruce, & W. R. Brewer (Eds.), *Theoretical issues in reading comprehension: Perspectives from cognitive psychology, artificial intelligence linguistics, and education* (pp. 415–431). Hillsdale, NJ: Erlbaum.
7. Apel, K., & Masterson, J. J. (2001). Theory-guided spelling assessment and intervention: A case study. *Language, Speech, and Hearing Services in Schools, 32,* 182–195.
8. August, D., & Shanahan, T. (Eds.). (2006). Executive summary. In D. August & T. Shanahan (Eds.), *Developing literacy in second-language learners: Report of the National Literacy Panel on Language-Minority Children and Youth* (pp. 1–9). Mahwah, NJ: Erlbaum. Retrieved from http://www.standardsinstitutes.org/sites/default/files/material/developing-literacy-in-second-language-learners-executive-summary_2.pdf
9. Badian, N. A. (1999). Reading disability defined as a discrepancy between listening and reading comprehension: A longitudinal study of stability, gender differences, and prevalence. *Journal of Learning Disabilities, 32,* 138–148.
10. Barton, S. E. (2000). *Barton reading and spelling system.* San Jose, CA: Bright Solutions for Dyslexia, LLC.
11. Bear, D. R., Invernizzi, M., Templeton, S. R., & Johnston, F. (2015). *Words Their Way: Word study for phonics, vocabulary, and spelling instruction*. Boston, MA: Pearson.
12. Berninger, V. W., Nagy, W., Richards, T., & Raskind, W. (2008). Developmental dyslexia: A developmental neurolinguistic approach. In G. Richheit & H. Strohner (Eds.), *Handbook of communication competence* (pp. 397–440). Berlin, Germany: Walter de Gruyter.
13. Blachman, B. A., Ball, E. W., Black, R., & Tangel, D. M. (2000). *Road to the code.* Baltimore, MD: Brookes.
14. Blischak, D. (1994). Phonologic awareness: Implications for individuals with little or no functional speech. *Augmentative and Alternative Communication*, *10,* 245–254.
15. Bourassa, D. C., & Treiman, R. (2001). Spelling development and disabilities: The importance of linguistic factors. *Language, Speech, and Hearing Services in Schools, 32,* 172–181.
16. Brown, M. C., Sibley, D. E., Washington, J. A., Rogers, T. T., Edwards, J. R., MacDonald, M. C., & Seidenberg, M. S. (2015). Impact of dialect use on a basic component of learning to read. *Frontiers in Psychology, 6,* 1–17.
17. Brown, W. E., Eliez, S., Menon, V., Rumsey, J. M., White, C. D., & Reiss, A. L. (2001). Preliminary evidence of widespread morphological variaitons of the brain in dyslexia. *Neurology, 56,* 781–783.
18. Catts, H. W., Fey, M. E., Tomblin, J. B., & Zhang, X. (2002). A longitudinal investigation of reading outcomes in children with language impairments. *Journal of Speech, Language, and Hearing Research, 45,* 1142–1157.
19. Catts, H. W., Kamhi, A. G., & Adlof, S. M. (2012). Causes of reading disabilities. In A. G. Kamhi & H. W. Catts (Eds.), *Language and reading disabilities* (pp. 77–111). New York, NY: Pearson.
20. Chall, J. S. (1983). *Stages of reading development.* New York, NY: McGraw-Hill.

21. Cirrin, F. M., Schooling, T. L., Nelson, N. W., Diehl, S. F., Flynn, P. F., Staskowski, M., Adamczyk, D. F. (2010). Evidence-based systematic review: Effects of different service delivery models on communication outcomes for elementary school-age children. *Language, Speech, and Hearing Services in Schools, 41,* 233–264.
22. DeFries, J. C., & Alarcon, M. (1996). Genetics of specific reading disability. *Mental Retardation and Developmental Disabilities, 2,* 39–47.
23. Duff, D., Tomblin, J. B., & Catts, H. (2015). The influence of reading on vocabulary growth: A case for a Matthew effect. *Journal of Speech, Language, and Hearing Reseach, 58,* 853–864.
24. Dymock, S. (2007). Comprehension strategy instruction: Teaching narrative text structure awareness. *The Reading Teacher, 61,* 161–167.
25. Eckert, M. A., Leonard, C. M., Richards, T. L., Aylward, E. H., Thomson, J., & Berninger, V. W. (2003). Anatomical correlates of dyslexia: Frontal and cerebellar findings. *Brain, 126,* 482–494.
26. Ehri, L. C. (2000). Learning to read and learning to spell: Two sides of a coin. *Topics in Language Disorders,20,* 19–36.
27. Flannery, K., Liederman, J., Daly, L., & Schultz, J. (2000). Male prevalence for reading disability is found in a large sample of Black and White children free from ascertainment bias. *Journal of the International Neuropsychological Society, 6,* 433–442.
28. Flax, J. F., Realpe-Bonilla, T., Hirsch, L. S., Brzustowicz, L. M., Bartlett, C. W., & Tallal, P. (2003). Specific language impairment in families: Evidence for co-occurrence with reading impairments. *Journal of Speech, Language, and Hearing Research, 46,* 530–543.
29. Galaburda, A. M. (1988). The pathogenesis of childhood dyslexia. In F. Plum (Ed.), *Language, communication, and the brain.* New York, NY: Raven Press.
30. Gatlin, B., & Wanzek, J. (2015). Relations among children's use of dialect and literacy skills: A meta-analysis. *Journal of Speech, Language, and Hearing Research, 58,* 1306–1318.
31. Gerber, A. (1993). *Language-related learning disabilities: Their nature and treatment*. Baltimore, MD: Brookes.
32. Gillingham, A., & Stillman, B. W. (1997). *The Gillingham manual.* Cambridge, MA: Educators Publishing Service.
33. Gonzalez, J. E., & Nelson, J. R. (2003). Stepping Stones to Literacy: A prevention-oriented phonological awareness training program. *Reading and Writing Quarterly*, *19,* 393–398.
34. Gorman, B. K., Fiestas, C. E., Peña, E. D., & Clark, M. R. (2011). Creative and stylistic devices employed by children during a storybook narrative task: A cross-cultural study. *Language, Speech, and Hearing Services in Schools, 42,* 167–181.
35. Gough, P. B., & Tunmer, W. E. (1986). Decoding and reading disability. *Remedial and Special Education, 7,* 6–10.
36. Hare, V. C., & Pulliam, C. A. (1980). College student's metacognitive awareness of reading behavior. In M. L. Kamil & A. J. Moe (Eds.), *Perspectives on reading research instruction. Twenty-ninth yearbook of the National Reading Conference* (pp. 226–271). Washington, DC: National Reading Conference.
37. Harris, K. R., & Graham, S. (1992). Self-regulated strategy development: A part of the writing process. In M. Pressley, K. Harris, & J. Gutherie (Eds.), *Promoting academic competence and literacy in school* (pp. 277–307). San Diego, CA: Academic Press.
38. Hoff, E. (2013). Interpreting the early language trajectories of children from low SES and language minority homes: Implications for closing achievement gaps. *Developmental Psychology, 49,* 4–14.
39. Hulme, C., & Snowling, M. J. (2013). *Developmental disorders of language learning and cognition*. West Sussex, England: Wiley-Blackwell.
40. Johnston, S. S., Davenport, L., Kanarowski, B., Rhodehouse, S., & McDonnell, A. P. (2009). Teaching sound letter correspondence and consonant-vowel-consonant combinations to young children who use augmentative and alternative communication. *Augmentative and Alternative Communication, 25,* 123–135.
41. Juel, C. (1991). Beginning reading. In R. Barr, M. L. Kamil, P. B. Mosenthal, & P. D. Pearson (Eds.), *Handbook of reading research: Volume II* (pp. 749–788). New York, NY: Longman.

42. Kamhi, A. G., & Catts, H. W. (2012). *Language and reading disabilities* (3rd ed.). Baltimore, MD: Pearson.
43. Katusic, S. K., Colligan, R. C., Weaver, A. L., & Barbaresi, W. J. (2009). The forgotten learning disability: Epidemiology of written-language disorder in a population-based birth cohort (1976–1982), Rochester, Minnesota. *Pediatrics*, *123*, 1306–1313.
44. Kim, A. H., Vaughn, S., Wanzek, J., & Wei, S. (2004). Graphic organizers and their effects on the reading comprehension of students with LD: A synthesis of research. *Journal of Learning Disabilities*, *37,* 105–118.
45. Kletzein, S. B. (1991). Strategy use by good and poor comprehenders reading expository text of differing levels. *Reading Research Quarterly, 26,* 67–85.
46. Koppenhaver, D. A., Coleman, P. P., Kalman, S. L., & Yoder, D. E. (1991). The implications of emergent literacy research for children with disabilities. *American Journal of Speech-Language Pathology, 1,* 38–44.
47. Koppenhaver, D. A., & Yoder, D. E. (1993). Classroom literacy instruction for children with severe speech and physical impairments (SSPI): What is and what might be. *Topics in Language Disorders, 13,* 1–15.
48. Kovelman, I., Baker, S. A., & Petitto, L. A. (2008). Age of first bilingual language exposure as a new window into bilingual reading development. *Bilingualism: Language and Cognition, 11,* 203–223.
49. Leach, J. M., Scarborough, H. S., & Rescorla, L. (2003). Late-emerging reading disabilities. *Journal of Educational Psychology, 95,* 211–224.
50. Light, J. G., & DeFries, J. C. (1995). Comorbidity of reading and mathematics disabilities: Genetics and environmental etiologies. *Journal of Learning Disabilities, 28,* 96–106.
51. Lindamood, P. C., & Lindamood, P. (1998). *The Lindamood phoneme sequencing program for reading, spelling and speech*. Austin, TX: PRO-ED.
52. Lo, Y. Y., Cooke, N. L., & Starling, A. L. P. (2011). Using a repeated reading program to improve generalization of oral reading fluency. *Education and Treatment of Children, 34,* 115–140.
53. Luckner, J. L., & Handley, C. M. (2008). A summary of the reading comprehension research undertaken with students who are deaf or hard of hearing. *American Annals of the Deaf, 153,* 6–36.
54. Marschark, M., & Wauters, L. (2008). Language comprehension and learning by deaf students. In M. Marschark, & P. C. Hauser (Eds.), *Deaf cognition: Foundations and outcomes* (pp. 309–350). New York, NY: Oxford University Press.
55. Masterson, J. J., & Apel, K. (2007). Spelling and word-level reading: A multilinguistic approach. In A. Kamhi, J. Masterson, & K. Apel (Eds.), *Clinical decision making in developmental language disorders* (pp. 249–266). Baltimore, MD: Brookes.
56. McCabe, A., & Bliss, L. S. (2003). *Patterns of narrative discourse.* Boston, MA: Allyn & Bacon.
57. Nelson, N. W. (2014b, November). *Raising awareness among school professionals and school-age students.* Paper presented at the ASHA Convention, Orlando, FL.
58. Nelson, N. W., & Crumpton, T. (2015). Reading, writing, and spoken language assessment profiles for students who are deaf and hard of hearing compared with students with language learning disabilities, *Topics in Language Disorders, 35,* 157–179.
59. Nelson, N. W., Plante, E., Helm-Estabrooks, N., & Hotz, G. (2015). *Test of Integrated Language and Literacy Skills (TILLS).* Baltimore, MD: Brookes.
60. Nelson, N. W., Van Meter, A. M., Chamberlain, D., & Bahr, C. M. (2001, August). The speech-language pathologist's role in a writing lab approach. *Seminars in Speech and Language, 22,* 209–219.
61. Páez, M. M., Tabors, P. O., & López, L. M. (2007). Dual language and literacy development of Spanish-speaking preschool children. *Journal of Applied Developmental Psychology, 28,* 85–102.
62. Paul, R., & Norbury, C. (2012). *Language disorders from infancy through adolescence: Listening, speaking, reading, writing, and communicating*. St. Louis, MO: Elsevier.
63. Pennington, B. F., & Bishop, D. V. (2009). Relations among speech, language, and reading disorders. *Annual Review of Psychology, 60,* 283–306.
64. Perfetti, C. A. (1985). *Reading ability.* New York, NY: Oxford University Press.

65. Perfetti, C. A., & Sandak, R. (2000). Reading optimally builds on spoken language: Implications for deaf readers. *Journal of Deaf Studies and Deaf Education, 5,* 32–50.
66. Petrill, S. A., Hart, S. A., Harlaar, N., Logan, J., Justice, L. M., Schatschneider, C., Cutting, L. (2010). Genetic and environmental influences on the growth of early reading skills. *Journal of Child Psychology and Psychiatry, 51,* 660–667.
67. Rehabilitation Act of 1973, 29 U.S.C. § 701 *et seq*.
68. Ritchey, K. D., & Goeke, J. L. (2006). Orton-Gillingham and Orton-Gillingham—based reading instruction: A review of the literature. *The Journal of Special Education, 40,* 171–183.
69. Roseberry-McKibbin, C. (2014). *Multicultural students with special language needs: Practical strategies for assessment and intervention*. Oceanside, CA: Academic Communication Associates.
70. Roth, F., & Worthington, C. K. (2015). *Treatment resource manual for speech-language pathology*. Clifton Park, NY: Delmar, Cengage Learning.
71. Scanlon, D. M., & Vellutino, F. R. (1996). Prerequisite skills, early instruction and success in first grade: Selected results form a longitudinal study. Mental Retardation and Developmental Disabilities, 2, 54–63.
72. Scott, C., & Windsor, J. (2000). General language performance measures in spoken and written narrative and expository discourse of school-age children with language learning disabilities. *Journal of Speech, Language, and Hearing Research, 43,* 324–339.
73. Silliman, E. R., & Berninger, V. W. (2011). Cross-disciplinary dialogue about the nature of oral and written language problems in the context of developmental, academic, and phenotypic profiles. *Topics in Language Disorders, 31,* 6–23.
74. Stanovich, K. (1986). Matthew effects in reading: Some consequences of individual differences in the acquisition of literacy. *Reading Research Quarterly, 21,* 360–407.
75. Stothard, S., Snowling, M. Bishop, D., Chipchase, B., & Kaplan, C. (1998). Language-impaired preschoolers: A follow-up into adolescence. *Journal of Speech, Language, and Hearing Research, 4,* 407–418.
76. Sun, L., & Wallach, G. P. (2014). Language disorders are learning disabilities: Challenges on the divergent and diverse paths to language learning disability. *Topics in Language Disorders, 34,* 25–38.
77. Torgesen, J. K. (2002). The prevention of reading difficulties. *Journal of School Psychology, 40,* 7–26.
78. Torgesen, J. K. (2004). Avoiding the devastating downward spiral: The evidence that early intervention prevents reading failure. *American Educator*, *28,* 6–19.
79. Trezek, B. J., Wang, Y., & Paul, P. V. (2010). *Reading and deafness: Theory, research, and practice*. Clifton Park, NY: Delmar, Cengage Learning.
80. Tunmer, W. E., & Chapman, J. W. (2007). Language-related differences between discrepancy-defined and non-discrepancy-defined poor readers: A longitudinal study of dyslexia in New Zealand. *Dyslexia, 13,* 42–66.
81. Vaughn, S., Cirino, P. T., Linan-Thompson, S., Mathes, P. G., Carlson, C. D., Cardenas-Hagan, E., Francis, D. J. (2006). Effectiveness of a Spanish Intervention and an English Intervention for English Language Learners at Risk for Reading Problems. *American Educational Research Journal, 43 ,* 449–487.
82. Wagner, R. K., Francis, D. J., & Morris, R. D. (2005). Identifying English language learners with learning disabilities: Key challenges and possible approaches. *Learning Disabilities Research and Practice, 20,* 6–15.
83. Weaver, C. (1998). Toward a balanced approach to reading. In C. Weaver (Ed.), *Reconsidering a balanced approach to reading* (pp. 11–74). Urbana, IL: National Council of Teachers of English.
84. Wilson, B. A. (1998). Matching student needs to instruction: Teaching reading and spelling using the Wilson Reading System. In S. A. Vogel & S. Reder (Eds.), *Learning disabilities, literacy, and adult education* (pp. 213–235). Baltimore, MD: Brookes.
85. Wolf, B. J. (2005). Teaching handwriting. In J. R. Birsh (Ed.), *Multisensory teaching of basic language skills* (pp. 179–206). Baltimore, MD: Brookes.

86. Wong, B. Y. L., & Wong, R. (1986). Study behavior as a function of metacognitive knowledge about critical task variables: An investigation of above average, average, and learning disabled readers. *Learning Disabilities Research, 1,* 101–111.
Zevenbergen, A. A., & Whitehurst, G. J. (2003). Dialogic reading: A shared picture book reading intervention for preschoolers. In A. Van Kleeck, S. A. Stahl, & E. B. Bauer (Eds.), *On reading books to children: Parents and teachers* (pp. 177–200). Mahwah, NJ: Erlbaum.

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