SUBJECT: SPEECH-LANGUAGE PATHOLOGY THERAPEUTIC PROCEDURES	REFERENCE #8203
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DEPARTMENT: REHABILITATION SERVICES	EFFECTIVE:
APPROVED BY:	REVISED:

POLICY:

The Speech-Language Pathologist plans care, treatment, and services for patients with developmental or acquired impairments of verbal and written language, voice, articulation, fluency, auditory and visual processing, cognition, memory, alternative/augmentative communication and swallowing.

PROCEDURE:

- The following impairments are addressed by Speech-Language Pathology:
    - Apraxia:
        - Apraxia of speech is a neurogenic speech disorder.
        - Patients with apraxia have sensorimotor problems in positioning and sequentially moving muscles for volitional speech production.
        - Apraxia is caused by impaired motor planning. Most often patients have unimpaired reflex and automatic acts' the difficulty they have is mostly in executing the voluntary movements in speech.
        - Pure apraxia is rare, and is not caused by muscle weakness or neuromuscular slowness.
        - In its pure form apraxia should not affect language skills; however, language skills are affected if there is a coexisting aphasia, which is common.
        - Apraxia of speech is known to be the most difficult disorder for Speech-Language Pathologists to treat and is extremely frustrating for the patient.
        - Oral apraxia can also occur, which results in imprecise and inconsistent articulatory movements during other oral-motor-activities.

- Major diagnoses resulting in verbal and oral apraxia:
  - Cancer
  - Neurological impairment
  - CVA
  - TIA
  - Head injury
  - Tumor
  - ETOH/controlled substance abuse
- Therapeutic intervention options:
  - Focus on adequate points of articulation and the sequencing of articulatory gestures.
  - Should be carefully sequenced to move from more automatic-reactive speech to less automatic volitional-purposive speech and eventually to spontaneous speech.
  - Treatment targets include articulator accuracy, slower rate, systematic practice, graduate increase in the rate, and normal prosody. Treatments should be primarily concerned with speech movements as opposed to non-speech movements.
    - Procedures include instruction, demonstration, modeling, shaping, phonetic placement, frequent cueing, use of rhythm and immediate positive or corrective feedback.
  - Teaching of family members and healthcare workers including speaking slowly, use of shorter sentence, reducing background noise, talking only with the patient is focused, and use total communication.

- Aphasia:
  - Aphasia is loss or impairment of receptive and/or expressive language due to central nervous system damage.
  - Major diagnoses related to aphasia:
    - Cancer
    - CVA
    - Head injury
    - Hydrocephaly
    - Intraventricular pressure
    - Neurological impairment
    - Pre-senile and senile dementia
    - TIA
    - Tumor
  - Therapeutic intervention options:
    - Point to named body parts and objects
    - Modeling responses
    - Incomplete sentence fill in the blank
    - Object/color matching
    - Object to picture matching
    - Picture to picture matching
    - Object identification from increasing field of presentation
    - Environmental object identification
    - Answering simple personal to complex abstract yes/no questions

- Following simple and more complex directions
- Short paragraph reading and auditory comprehension tasks
- Reading tasks
- Automatics
- Counting
- Simple social response
- Gesturing object function with or without object present
- Sentence completion
- Object naming
- Photo description
- Action description
- Naming in categories
- Functional writing
- Answering questions with short responses
- Defining relationships
- Verbal problem solving

- Dysarthria:
  - Dysarthrias are a group of speech disorders resulting from impaired muscular control of the speech mechanism, involving peripheral or central nervous system pathology due to paralysis of speech musculature, weakness or in coordination of the speech musculature (both voluntary and involuntary). Voice, articulation, respiration, rhythm and/or resonance for speech may be affected. The dysarthric patient may also have difficulty handling his/her secretions and swallowing.
  - Major diagnoses resulting in dysarthria:
    - CP
    - CVA
    - Head injury
    - Intraventricular pressure secondary to trauma or disease, such as Reye's Syndrome
    - Metastatic cancer
    - MR
    - MS
    - Peripheral nerve damage
    - Pre-senile (Alzheimer's) and senile dementias
    - Progressive neurological disease, such as Parkinson's
    - Spinal cord injury
    - Tumor

- Therapeutic intervention options:
  - Activities to encourage rate reduction
  - Appropriate pauses in speech
  - Training of consistent production of subglottal air pressure
  - Modification of posture
  - Minimal contrast pairs activities
  - Oralmotor exercises to develop strength and coordination
  - Training of maximum vowel prolongation
  - Shaping production of longer phrases and sentences
  - Controlled exhalation
  - Over-articulation
  - Compensatory articulator movements
  - Phrase production via language-based tasks
  - Pitch control tasks
  - Single word production via language-based tasks

- Types of Dysarthria
  - Flaccid dysarthria (lower motor neuron/bulbar palsy):
    - Symptoms:
      - Atrophy
      - Flaccidity
      - Diminished reflexes
      - Weakness
      - Fasciculation
    - Speech symptoms:
      - Audible inspirations
      - Imprecise consonants
      - Breathiness during phonation
      - Hypernasality and nasal emissions
      - Harsh voice, monopitch and monoloudness
  - Spastic Dysarthria (Upper Motor Neuron/Pseudobulbar Palsy)
    - Symptoms:
      - Dysphagia
      - Emotional lability
      - Expressionless face
      - Hyperactive gag reflex
      - Hyperadduction of vocal folds and inadequate closure of velopharyngeal port

- Positive sucking and jaw jerk
- Restricted range and slow speed of the tongue
- Soft palate responds reflexively but limited on phonation
- Spasticity and weakness, bilateral facial weakness, jaw strength may be normal

♦ Speech symptoms:

- Breathy and harsh quality
- Hypernasality
- Imprecise consonants
- Low pitch
- Prosodic changes (excess and equal stress and variability of pitch and loudness, monopitch and monoloudness)
- Slow rate
- Strained strangled phonation
- Strained-strangled voice quality

■ Ataxic Dysarthria:

♦ Symptoms:

- Gait disturbances, including hypotonia musculature
- Movement disorders (over or undershooting of targets, uncoordinated, jerky, inaccurate, slow, imprecise and halting movements)

- Speech symptoms:
  - Articulatory breakdown (imprecise production of consonants, irregular articulatory breakdowns, and distortion of vowels)
  - Dysrhythmia of speech
  - Excess loudness variation
  - Excessive and even stress
  - Harsh voice
  - Impression of drunken speech
  - Monopitch and monoloudness
  - Prolonged phonemes and intervals between words or syllables
  - Prosodic alterations with impaired stress
  - Slow rate
  - Syllable repetition

- Hypokinetic Dysarthria (Extrapyramidal/Parkinson):
  - Symptoms (Parkinson's):
    - Decreased swallowing (accumulation of saliva in the mouth and drooling)
    - Failure of gestural expression
    - Limited range, speech and force of movement
    - Micro writing

- Paucity of movement
- Postural disturbances (involuntary flexion of the head, trunk and harm; difficulty changing positions)
- Resting tremor
- Rigidity of muscles
- Walking disorder (slow to begin, then short, rapid, shuffling steps)

♦ Speech symptoms:

- Fast repetitive movements of very reduced range
- Harsh and continuously breathy voice
- Imprecise consonants
- Monopitch and monoloudness
- Reduced stress
- Short rushes of speech
- Variable rate

■ Hyperkinetic Dysarthria (Extrapyramidal):

- Abnormal and involuntary movements of the orofacial muscles
- Dystonia
- Myoclonus
- Predominantly quick hyperkinesias
- Predominantly slow hyperkinesias

- Mixed Dysarthrias:
  - Multiple Sclerosis:
    - Dysarthria may or may not be present
    - Severity is related to the severity of neurological impairment
    - Speech deviations become more predominant as additional motor systems become involved
  - Amyotrophic Lateral Sclerosis:
    - Excessive intervals between words and phrases
    - Grossly affected articulation
    - Laborious, slow production of words in very short phrases
    - Marked hypernasality
    - Mixed spastic flaccid dysarthria
    - Monotone
    - Often unintelligible speech
    - Severe harshness
    - Strained strangled squeezing out of low pitched tones
  - Wilson's Disease

- Voice Disorders:
  - Voice disorders are caused by impairment of vocal cords. Weakness of intensity (loudness), pitch limitation, monotonous presentation, breathiness, pitch breaks, as well as discomfort and edema may be present. Paralysis or paresis may affect one or both vocal folds leading to aphonia (no functional vocal fold vibration).
  - Functional voice disorders include such pathologies as:
    - Granulomas
    - Vocal fold paralysis
    - Vocal nodules which are unilateral or bilateral growths or nodes on the medial surface(s) of the fold(s) resulting in pitch limitations, breathiness, hoarseness and pain
  - Therapeutic intervention options post ENT MD consult:
    - Paresis Post Neurological Insult:
      - Develop ability to approximate vocal folds (adduction) via such tasks as pushing against a hard surface in an effort to bring vocal folds together, sustain exhalation during phonation for up to five (5) to 10 seconds and develop awareness of breath support necessary for adequate voice production.
    - Pathology of Vocal Fold:
      - If a pathology is suspected, the Speech-Language Pathologist should recommend an examination by an Otolaryngologist (ENT). A direct laryngoscopy may be done by an ENT to substantiate phonological indications of suspected pathologies. Surgical intervention may be required prior to initiation of voice therapy; however, it is recommended that a conference with the patient's ENT occur as pre-surgical voice therapy may improve the patient's condition, depending upon the medical diagnosis.

- Inability to phonate resulting from cuffed-type tracheostomy in place with cuff inflated:
  - Tracheostomy speaking valves are available to allow tracheostomy patients to phonate. If medically able, the patient's cuff is deflated. In a combined effort with respiratory therapy, the Speech-Language Pathologist places a speaking valve on the patient's tracheostomy tube.
- Steps to placing the valve:
  - Oral suctioning done by Respiratory Therapist
  - Deep suctioning and lavage done by the Respiratory Therapist
  - Deflate cuff, noting volume of air being removed
  - Reset ventilator setting to compensate for lost tidal volume
- While patient is using the speaking valve, Speech-Language Pathologist and Respiratory Therapist are making the following observations of the patient:
  - Breathing patterns
  - Heart rate and blood pressure
  - Overall well being, color, anxiety, etc.
  - Oxygen saturation percentage
  - Respiratory volumes
  - Vocal quality

- Maxillo Facial Disorders:
  - Speech production and swallowing disorders can result from:
    - Cancer of the maxilla and/or mandible
    - Cleft palate (either acquired or congenital)
    - Faulty dentition; loosely fitting dentures
    - Trauma to the facial regions due to injury or burns; either exterior or interior as with ingestions of caustic substances
  - Nursing staff are responsible for the daily care of the patient's dentures; ensuring proper placement and application of dental adhesive when indicated. Food pocketing may occur and Nursing is directly responsible for maintaining clear oral cavity to prevent aspiration.
  - Therapeutic intervention options:
    - The Speech-Language Pathologist works in close conjunction with the attending physician and reconstructive surgeon as well as the prosthodontist to develop a patient care plan for the remediation of speech disorders.
    - Prosthetic devices such as an obturator, velo-palatal lift or artificial palate may need to be created by the prosthodontist.
    - The Speech-Language Pathologist may be involved in desensitization of oral structures, modifying resonance, increasing strength and range of motion of oral musculature, providing compensatory techniques for speech or swallowing, etc.

REFERENCE:

Roseberry-McKibbin, Celeste, Hegde, M. N., *An Advanced Review of Speech-Language Pathology*, PRO-ED; Second Edition, 2006