Dementia, Vascular: Speech Therapy

Indexing Metadata/Description

› Title/condition: Dementia, Vascular: Speech Therapy
› Synonyms: Multi-infarct dementia; vascular dementia: speech therapy; Binswanger's disease: speech therapy; arteriosclerotic dementia: speech therapy; dementia, arteriosclerotic: speech therapy
› Anatomical location/body part affected: Blood vessels in the brain\(^1\)
› Area(s) of specialty: Adult Neurological Disorders
› Description: Vascular dementia (VaD) describes impairments in cognitive functioning that result from restricted blood flow to the brain.\(^1\) In 2013, the *Diagnostic and Statistical Manual of Mental Disorders*, fifth edition (DSM-5), was published, in which the term “dementia” was replaced with “major neurocognitive disorder” (NCD).\(^{46}\) According to the DSM-5, NCDs exist on a spectrum defined by the extent of cognitive and functional impairments. The term mild NCD refers to cognitive impairment that does not interfere with independence but results in the need for occasional assistance, increased time to complete activities, or use of compensatory strategies. Major NCD refers to cognitive impairment that is so severe that it results in considerable functional impairments and the individual requires assistance to complete ADLs.\(^{46}\) DSM-5 authors note that the terms mild NCD and major NCD are inherently arbitrary and that diagnosis will be based on the physician’s careful history taking and observation to determine and appropriately label the extent of impairment.\(^{46}\) Despite the introduction of the term NCD, DSM-5 authors state that the term dementia is still used within the DSM-5 for continuity and is appropriate in clinical use as well.\(^{46}\) For detailed information on other types of dementia see the series of Clinical Reviews on dementia.

• According to the DSM-5, VaD is classified as “major or mild vascular neurocognitive disorder.” In order to have the diagnosis of VaD according to the DSM-5, an individual must meet the diagnostic criteria for either major or mild NCD and exhibit considerable cognitive deficits including reduced complex attention, poor processing speed, and executive dysfunction that are consistent with a vascular etiology (i.e., occurring in close temporal proximity to one or more cardiovascular events).\(^{46}\)

› ICD-10 codes
  • F01.50 vascular dementia without behavioral disturbance
  • F01.51 vascular dementia with behavioral disturbance
  • I67.3 progressive vascular leukoencephalopathy

› G-Codes
  • Motor Speech G-code set
    – G8999, Motor speech functional limitation, current status at time of initial therapy treatment/episode outset and reporting intervals
    – G9186, Motor speech functional limitation, projected goal status at initial therapy treatment/outset and at discharge from therapy
    – G9158, Motor speech functional limitation, discharge status at discharge from therapy/end of reporting on limitation
• **Spoken Language Comprehension G-code set**
  – G9159, Spoken language comprehension functional limitation, current status at time of initial therapy treatment/episode outset and reporting intervals
  – G9160, Spoken language comprehension functional limitation, projected goal status at initial therapy treatment/episode outset and at discharge from therapy
  – G9161, Spoken language comprehension functional limitation, discharge status at discharge from therapy/end of reporting on limitation

• **Spoken Language Expressive G-code set**
  – G9162, Spoken language expression functional limitation, current status at time of initial therapy treatment/episode outset and reporting intervals
  – G9163, Spoken language expression functional limitation, projected goal status at initial therapy treatment/episode outset and at discharge from therapy
  – G9164, Spoken language expression functional limitation, discharge status at discharge from therapy/end of reporting on limitation

• **Attention G-code set**
  – G9165, Attention functional limitation, current status at time of initial therapy treatment/episode outset and reporting intervals
  – G9166, Attention functional limitation, projected goal status at initial therapy treatment/episode outset and at discharge from therapy
  – G9167, Attention functional limitation, discharge status at discharge from therapy/end of reporting on limitation

• **Memory G-code set**
  – G9168, Memory functional limitation, current status at time of initial therapy treatment/episode outset and reporting intervals
  – G9169, Memory functional limitation, projected goal status at initial therapy treatment/episode outset and at discharge from therapy
  – G9170, Memory functional limitation, discharge status at discharge from therapy/end of reporting on limitation

• **Voice G-code set**
  – G9171, Voice functional limitation, current status at time of initial therapy treatment/episode outset and reporting intervals
  – G9172, Voice functional limitation, projected goal status at initial therapy treatment/episode outset and at discharge from therapy
  – G9173, Voice functional limitation, discharge status at discharge from therapy/end of reporting on limitation

• **Other Speech Language Pathology G-code set**
  – G9174, Other speech language pathology functional limitation, current status at time of initial therapy treatment/episode outset and reporting intervals
  – G9175, Other speech language pathology functional limitation, projected goal status at initial therapy treatment/episode outset and at discharge from therapy
  – G9176, Other speech language pathology functional limitation, discharge status at discharge from therapy/end of reporting on limitation

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<thead>
<tr>
<th>G-code Modifier</th>
<th>Impairment Limitation Restriction</th>
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<tbody>
<tr>
<td>CH</td>
<td>0 percent impaired, limited or restricted</td>
</tr>
<tr>
<td>CI</td>
<td>At least 1 percent but less than 20 percent impaired, limited or restricted</td>
</tr>
<tr>
<td>CJ</td>
<td>At least 20 percent but less than 40 percent impaired, limited or restricted</td>
</tr>
<tr>
<td>CK</td>
<td>At least 40 percent but less than 60 percent impaired, limited or restricted</td>
</tr>
<tr>
<td>CL</td>
<td>At least 60 percent but less than 80 percent impaired, limited or restricted</td>
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Reimbursement: Reimbursement for therapy will depend on insurance contract coverage. Prior to initiating speech therapy for a patient with VaD, the clinician should determine if the patient is capable of learning new information. Additionally, in order to receive reimbursement from the insurance company, the clinician must document measurable progress toward functional goals.

Presentation/signs and symptoms: The symptoms of VaD often occur suddenly and progress in a stepwise manner. A patient with VaD might suddenly experience cognitive impairments that then plateau; however, following a stroke or mini-strokes, new symptoms can arise. In other cases, patients with VaD have an insidious onset of symptoms that progress gradually. As VaD progresses, a patient’s personal, social, and vocational functioning become significantly impaired. It is often difficult for the physician to distinguish VaD from Alzheimer’s disease due to shared cognitive and behavioral symptoms. Additionally, many patients have co-occurring VaD and Alzheimer’s disease. For detailed information on Alzheimer’s disease, see Clinical Review...Alzheimer’s Disease: Speech Therapy; Topic ID Number: T708913. Patients with VaD can present with a wide range of symptoms that vary according to the part(s) of the brain affected. Patients with small-vessel VaD often present with more apathy, aberrant motor behavior, and hallucinations as compared to patients with large-vessel VaD, who typically present with a higher degree of agitation/aggression and euphoria. Symptoms of VaD can include:

- Memory impairment
- Confusion and agitation
- Unsteady or abnormal gait
- Poor bladder and/or bowel control
- Wandering
- Depression
- A decline in the ability to organize thoughts or actions
- Difficulty planning ahead
- Trouble communicating details sequentially
- Poor attention and concentration
- Difficulty solving complex problems
- Slowed thinking
- Distractibility or “absentmindedness”
- Poor ability to navigate familiar locations
- Poor word retrieval
- Difficulty following directions
- Difficulty counting money or engaging in transactions involving money
- Inappropriate displays of emotion
- Irritability
- Apathy
- Hallucinations or delusions
- Dysphagia, especially dysphagia involving bolus formation and chewing semi-solid food

Causes, Pathogenesis, & Risk Factors

Causes

- Blood vessels in the brain become completely blocked
Often, a stroke (infarction) results when a blood vessel in the brain becomes completely blocked. When a patient experiences a “silent brain infarction,” no symptoms of stroke are immediately observed; however, as the number of strokes increases, so does the risk of developing VaD(1)

- Blood vessels in the brain narrow
  - When the blood vessels in the brain narrow, VaD can result from reduced blood flow to the brain(1)
- Low blood pressure(1)
- Brain hemorrhage(1)
- Blood vessel damage from disorders such as systemic lupus erythematosus and temporal arteritis(1)

Pathogenesis: Symptoms of VaD result from chronic reduction of blood flow in and to the brain. Loss of cortical cholinergic innervation, which has also been implicated in Alzheimer’s disease, appears to be related to cognitive changes in patients with VaD as well(44) In a study conducted in the United Kingdom with postmortem brain tissue from 90 subjects aged 71 to 98 years at the time of death, researchers found that selective regional pyramidal cell atrophy in the dorsolateral prefrontal cortex was associated with executive dysfunction in VaD(47)

Risk factors
- Age (more common in persons over 65 years of age, with increasing risk in 8th and 9th decades of life)(1,5,49)
- History of stroke(1,5,49)
- Atherosclerosis (hardening of the arteries)(1,49)
- High blood pressure (hypertension)(1,6,49)
- Atrial fibrillation(1)
- Diabetes and insulin resistance(1,49,52,54)
- Smoking(1)
- Hyperlipidemia (high cholesterol)(1,49)
- Male sex(2)
- African American ethnicity
- Patients who have a history of mild cognitive impairment (MCI; isolated memory loss that does not result in a functional impairment) are at increased risk of developing VaD(2,8)

Overall Contraindications/Precautions
- The speech-language pathologist (SLP) should carefully review all medical records before evaluating or treating a patient with dementia
- A patient’s cultural and linguistic background should be considered to determine the appropriateness of examination and/or therapy materials(2)
- The patient’s caregiver/family should be involved in all assessment and treatment procedures

Examination
Contraindications/precautions to examination
- In older adult patients especially, sensory deficits (e.g., hearing and/or visual deficits) should be assessed and/or managed prior to the assessment of cognitive-communication skills(9,10)
- Depression is common among persons with VaD and can adversely affect test performance, making patients seem more impaired than they are(1,9)
- The SLP should consider the possible effect of medication(s) on a patient’s performance during a screening and/or assessment. Older adults might be taking medications that negatively affect their cognitive skills and test performance(2)
- In addition to considering results from standardized measures, the SLP should conduct interviews with caregivers and observe the patient in a variety of settings in order to determine the patient’s level of functioning, identify changes in functioning, and write appropriate treatment goals(2)
- If the patient experiences changes in symptoms, he or she should be reevaluated in order to make appropriate changes to the plan of care(2)
• Patients with dementia may not be able to complete standardized tests or accurately answer questions regarding medical history
• During a speech-language evaluation, it is of utmost importance to be aware of a patient’s pain tolerance, stamina, and level of frustration
• The time of day and the number of previous evaluations can affect the patient’s alertness and performance

History

• History of present illness/injury
  – Mechanism of injury or etiology of illness: The patient’s medical history should assess vascular risk factors as well as the degree and type of cognitive impairments the patient is experiencing. The diagnosis of VaD is based on clinical history, results of physical and neurologic examinations, and the use of accepted diagnostic criteria. Medical specialists that might be involved in diagnosing dementia include neurologists, neuropsychologists, neuroradiologists, psychiatrists, sleep medicine clinicians, and/or physical medicine specialists. Diagnostic criteria for dementia include:
    - Memory impairment accompanied by aphasia, apraxia, agnosia, and/or executive dysfunction
    - Impairments in social or occupational functioning
    - The presence of symptoms even in the absence of delirium
    - Insidious onset of symptoms
    - Gradual progression of symptoms
    - Other conditions (e.g., Parkinson disease, brain tumor) are ruled out through the use of neuroimaging and laboratory testing

  – Course of treatment
    - Medical management: Medical management of VaD is directed at preventing or controlling risk factors for stroke (e.g., controlling blood pressure, cholesterol levels, diabetes). Controlling these risk factors might also slow the progression of the disease

    - Medications for current illness/injury: Obtain a comprehensive list of medications prescribed and/or being taken (including OTC drugs). The concurrent use of multiple medications is common among older adults who have complex medical conditions, and the side effects of these medications may adversely affect cognitive and communicative functioning. Contact a pharmacist or physician regarding questions about medication side effects. Currently, no drugs are approved by the U.S. Food and Drug Administration (FDA) to specifically treat VaD; however, physicians frequently prescribe drugs approved for treatment of Alzheimer’s disease (such as cholinesterase inhibitors and memantine) for patients with VaD. Authors of a systematic review found that antihypertensive medications—especially ACE inhibitors and diuretics—were effective in reducing the risk and progression of dementia

    - Diagnostic tests completed: Neuroimaging studies and laboratory tests may be conducted to rule out other causes of changes in cognitive status (e.g., metabolic abnormalities, infection, toxin effects) or to identify the changes in the brain resulting from stroke. Usual tests for a person suspected of having dementia include the following:
      - Laboratory evaluation
        - Complete blood cell count
        - Standard chemistry panel
        - Vitamin B12 and folate
        - Thyroid-stimulating hormone
        - Neurosyphilis treponemal screen
        - Urinalysis
        - HIV antibody (selected cases)
      - Neuroimaging
        - MRI is a very useful tool in the diagnosis of VaD due to its ability to display changes in the brain resulting from stroke
        - CT
        - PET scan
      - Doppler ultrasound measures the speed and direction of blood flow to identify blockages or narrowing of blood vessels
- **Home remedies/alternative therapies:** Document any use of home remedies or alternative therapies (e.g., acupuncture) and whether they help.
- Authors of a systematic review and meta-analysis of 12 RCTs that examined the effectiveness and safety of acupuncture for vascular mild cognitive impairment reported that acupuncture might be effective for improving cognition; however, current evidence is not sufficient to draw definitive conclusions.\(^{(45)}\)

- **Previous therapy:** Document whether the patient has had occupational, physical, or speech therapy for this or other conditions and what specific treatments were helpful or not helpful. Document whether a patient has previously been treated for depression or MCI.

- **Aggravating/easing factors**
- Are there times of day when the patient has more/less difficulty recalling information, completing cognitive tasks, and/or communicating?
- Are there specific situations in which it is more/less difficult for the patient to recall information, complete cognitive tasks, and/or communicate?
- Is the patient aware of cognitive and/or communication difficulties? Is the patient frustrated by cognitive and/or communication difficulties?
- Does the patient have a mood disorder (e.g., depression) that may affect motivation to communicate?\(^{(9)}\)

- **Body chart:** Use a body chart to document location and nature of symptoms.

- **Nature of symptoms:** Document the nature of the patient’s current symptoms.

- **Symptoms of dementia**
- In order for any type of dementia to be diagnosed, a patient must display memory impairment and one or more of the following: language impairment, apraxia, agnosia (difficulty recognizing objects), and/or impaired executive function.\(^{(10)}\)
- In dementia, language impairment may initially present as word-finding difficulties and progress to mutism in the end stages of the disease.\(^{(10)}\)
- Patients in the end stages of dementia might experience feeding and swallowing problems (dysphagia).\(^{(10)}\)

- **Rating of symptoms:** Use a visual analog scale (VAS) or 0–10 scale to assess symptoms at their best, at their worst, and at the moment (specifically address if pain is present now and how much).

- **Pattern of symptoms:** Document the progressive nature of symptoms.\(^{(7,10,12,13)}\) Document changes in symptoms throughout the day and night, if any (a.m., mid-day, p.m., night).

- **Sleep disturbance:** Sleep disturbances are common in patients with VaD. Document number of wakings/night and/or sleep cycle reversal.\(^{(12)}\)

- **Other symptoms:** Document other symptoms the patient is experiencing that could exacerbate the condition and/or symptoms that could be indicative of a need to refer to a physician (e.g., constipation, urinary incontinence, sensory deficits, dentition problems, pain, sleep problems).\(^{(12,50)}\)

- **Respiratory status:** Note any respiratory difficulties patient is experiencing.

- **Psychosocial status:** Depression is common among persons with VaD.\(^{(1)}\)
- The patient should be referred to a neuropsychologist or clinical psychologist when signs of depression are present.\(^{(9)}\)
- In a retrospective descriptive study conducted in Spain, researchers found that the most prevalent neuropsychiatric symptoms in the sample as a whole (comprising 40 patients with Alzheimer’s disease and 40 patients with VaD) were agitation (45 cases, 56%), depression (33, 41.2%), and anxiety (28, 35%)\(^{(39)}\).
- Patients with VaD often exhibit apathy and social withdrawal.\(^{(40)}\)
- Review evaluation reports completed by a neuropsychologist or clinical psychologist for information on the patient’s behavioral symptoms and the possible presence of depression.

- **Hearing and vision:** Screening for vision and hearing impairments should always precede screening for cognitive and/or language impairments. An audiologist should check for impacted cerumen prior to a pure-tone audiometric screening and word recognition testing.\(^{(9)}\)

- **Barriers to learning**
- Are there any barriers to learning? Yes__ No__
- If Yes, describe __________________________
• Medical history
  – Past medical history
    - Previous history of same/similar diagnosis: Document 1) previous communication difficulties or cognitive deficits, 2) any previous history of dementia, delirium, and/or stroke, 3) onset and duration of cognitive, behavioral, and language symptoms, and 4) family history of neuropsychiatric disorders
    - Comorbid diagnoses: Ask the patient and/or caregiver about other problems, including hypertension, high cholesterol levels, depression, diabetes, cancer, heart disease, psychiatric disorders, and orthopedic disorders
    - In a study conducted in the United Kingdom, researchers reviewed 4,438 cases of VaD and found that, compared to the nondementia control group and the Alzheimer’s disease group in the study, patients with VaD had higher prevalence of many conditions. Orthostatic hypotension was less prevalent in patients with VaD than in patients with Alzheimer’s disease and nondementia controls; however, congestive heart failure, atrial fibrillation, ischemic heart disease, hypertension, diabetes mellitus, epilepsy/seizures, and depression were more prevalent in patients with VaD
    - Medications previously prescribed: Obtain a comprehensive list of medications prescribed and/or being taken (including OTC drugs)
    - Other symptoms: Ask the patient or family/caregiver about other symptoms the patient is experiencing, such as falls, constipation, bowel/bladder incontinence, sensory deficits, pain, dental problems, and sleep difficulties

• Social/occupational history
  – Patient’s goals: Document what the patient and the patient’s family hope to accomplish with therapy and in general
  – Vocation/avocation and associated repetitive behaviors, if any: Does the patient participate in language- or motor-based recreational activities? Does the patient work or attend school? Does the patient regularly use a computer/telephone?
  – Functional limitations/assistance with ADLs/adaptive equipment: Document if the patient uses any adaptive equipment to communicate (e.g., pen/paper). Document functional limitations such as inability to drive, cook, manage finances, and/or pursue social contacts
  – Living environment: Document with whom patient lives (e.g., caregivers, family members). If a patient’s cognitive skills are significantly impaired, he or she might require constant supervision and no longer be able to drive or live independently
  - Does the patient speak another language? If the patient is bilingual or multilingual, obtain information about:
    - Order of acquisition of each language and language history (e.g., language used in education)
    - Which language is used in which everyday situations (e.g., work, home, with relatives, with friends)
    - What modalities are used in each language (e.g., reading, speaking, writing)
    - Information about proficiency in each language can be gathered using a tool such as the Language Use Questionnaire (LUQ), which includes questions about the age of acquisition for each language, the total amount of time a person has been exposed to each language during his or her lifetime, and the proficiency of the person’s most frequent communication partners in each language

⇒ Relevant tests and measures: (While tests and measures are listed in alphabetical order, sequencing should be appropriate to patient medical condition, functional status, and setting)
• Arousal, attention, cognition (including memory, problem solving): A patient with VaD can experience cognitive, behavioral, and psychiatric impairments, including memory loss, poor attention, reduced executive functioning, poor insight, and impaired problem-solving skills. Working memory, procedural memory (memory required to perform daily activities such as making a sandwich), and episodic memory can all be impaired in patients with VaD. Refer to psychological and cognitive evaluations to assist in informing course of treatment and providing a prognosis for therapy. Note that scores on cognitive tests that involve verbal responses may not be valid for persons with language impairments such as those associated with dementia. A complete evaluation should assess the patient’s behavior during interactions, mood, thought content and process, insight and judgment, ability to orient, attention, memory, visuospatial abilities, verbal recall, and executive functioning. Additionally, the presence or absence of psychosis should be determined by a medical professional trained in the diagnosis of psychosis. The following are examples of cognitive tests:
  – Mini-Mental State Examination (MMSE): To assess cognitive status of adults. Sections include Orientation to Time, Orientation to Place, Registration, Attention and Calculation, Recall, Naming, Repetition, Comprehension, Reading, Writing, Drawing. Although commonly used as a screening measure for cognitive impairment, the MMSE has been criticized for being insufficient in identifying visuospatial and executive function deficits in patients with VaD
Montreal Cognitive Assessment (MoCA): 30-point (normal score = 26+) screening measure for cognitive impairment; sections include visuospatial/executive functioning, naming, memory, attention, language, abstraction, delayed recall, and orientation. Available in over 40 languages. In a study conducted in Japan with the Japanese version of the MoCA (MoCA-J), researchers found that the MoCA-J was superior to the MMSE for identifying vascular cognitive impairment in 12 patients with extensive leukoaraiosis (white matter lesions associated with stroke and dementia).

For detailed information on assessment and treatment of memory deficits, see Clinical Review...Memory Impairment: Speech Therapy; Topic ID Number: T708911

• Assistive and adaptive devices: Note if the patient wears hearing aids or glasses and determine if hearing aids are in working order. Note any use of wheelchair, walker, or communication devices

• Oral structure and oral motor function: A motor speech evaluation should be performed if there are signs of coexisting oral or verbal apraxia (for detailed information on assessment and treatment of apraxia, see Clinical Review...Apraxia of Speech (Acquired); Topic ID Number: T708586)

• Self-care/activities of daily living (objective testing): Assess impact of cognitive-linguistic deficits on functional communication skills

• Speech and language examination (including reading): Patients with VaD often have deficits in cognitive and language functioning that interact to make functional communication difficult. A patient’s inability to attend to, perceive, organize, and remember information will impact receptive and expressive language skills. Difficulties with problem solving and executive functioning negatively affect functional communication. It is important that the SLP assess ways in which cognitive-linguistic difficulties affect the patient’s ability to communicate in social, academic, and/or vocational situations. A cognitive-linguistic assessment should also consider how various communication tasks can be modified in order to support a patient’s functional communication. When selecting tests, SLPs must consider the cultural and linguistic background of the patient and determine if the measurement was standardized on the relevant population. Tests that have normative information on individuals with dementia should be used when possible. Some tests might be too difficult for an individual with severe dementia to complete and therefore cannot adequately identify that individual’s strengths and weaknesses. Assessment tools should provide the SLP with a picture of the patient’s cognitive-communicative strengths and weaknesses in the areas of language comprehension, language expression, working memory, declarative memory, and nondeclarative/procedural memory symptoms

• Speech: Assess speech production and articulation to identify if the patient presents with apraxia or dysarthria; patients with VaD are likely to have decreased phonemic fluency and a flattening of pitch and intonation in spontaneous speech
  - For detailed information on symptoms, assessment, and treatment of apraxia, please see Clinical Review...Apraxia of Speech (Acquired), referenced above
  - For detailed information on symptoms, assessment, and treatment of dysarthria, see the series of Clinical Reviews on dysarthria

• Language: Patients with VaD are likely to demonstrate diminished grammatical complexity in sentence production. Standardized tests can be used to assess components of language that are affected by cognitive-communication impairments, such as word finding, auditory comprehension, and reading and writing. Language tests designed specifically for use in individuals with dementia include:
  - The Arizona Battery for Communication Disorder of Dementia (ABCD): Assesses linguistic expression, linguistic comprehension, verbal episodic memory, visuospatial construction, and mental status. The ABCD was standardized on individuals with Alzheimer’s disease and Parkinson disease as well as on younger and older individuals without disabilities. This test can be used to perform the differential diagnosis, develop treatment goals, monitor changes in performance, and plan for discharge
  - The Cognitive-Linguistic Quick Test (CLQT): Assesses individual strengths and weaknesses in the areas of attention, memory, executive functions, language, and visuospatial skills. The CLQT can be administered in 15 to 30 minutes and is available in English and Spanish

• Functional communication: Tests that assess pragmatic and communication skills used in daily living (e.g., calling for help, exchanging greetings, responding to yes/no questions) include:
  - Functional Communication Profile–Revised (FCP-R): An assessment, rating, and inventory of the patient’s functional communication skills (e.g., sign, nonverbal, augmentative)
- Communicative Activities of Daily Living – 2 (CADL-2): Assesses the following areas of communication: Reading, Writing, and Using Numbers; Social Interaction; Divergent Communication; Contextual Communication; Nonverbal Communication; Sequential Relationships; and Humor/Metaphor Absurdity.

- Functional Assessment of Communication Skills for Adults (ASHA-FACS): Assesses functional communication in four areas: social communication; communication of basic needs; reading, writing, and number concepts; and daily planning.

- Communicative Effectiveness Index: Measure of change in functional communicative ability. Assesses four domains: Basic Need, Health Threat, Life Skills, and Social Need.

- Special tests specific to diagnosis: To assess quality of life and functional outcomes, the clinician can administer quality of life scales, social participation indices, or ratings of communicative effectiveness.

- Swallow examination: Patients with dementia are at risk for swallowing and feeding problems. For detailed information on the assessment and treatment of swallowing and feeding problems in patients with dementia see Clinical Review... Dysphagia: Dementia; Topic ID Number: T708935

- Tracheostomy examination: If present, assess tracheostomy tube and document date of placement, current respiratory status, and use of speaking valve. For detailed information on assessment of patients with tracheostomies, see Clinical Review... Dysphagia: Adults with Tracheostomy; Topic ID Number: T709084. For detailed information on assessment of a tracheostomy tube and use of a speaking valve, see Clinical Review... Passy-Muir Tracheostomy & Ventilator Swallowing and Speaking Valve; Topic ID Number: T708919

**Assessment/Plan of Care**

**Contraindications/precautions**

- Only those contraindications/precautions applicable to this diagnosis are mentioned below, including with regard to modalities. Rehabilitation professionals should always use their professional judgment.

- Patients with VaD who have dysphagia may be at risk for aspiration. Post feeding guidelines at bedside (as applicable) and educate family/staff about feeding status, if appropriate. If inpatient, discharge criteria should include patient and/or family independence with feeding strategies.

- Patients with VaD may be at risk for falls; follow facility protocols for fall prevention and post fall-prevention instructions at bedside (as applicable), if inpatient. Ensure that patient and family/caregivers are aware of the potential for falls and educated about fall-prevention strategies. Discharge criteria should include independence with fall-prevention strategies.

- Since dementia, including VaD, is progressive, an SLP must determine which patients are likely to benefit from treatment prior to initiating therapy. Being able to respond to cues, read, follow simple instructions, and engage in conversation are all indicators that a patient will be able to benefit from intervention.

- The SLP should consider the patient’s level of frustration and level of awareness during assessment and treatment so as not to offend or upset him or her.

- To determine relevance and appropriateness of treatment programs, decisions about goals and course of therapy should be made in collaboration with the patient, his or her caregivers, and other healthcare professionals. It is highly recommended that family members be involved in the rehabilitation process as much as possible.

- Cultural background, language preference, and patient interests must be considered when planning treatment goals and activities.

- Treatment goals and objectives will shift with the progression of dementia.

- Precautions will vary according to the individual patient and the severity of accompanying language, cognitive, behavioral, and/or motor symptoms.

- As with an evaluation, it is important to thoroughly review a patient’s medical records prior to any treatment.

- Individuals with dementia become more and more of a safety risk to themselves and others as the dementia progresses. Impaired driving, wandering behavior, leaving stoves unattended, and accidents all pose safety risks for patients with dementia. The patient and his or her family must be made aware of safety risks and appropriate precautions beginning in the early stages of the disease and throughout the disease’s progression.

- Clinicians should follow the guidelines of their clinic/hospital and what is ordered by the patient’s physician. The summary below is meant to serve as a guide, not to replace orders from a physician or a clinic’s specific protocols.
Diagnosis/need for treatment: A fully trained and certified SLP is able to identify patients who are at risk for or who present with cognitive-communication disorders, such as those communication disorders associated with VaD. An SLP is able to assess cognitive-communication disorders as well as plan and implement intervention.

Rule out: The patient’s physician should rule out a number of other conditions that can cause cognitive, linguistic, or behavioral changes, including Huntington’s disease, Parkinson disease, subdural hematoma, normal-pressure hydrocephalus, brain tumor, delirium, systemic conditions known to cause dementia (e.g., hypothyroidism, vitamin B12 or folic acid deficiency, hypercalcemia, neurosyphilis, HIV infection), and major psychiatric disorders (e.g., schizophrenia, major depression, substance abuse). Other types of dementia, such as Alzheimer’s disease, dementia with Lewy bodies, and dementia associated with Parkinson disease, should also be identified or ruled out. For detailed information on other types of dementia see the series of Clinical Review on Dementia.

Prognosis: The prognosis for a patient with VaD is poor. Patients with VaD typically experience progressively deteriorating functioning. Short periods of stabilization or apparent improvement sometimes occur between periods of significant, rapid decline.

- In a study conducted in the United States with 766 adults aged 50+, researchers followed subjects for 30 years. Authors of this study reported that greater cognitive impairment was associated with poorer physical and functional mobility. Additionally, individuals in this study who developed VaD exhibited faster rates of physical decline than individuals with AD or those older adults with normal cognition.

- Authors of an observational longitudinal study with 292 individuals with dementia (multiple different types) conducted in the United States reported that malnutrition was associated with greater overall impairment over the course of 6 years as measured by the Clinical Dementia Rating–Sum of Boxes.

Referral to other disciplines: Patients with dementia require the care of multiple disciplines, including but not limited to neurology, radiology, speech-language pathology, physical therapy, occupational therapy, psychology, social work, and/or nutrition depending on their presenting symptoms.

Other considerations

- Families who receive education and support are likely to experience less caregiver stress, depression, and burnout. Treating a caregiver’s psychological symptoms can decrease the need to transfer the patient with dementia to a skilled nursing facility.

- Since patients with dementia have decreased cognitive reserve, they are at increased risk for acute cognitive or functional decline should a new illness (e.g., congestive heart failure, infection) develop. Therefore, comorbid diseases should be effectively prevented or immediately treated.

- Environmental triggers such as insufficient or excessive sensory stimulation might lead to increased agitation and/or aggressive behaviors. Insufficient sensory stimulation includes poor daytime lighting, while excessive sensory stimulation includes intense activity in the environment. Environmental stimuli should be adjusted as needed.

Treatment summary

- Direct intervention techniques used when working with patients with dementia that are supported by research include, but are not limited to, spaced-retrieval training, reminiscence, Montessori-based activities, and the use of graphic and written cues in memory wallets and books.

- Authors of a systematic review of 11 trials of cognitive training and 1 trial of cognitive rehabilitation found no evidence for the efficacy of cognitive training on cognitive functioning, mood, or ADLs in individuals with mild to moderate Alzheimer’s disease or VaD; however, the quality of the studies in the review was not high. The trial of cognitive rehabilitation indicated that there were potential benefits of one-on-one cognitive rehabilitation for ADL functioning in individuals with mild Alzheimer’s disease.

- Authors of a review of the literature described a number of techniques successfully used with patients with dementia. Although some research focuses specifically on patients with Alzheimer’s disease, much research involves subjects with dementia resulting from a variety and/or combination of diseases (e.g., VaD, dementia with Lewy bodies, Alzheimer’s disease). Research and/or literature reviews focusing exclusively on patients with Alzheimer’s disease are not included in this summary.

- Repeated exposure: spaced retrieval training (SRT)
  - In SRT, a patient is expected to make a target response (e.g., identify the time for lunch) over gradually increasing increments of time. If the patient recalls the target information incorrectly, the therapist provides the correct response.
and then asks the patient to repeat it. If the patient recalls the target information correctly, the increment of time before the patient is asked to repeat the information is increased\(^{(29)}\).

- Advantages of SRT include: 1) SRT can be embedded in other tasks (e.g., having a conversation), and 2) SRT can be used to target both verbal and nonverbal responses (e.g., recalling a patient’s room location or demonstrating swallow safety precautions)\(^{(29)}\).

- SRT is supported by extensive research and has been shown to be effective when used in patients with Alzheimer’s disease as well as patients experiencing AIDS-related dementia\(^{(29,20)}\).

- In a study conducted in the United States involving 66 patients with dementia, researchers examined the effects of SRT on patients’ ability to master communication goals. Patients who received SRT were found to be more likely to master treatment goals than those receiving therapy based upon “best practice” procedures. During two follow-up evaluations (1 week post intervention and 4 months post intervention), patients who received SRT maintained their mastery of communication goals better than patients in the “best practice” group\(^{(30)}\).

- Authors of a published systematic review of the literature (13 studies reviewed) found that a majority of patients participating in SRT “learned some or all of the target information and behaviors being taught”\(^{(31)}\).

- In a published study conducted in Germany comparing word-list learning skills of healthy young controls, older healthy controls, and patients with VaD, researchers found that although the patients with VaD performed significantly worse in delayed recall tasks (recalling the words on the initial word list) as compared to the controls, these patients were able to recall words with a negative emotional connotation (e.g., “misery”) significantly better than emotionally neutral words (e.g., “joint”)\(^{(32)}\).

- Repeated exposure: quizzes
  - Published research has shown increases in category naming and recall of personal biographical information when patients participated in intervention combining repeated exposure and quizzes\(^{(29)}\).
  - The repeated exposure requires the patient to use effort to generate a response, while the quiz is structured to constrain the set of possible answers (i.e., multiple choice questions), thus prompting a more directed search of episodic memory and reducing the potential for incorrect (error) responses\(^{(29)}\).

- Errorless learning (EL)
  - Intervention using EL attempts to prevent patients from making mistakes while they are learning a new skill or acquiring new information\(^{(29)}\).
  - Patients are asked not to guess when they do not know the correct response; however, cues and forced-choice recognition limit the number of possible patient responses\(^{(29)}\).
  - Authors of a review of the literature found that errorless learning has been beneficial in teaching patients with dementia the names of persons, personal biographical information, how to use a calendar, how to use an electronic memory aid, and new face-name associations\(^{(29)}\).

- Direct attention training: exercises that specifically target attention skills and require the patient to attend to stimuli of increasing complexity\(^{(36)}\).
  - Authors of a case study with a 58-year-old male subject found that following 10 weeks of intensive, structured, direct attention training with a modified version of the Attention Process Training – II (APT-II), the patient had significant positive changes on posttreatment measures of attention. Additionally, the patient had increased confidence in his cognitive skills. All of these changes were maintained at a follow-up session at 8 months posttreatment\(^{(17)}\).

- Group reminiscence therapy (RT)\(^{(33)}\)
  - Patient recalls personal experiences from the past
  - The SLP facilitates communication while the patient is recalling past experiences and uses reminiscence therapy to increase the patient’s social engagement
  - The patient is required to activate several cognitive systems, such as attention, semantic memory, and episodic memory
  - The patient is required to use language associated with recalled concepts, events, and feelings
  - Authors of a systematic review of the literature found preliminary evidence for the positive effects of RT when used with patients with dementia\(^{(33)}\). Positive outcomes included:
    - Patients display small improvements in global cognitive functioning
    - Patients contribute more to conversations during reminiscence group activities
    - Patients improve their ability to produce verbal and narrative aspects of discourse during reminiscence group activities
- Patients improve their ability to remember information related to topics presented during reminiscence therapy

- Environmental modifications
  - Speech-language intervention should focus on teaching the patient ways to retain effective communication skills, providing compensatory strategies, and stabilizing the patient’s environment. A patient’s environment can be stabilized by establishing a routine and by reducing environmental distractions. Objects and topics that the patient encounters in daily life should be integrated into cognitive-communication therapy. Patients with temporal-spatial disorientation frequently experience confusion and agitation. Environmental cues such as posting the date, making familiar objects visible, and displaying pictures of loved ones can help to reassure and redirect patients who experience these symptoms.
  - Each patient’s environment should be assessed to confirm that it is safe and secure.

- Family/caregiver training
  - Patients, families, caregivers, and staff should be educated on the proper use of environmental and behavior modification techniques to support the patient’s target behavior.
  - Family, caregivers, and staff should be educated on ways to use gesture, visual cues, and a reduced speech rate to increase their ability to effectively communicate with a person with dementia.

- Research in the area of cognitive psychology provides a set of principles that can be applied to patients with dementia and used to foster encoding, storage, and retrieval of information during the learning process. Although research supporting the use of these principles has primarily involved patients with Alzheimer’s disease, the principles might benefit patients experiencing memory impairments resulting from other types of dementia. These principles include:
  - Repetition is beneficial/use of priming: Patients with dementia profit from repetition. Repetition can help these patients relearn forgotten information or learn new information. Authors of a literature review found research that providing patients with Alzheimer’s disease with repeated opportunities to recall information is more beneficial than repeatedly presenting them with information. Priming is the practice of repeatedly activating related concepts, thus strengthening memory traces. Information that is primed is more accessible and more quickly retrieved.
  - Patients should be actively involved in learning: When a patient generates a response, he or she is required to use greater effort than when required to only watch or listen. Since generating a response is more effortful, it requires patients to process information more deeply and creates a more long-lasting memory trace.
  - Error responses should be avoided: Patient errors should be avoided because every time the patient repeats an error, the error response is strengthened. EL techniques attempt to reduce patient errors by providing the patient with cues during retrieval in order to limit the number of possible responses and limit guessing when the patient does not know the correct response.
  - Focus on single rather than multiple tasks: Patients who present with divided attention deficits should not be asked to perform multiple tasks or processes concurrently.
  - Use cues to facilitate recall: Cues, such as providing the first letter of a name the patient is trying to recall, can refine the patient’s search of his or her episodic memory. Such cues can be used to facilitate information recall or to decrease undesirable behaviors.

- The different types of dementia have different neuropathologies and affect cognitive-communication skills in a variety of ways. Therefore, treatment should focus on increasing a patient’s reliance on spared cognitive systems while decreasing his or her reliance on impaired systems.

- Therapy should focus on strengthening knowledge and cognitive processes that show the potential for improvement.

- As the dementia progresses, intervention should be modified to meet the patient’s and caregivers’ needs. Treatment can occur in an outpatient setting, day care, assisted living environment, or skilled nursing facility.

- When serving patients with dementia, therapy might include “direct interventions” (e.g., providing speech-language-cognitive intervention directly to the patient) or “indirect interventions” (e.g., caregiver training, environmental modifications).

- Caregivers should receive training in all direct intervention techniques so that they can use these techniques when the patient is discharged from the treatment program, or in order to supplement ongoing treatment.

- Although direct treatment is not appropriate for all patients with dementia, indirect intervention (especially caregiver training) is appropriate during all the stages of dementia for all patients.
Daily routines and the patient’s living environment should be incorporated into treatment plans in order to address functional communication needs\(^{(2)}\)

| Problem                                          | Goal                                                                 | Intervention                        | Expected Progression                                                                 | Home Program                                                                 |
|--------------------------------------------------|                                                                     |                                   |                                                                                     |                                                                             |
| Impaired ability to learn new information; poor retention of information | Improve ability to learn new information; improve ability to retain information | **Repeated exposure**<sup>\(\text{\textsuperscript{29}}\)**<br>Spaced retrieval training (SRT)<sup>\(\text{\textsuperscript{29}}\)**<br>Quizzes<sup>\(\text{\textsuperscript{29}}\)**<br>See Treatment summary, above | For SRT: the patient is asked to recall specific information after increasingly longer periods of time | This technique can be used to teach functional skills such as using a calendar for self-cuing of the date and medication schedules. Use of this technique can be carried over in the home |
| Poor recall of information                       | Improve patient’s ability to learn a new skill or acquire new information | **Errorless learning**<sup>\(\text{\textsuperscript{29}}\)**<br>Therapists present information or procedures in ways that minimize the likelihood that the patient will give an incorrect response. Patients are instructed not to guess when responding, and therapists provide cues and forced-choice recognition tasks in order to prevent errors. Can be combined with SRT to maximize gains in therapy | SLP will slowly increase the difficulty of the task while maintaining a support structure (of cues and prompts) that will eliminate or minimize errors | This technique can be used to recall functional information |
| Speech and language impairment                   | Improved functional communication                                   | **Aphasia therapy**<sup>\(\text{\textsuperscript{29}}\)**<br>See the series Clinical Reviews on aphasia for detailed information | Progression of therapy tasks will vary according to the exact nature of speech and language impairment. Typically, therapeutic activities progress from more simple contexts (e.g., words) to more complex contexts (e.g., conversation) in a stepwise manner | To be determined by the treating SLP; home practice tasks are often assigned as a means of increasing carryover from therapy sessions |
**Desired Outcomes/Outcome Measures**

› Increased use of intact cognitive skills to supplement skills that are declining
  • ABCD
  • MoCA
› Improved/maintained functional communication
  • Communicative Effectiveness Index
  • ASHA-FACS
  • CADL-2
  • FCP-R
  • CLQT
› Improved mood/reduced maladaptive behaviors
› Increased participation in social, vocational, and avocational activities
› Increased/maintained independence
› Increased communication with external support
› Effective external modifications
› Family education regarding dementia and communicating more effectively with the patient
› Patient education to increase patient’s awareness of target behaviors
› Improved quality of life
  • Quality of life scales, social participation indices, or ratings of communicative effectiveness

**Maintenance or Prevention**

› The risk of developing VaD might be reduced by:
  • Maintaining a healthy blood pressure; use of antihypertensive medication\(^1,6,11,34\)
  • Maintaining normal cholesterol levels\(^1,34\)
  • Preventing or effectively managing diabetes\(^1,34,54\)
  • Smoking cessation\(^1,34\)
› Activities that improve or maintain cardiovascular health, including following a healthy diet, limiting alcohol consumption, and engaging in regular physical exercise, are important for brain protection and are thought to help prevent VaD\(^5\)
  • In a matched case-control study conducted in the United States with 205 subjects with dementia and 205 age-and gender-matched control subjects, researchers found that current moderate alcohol use had a slight protective effect against VaD; this effect was stronger for subjects under age 80.\(^35\) Previous alcohol exposure/use was not associated with a protective effect
› Clinic-based treatment should be eventually transferred to home-based routines so that the patient and caregivers can continue treatment independently

**Patient Education**

› The following organizations provide patient education material on VaD:
  • The Mayo Clinic: [http://www.mayoclinic.com/health/vascular-dementia/DS00934](http://www.mayoclinic.com/health/vascular-dementia/DS00934)

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**Coding Matrix**

References are rated using the following codes, listed in order of strength:

<table>
<thead>
<tr>
<th>Code</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>Published meta-analysis</td>
</tr>
<tr>
<td>SR</td>
<td>Published systematic or integrative literature review</td>
</tr>
<tr>
<td>RCT</td>
<td>Published research (randomized controlled trial)</td>
</tr>
<tr>
<td>R</td>
<td>Published research (not randomized controlled trial)</td>
</tr>
<tr>
<td>C</td>
<td>Case histories, case studies</td>
</tr>
<tr>
<td>G</td>
<td>Published guidelines</td>
</tr>
<tr>
<td>RV</td>
<td>Published review of the literature</td>
</tr>
<tr>
<td>RU</td>
<td>Published research utilization report</td>
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<tr>
<td>QI</td>
<td>Published quality improvement report</td>
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<tr>
<td>L</td>
<td>Legislation</td>
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<tr>
<td>PGR</td>
<td>Published government report</td>
</tr>
<tr>
<td>PFR</td>
<td>Published funded report</td>
</tr>
<tr>
<td>PP</td>
<td>Policies, procedures, protocols</td>
</tr>
<tr>
<td>X</td>
<td>Practice exemplars, stories, opinions</td>
</tr>
<tr>
<td>GI</td>
<td>General or background information/texts/reports</td>
</tr>
<tr>
<td>U</td>
<td>Unpublished research, reviews, poster presentations or other such materials</td>
</tr>
<tr>
<td>CP</td>
<td>Conference proceedings, abstracts, presentations</td>
</tr>
</tbody>
</table>
References


