Dyslexia, Surface (Acquired)

Indexing Metadata/Description

- **Title/condition:** Dyslexia, Surface (Acquired)
- **Synonyms:** Surface dyslexia (acquired); acquired surface dyslexia; alexia, surface (acquired); acquired surface alexia
- **Anatomical location/body part affected:** Left hemisphere cortex
- **Area(s) of specialty:** Adult Neurological Disorders
- **ICD-9 codes**
  - 784.61 alexia secondary to an organic lesion
- **ICD-10 codes**
  - R48.0 dyslexia and alexia

(Transcripts are provided for the readers’ reference, not for billing purposes)

- **G-codes**
  - **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/outset and at discharge from therapy
    - G9176, Other speech language pathology functional limitation, discharge status at discharge from therapy/end of reporting on limitation

<table>
<thead>
<tr>
<th>G-code Modifier</th>
<th>Impairment Limitation Restriction</th>
</tr>
</thead>
<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>
</tr>
<tr>
<td>CM</td>
<td>At least 80 percent but less than 100 percent impaired, limited or restricted</td>
</tr>
<tr>
<td>CN</td>
<td>100 percent impaired, limited or restricted</td>
</tr>
</tbody>
</table>


- **Reimbursement:** Reimbursement for therapy will depend on insurance contract coverage; no specific issues or information regarding reimbursement have been identified
- **Presentation/signs and symptoms:** Acquired surface dyslexia is a reading deficit in which the patient presents with relatively good reading ability of regularly spelled words (e.g., mint) but difficulty reading words with irregular spelling that cannot be sounded
out (e.g., pint, psychic). The patient is able to apply grapheme-to-phoneme rules, but does so inadequately and tends to make phonological errors in which the error word sounds similar to the target word.\(^1\) One explanation for the errors in surface dyslexia is that the patient relies on a sublexical procedure for reading rather than a lexical procedure.

This theory assumes a reading model in which there are two main routes for reading.\(^2\) In the lexical route (direct route), the word is recognized by matching it to a corresponding word form in the visual word store. In the phonological route (nonlexical, indirect route), the written word is read by converting graphemes to phonemes. It is hypothesized that patients with surface dyslexia are not able to use the lexical procedure for reading and rely primarily on the phonological route.\(^1\) Comprehension of the word is often influenced by spoken pronunciation. Thus, the patient might exhibit errors in comprehending irregularly spelled words (e.g., “bear” misunderstood as “beer”) or homophones (words that sound the same but are spelled differently and have different meanings—e.g., “vein” vs. “vain”).\(^2\) Writing ability is often similarly impaired as reading ability with the patient exhibiting surface dysgraphia, which is difficulty spelling irregular words (e.g., “tough” as “tuff”).\(^3\)

**Causes, Pathogenesis, & Risk Factors**

- **Causes:** Acquired surface dyslexia is caused by injury to the left cerebral cortex. Brain injury may be caused by stroke, trauma, brain tumors, brain infections, and other conditions of the brain.\(^1\) Patients with progressive aphasia and progressive focal dementia have also shown impairments in reading words with atypical spelling\(^4,5\).

  - Acquired surface dyslexia can occur after brain damage in both pediatric and adult patients\(^6\).

  - Cases of acquired surface dyslexia have also been reported in children with damage to the right hemisphere of the brain\(^6\).

- **Pathogenesis**

  - Acquired surface dyslexia is caused by brain injury that prevents blood from reaching the reading areas of the brain, resulting in damage to brain cells.\(^2\) Surface dyslexia can also result from degenerative conditions that impair semantic memory, such as primary progressive aphasia and semantic dementia.\(^4,5,8,9\) For detailed information on degenerative anomia, see Clinical Review...Anomia, Degenerative; CINAHL Topic ID Number:T708760.

  - In a study conducted in the United States examining the neural basis of surface dyslexia in patients with semantic dementia, researchers found that patients with surface dyslexia had atrophy in the left mid-fusiform gyrus and left superior temporal regions, which were the areas of the brain that the control subjects recruited when reading irregular words\(^8\).

- **Risk factors**

  - **Stroke**

    - Age (risk doubles each decade of life after age 55)\(^10\)
    - Sex (more common in women than men)\(^10\)
    - Family history\(^10\)
    - History of stroke\(^10\)
    - Smoking\(^10\)
    - High blood pressure\(^10\)
    - Diabetes\(^10\)
    - Excess weight\(^10\)
    - Excess low-density lipoprotein (LDL) blood cholesterol\(^10\)
    - Physical inactivity\(^10\)
    - Excessive alcohol use\(^10\)
    - Irregular heartbeat\(^10\)
    - Poor diet\(^10\)
• **Traumatic brain injury (TBI)**
  – Children, especially newborns to 4-year-olds\(^{(11)}\)
  – Teenagers and young adults, especially those 15 to 24 years of age\(^{(11)}\)
  – Adults over 75\(^{(11)}\)

**Examination**

› **Contraindications/precautions to examination:** Depression and anxiety are common among people with brain injury and can adversely affect test performance.\(^{(12)}\) Speech-language pathologists (SLPs) should be knowledgeable about symptoms of depression (e.g., loss of interest in daily activities, problems sleeping, feelings of sadness and hopelessness) and refer to a neuropsychologist or clinical psychologist when signs are present.\(^{(12)}\) Persons with aphasia, dementia, or TBI might not be able to complete standardized tests or answer questions regarding medical history. It is recommended that the caregiver/family members be involved in all assessment procedures. Tests to assess cognitive ability or premorbid cognitive ability through reading (National Adult Reading Test [NART]) are not valid for persons with acquired surface dyslexia.\(^{(13)}\) Risk for falls is often present in persons with stroke or brain injury

› **History**

• **History of present illness/injury**
  – **Mechanism of injury or etiology of illness:** Refer to neurological testing for site and size of lesion
  – **Course of treatment**
    - **Medications for current illness/injury:** Obtain a comprehensive list of medications prescribed and/or being taken (including over-the-counter drugs). The concurrent use of multiple medications is common among older adults who have complex medical conditions, and the side effects of these medications can adversely affect cognitive and communicative functioning.\(^{(12)}\) Contact a pharmacist or physician regarding questions about side effects.\(^{(12)}\)
    - **Diagnostic tests completed:** Note the results of any neurological (MRI, CT), neuropsychological, or psychological/cognitive tests that have been completed
    - **Home remedies/alternative therapies:** Document any use of home training programs or alternative therapies (e.g., acupuncture) and their efficacy
    - **Previous therapy:** Document whether patient has had speech-language therapy, occupational therapy, or psychotherapy for this or for other conditions and what specific treatments were helpful or not helpful
  – **Aggravating/easing factors**
    - Does the patient have vision problems?
    - Does the patient have more difficulty reading some types of texts (e.g., newspaper, novels, instructions)?
    - Does the patient speak, understand, read and/or write another language? If yes:
      - Obtain information about order of acquisition of each language and language history (e.g., language used in education)\(^{(14)}\)
      - Which language is used in different situations (e.g., work, home, with relatives, with friends)?\(^{(14)}\)
      - What modalities are used in each language (e.g., reading, speaking, writing)?\(^{(14)}\)
      - Premorbid proficiency in each language can be compared to present proficiency using a 7-point scale (e.g., 1 = not fluent, 7 = native proficiency)\(^{(15)}\)
    - Does the patient suffer from a mood disorder (e.g., depression) that might affect motivation to communicate?\(^{(16)}\)
  – **Other symptoms:** Document other symptoms patient may be experiencing that could exacerbate the condition and/or symptoms. Examples include aphasia, depression, limited/impaired physical mobility, dysphagia, apraxia, overall health status, and vision deficits
  – **Respiratory status:** Document any respiratory difficulties the patient is experiencing (e.g., use of supplemental oxygen, mechanical ventilator)
  – **Psychosocial status:** Patients with stroke or other brain injury are at increased risk for depression and anxiety.\(^{(12)}\)
    Many depression scales and psychological scales have been used to assess patients who have had stroke. The SLP can collaborate with the psychologist to determine the appropriate evaluation with respect to the patient’s language abilities.\(^{(16)}\) Some examples include:
    - Hospital Anxiety and Depression Scale (HADS) (mild aphasia)\(^{(16)}\)
    - Depression Intensity Scale Circles (DISC) (moderate aphasia)\(^{(16)}\)
Hearing
- Does the patient have difficulty hearing in the quiet treatment environment?
- Does the patient ask for frequent repetitions?
- Does the patient have a known hearing loss? If so, does he or she wear hearing aids? Left, right, or bilateral?
- It might be appropriate to recommend audiology consult for patients with suspected hearing loss

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 any previous communication difficulties. Document any previous learning disabilities
  - Comorbid diagnoses: Refer to medical charts and ask patient or patient’s family about other problems, including hearing loss, vision deficits, diabetes, cancer, heart disease, and psychiatric disorders
  - Medications previously prescribed: Obtain a comprehensive list of medications prescribed and/or being taken (including over-the-counter drugs)

Social/occupational history
- Patient’s goals: Document what the patient and patient’s caregiver/family hope to accomplish with therapy and in general
- Vocation/avocation and associated repetitive behaviors, if any: Does the patient participate in recreational or competitive sports? Does the patient work and/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)
- Living environment: Stairs, number of floors in home, with whom patient lives (e.g., caregivers, family members), language(s) that the patient uses in the home

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): Refer to psychological and cognitive evaluations to assist in informing course of treatment and providing a prognosis for therapy. A comprehensive evaluation for acquired surface dyslexia should include assessments of visual-perceptual processes, visual spatial attention, and working memory.

- Many tests of cognition are reading-based, and the patient’s reading skills should be carefully considered before test administration. Cognitive tests include the following:
  - 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
  - Wechsler Adult Intelligence Scale (WAIS): To assess intellectual and cognitive abilities of adults

Assistive and adaptive devices: Note if patient wears hearing aids or glasses and determine if hearing aids are in working order. Note if patient uses any devices to assist with mobility (e.g., walker, wheelchair) or communication (e.g., pen and paper, speech-generating device)

Speech and language examination (including reading): When selecting tests, clinicians must consider the patient’s level of awareness as well as cultural and linguistic background. Tests that have normative information on diverse groups should be used when possible. The following are some examples of standardized tests that can be used to assess language, cognition, and functional communication:

Language (expressive and receptive language ability)
- All general tests for aphasia have subtests that assess reading comprehension; however, many language tests have only a few items and are insufficient for detecting milder problems, distinguishing between reading disorders, or planning for therapy. Language tests for aphasia include the following:
  - Boston Diagnostic Aphasia Examination – 3 (BDAE-3): To assess different modalities of language (auditory, visual, gesture) and processing functions. Contains subtests for analyzing reading disorders
Psycholinguistic Assessment of Language Processing in Aphasia (PALPA): To assess components of language structure such as orthography, phonology, word and picture semantics, and morphology and syntax.

Western Aphasia Battery-R (WAB-R): To assess oral language (verbal fluency, language information content, comprehension, repetition and naming), nonverbal language, and reading and writing. Contains a supplementary task to aid the clinician in distinguishing among surface dyslexia, deep dyslexia, and visual dyslexia.

Functional communication and needs assessment: Some tests that assess communication that is used in daily living contain tasks that assess functional reading ability.

Communicative Activities of Daily Living-2 (CADL-2): Assessment of the following areas of communication:
- Reading, Writing, and Using Numbers
- Social Interaction
- Divergent Communication
- Contextual Communication
- Nonverbal Communication
- Sequential Relationships
- Humor/Metaphor Absurdity

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

Bilingual assessment (as needed)

Bilingual Aphasia Test (BAT): Assesses the bilingual patient’s ability to use each language in different settings by a language use history questionnaire. A computer program is available to evaluate responses in more than 100 different languages.

Other assessments have been adapted and standardized for Spanish speakers (e.g., BDAE-3, WAB-R, PALPA).

For detailed information on assessment and treatment of language disorders in bilingual patients, see Clinical Review... Language Disorders: Aphasia in Bilingual Adults; CINAHL Topic ID Number: T708880

Reading

- Reading comprehension
  - Reading Comprehension Battery for Aphasia (2nd ed.) (RCBA-2): Contains single word, sentence, and paragraph comprehension tasks as well as tasks of functional reading of signs and labels
  - Oral reading of decodable words, nonwords, sight words, sentences, and paragraphs
  - Test of Word Reading Efficiency: 2nd Edition (TOWRE-2): Assesses sight word recognition and phonemic decoding in children and adults

- Other tests designed to assess developmental reading disorders may be appropriate in determining age or grade level equivalencies for individuals with acquired surface dyslexia; these include Gates-MacGinitie Reading Tests, the Woodcock Reading Mastery Tests, and the Nelson-Denny Reading Test

Spelling: Assess written and oral spelling

Writing skills: Assess the patient’s writing abilities

For detailed information on assessment and treatment of acquired writing impairment, see Clinical Review... Agraphia: Speech Therapy; CINAHL Topic ID Number: T708854

Oral structure and oral motor function: A motor speech evaluation should be performed if there are signs of coexisting apraxia or dysarthria

Sensory testing: Screening for vision and hearing should always precede screening for reading difficulties. An audiologist should check for impacted cerumen prior to a pure-tone audiometric screening and word recognition testing. Informal assessment of vision is required if patient intends to support communication with visual methods (e.g., writing, gestures, pictures)

In a study conducted in the United Kingdom of 177 patients with reading impairment following a stroke, researchers found that in the majority of patients, the reading impairment was related to a visual impairment such as visual field loss, eye movement deficit, or low central vision

Assessment/Plan of Care

Contraindications/precautions: The relative benefits and risks of intensive therapy should be evaluated on a case-by-case basis. To ensure 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 health care professionals. Cultural background, language preference, and patient interests must also be considered. Treatment goals and objectives will evolve with the recovery of the patient. It is recommended that outcome measures include assessment of functional reading and writing skills
Diagnosis/need for treatment: The clinical diagnosis of acquired surface dyslexia is made by the SLP through the use of standardized reading assessments.

Rule out: Surface dyslexia should be distinguished from other types of dyslexia (e.g., deep dyslexia, phonological dyslexia) and from a visual field deficit, low vision, or a visual neglect dyslexia. Evidence of dementia and/or primary progressive aphasia must also be determined.

Prognosis: Prognosis will vary with the presence of concomitant disorders such as aphasia and dementia as well as patient motivation.

Referral to other disciplines: Refer to OT for assistance with daily living skills if needed. Refer to a psychologist or counselor for depression or anxiety. Refer to an eye specialist to rule out visual impairment.

Treatment summary: Approaches for acquired surface dyslexia typically differ from those used with deep and phonological dyslexia because there is relatively less impairment in decoding skills for regularly spelled words. Intervention research for subjects with surface dyslexia has focused primarily on increasing recognition of irregularly spelled words and distinguishing between homophones. Results of case studies have shown improvement for learning treated words, but that generalization to untreated words or to spelling ability is difficult to achieve. Grapheme-to-phoneme (GPC) instruction is not commonly used in treatment of patients with surface dyslexia. However, contrasting treatment methods should not be ruled out because the relationship between diagnosis and treatment is not always straightforward. A given treatment strategy might be equally appropriate for different types of dyslexia because separate components of the treatment will affect different levels of processing. A diagnostic treatment approach is encouraged in all cases. Because therapy for acquired surface dyslexia is idiosyncratic and conforms to the patient’s particular difficulties, most research consists of case studies and single subject research design studies.

Semantically based approaches
- Whole word/mnemonic approach: Authors of a case study investigated the effects of a whole word, mnemonic approach to increase irregular word reading skills of a subject with acquired surface dyslexia. A mnemonic aid, a picture representing the meaning of the word, was provided for each printed word on a cue card. The patient practiced reading the words at home using the mnemonic aids. Therapy focused on words with similar spelling but different pronunciation (e.g., bough, rough, through). At baseline, the subject could read 5 out of 24 words. After 2 weeks of therapy, the subject had perfect performance on the words that were trained and showed generalization to untrained words. Performance was maintained on a follow-up test 1 year later. Authors of a second case study performed with another subject using this technique found similar results, but therapy to improve reading did not generalize to spelling skills (dysgraphia).

- Homophone comprehension: A computer program was used to train a subject with surface dyslexia to better distinguish meaning between homophones (words that sound the same but are spelled differently and have different meanings). Therapy involved sentence completion tasks presented by a computer. The subject was required to select the correct word when presented with six choices: the target word, one homophone, and four phonologically related foils. Over the course of 29 sessions, the subject showed improvement on accuracy and decreased time on answering each sentence. Post-testing showed significant improvement on comprehension of treated and untreated items.

Instruction for increasing reading fluency and comprehension
- Oral Reading for Language in Aphasia (ORLA): ORLA requires the patient to repeatedly read aloud sentences and short paragraphs, first in unison with the clinician and then independently. The approach is based upon learning principles such as active participation by the learner, repetitive practice, over-learning of skills, use of meaningful materials, and opportunities for success. Authors of a case study of a subject with deep dyslexia examined the effects of ORLA on oral reading ability. No case studies using this approach have been trialed with persons with surface dyslexia. The treatment included a total of 24 1-hour sessions over 7 weeks. Results indicated the ORLA was effective in improving oral reading of trained sentences, and improvements in reading comprehension were seen in subtests of the WAB-R and the RCBA-2.
| Surface dyslexia – inability to read irregularly spelled words | Increase ability to read words | **Whole word/ mnemonic approach**  
This approach is used to teach patients to distinguish between words with similar spelling but different pronunciation (e.g., through, tough) by use of mnemonic aids. A mnemonic aid consists of a picture representing the meaning of the word presented with a printed version of the word.  

See Treatment summary, above | Initially, the patient will read words aloud correctly with the mnemonic aid; as reading skills improve, the patient will progress to reading words aloud correctly without the mnemonic aid | The patient can practice reading aloud words at home |
|---|---|---|---|---|
| Surface dyslexia – inability to distinguish between homophones | Increase ability to distinguish between homophones | **Homophone/ computer-assisted approach**  
Patients can complete fill-in-the-blank exercises in which they are asked to choose the correct homophone from a series of choices. Feedback can be delivered by a computer program or by a card with the correct answer on the back. Patients can also practice learning homophones by reading each homophone and its definition and then writing the word in a sentence.  

See Treatment summary, above | Patient will learn to associate a written word form with its meaning by receiving corrective feedback from the SLP and reading the word in the context of a sentence; as the patient’s reading skills improve, the SLP will reduce and then eliminate the corrective feedback | The patient can practice homophone exercises (fill-in-the-blank) at home |
<table>
<thead>
<tr>
<th>Surface dyslexia – reduced reading comprehension</th>
<th>Increase reading fluency and reading comprehension by practicing repeated readings of words, sentences, phrases, or text (newspaper articles)</th>
<th><strong>Oral Reading for Language in Aphasia (ORLA)</strong> (^{(1)})</th>
<th>SLP proceeds through the steps of this program as indicated per ORLA protocol(^{(1)})</th>
<th>Practice reading specific texts can be performed at home for 30 minutes/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>ORLA involves a series of steps of repeated reading intended to increase reading fluency and comprehension. A summary of the steps is below:</td>
<td>1. The SLP reads aloud a text to the patient and points to each word as it is read. The length of the material may vary from 3 to 100 words depending on the skills of the patient. 2. The SLP reads aloud the text to the patient again and encourages the patient to point to each word as it is read. 3. The SLP reads the material aloud together with the patient as the patient points to each word. 4. For each line or sentence in the text, the SLP states a word and the patient must identify the word by pointing. 5. For each line or sentence in the text, the SLP points to a word that the patient must read aloud. 6. The patient reads the whole sentence aloud with the SLP.</td>
<td>See Treatment summary, above</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Condition</td>
<td>Goal</td>
<td>Therapy Description</td>
<td>Home program will vary with respect to the goals of the patient</td>
<td></td>
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<td>----------------------------</td>
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<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------</td>
<td></td>
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</tbody>
</table>
| Practice reading specific texts can be performed at home for 30 minutes/day | Increase communication skills     | **Aphasia therapy**  
For detailed information on assessment and treatment of aphasia, see the series of Clinical Reviews on aphasia  
Therapy for aphasia generally progresses from sound level to syllable, word, phrase, sentence and finally conversational level |                                                               |
| Dysphagia (as needed)      | Increase swallow safety           | **Dysphagia therapy**  
Therapy will vary according to the results of a swallow evaluation. Treatment might include strategies for airway protection, strategies for facilitating oral phase of swallowing, and dietary adjustments.  
For detailed information on assessment and treatment of dysphagia, see Clinical Review... *Dysphagia: Post-Stroke*; CINAHL Topic ID Number:T708770  
As the patient’s swallow improves, the SLP will increase the frequency and intensity of dysphagia exercises as well as the difficulty of the trials of food and liquid that are given in therapy | Home program will vary with respect to the goals of the patient |
| Apraxia of speech (as needed) | Increase functional speech production | **Apraxia therapy**  
For detailed information on assessment and treatment of apraxia, see Clinical Review... *Apraxia of Speech (Acquired)*; CINAHL Topic ID Number:T708586  
Therapy for apraxia generally progresses from sound level to syllable, word, phrase, sentence, and finally conversational level | Home program will vary with respect to the goals of the patient |
| Dysarthria (as needed)      | Increase functional speech production | **Dysarthria therapy**  
For detailed information on assessment and treatment of dysarthria (spastic, flaccid, ataxic, hypokinetic, and hyperkinetic), see the series of Clinical Reviews on these topics  
Therapy for dysarthria generally progresses from sound level to syllable, word, phrase, sentence, and finally conversational level | Home program will vary with respect to the goals of the patient |
Acquired agraphia/dysgraphia (as needed) | Increase writing skills | **Agraphia therapy** | Therapy for agraphia generally progresses from writing letters, words, phrases, sentence, and finally paragraph level | Home program will vary with respect to the goals of the patient

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**Desired Outcomes/Outcome Measures**

- Improved reading of irregularly spelled words
  - BDAE-3, PALPA, WAB-R, RCBA-2
  - Gates-MacGinitie Reading Tests\(^{(27)}\)
  - Woodcock Reading Mastery Tests\(^{(28)}\)
  - Nelson-Denny Reading Test\(^{(29)}\)
  - TOWRE-2\(^{(36)}\)

- Improved reading comprehension
  - BDAE-3, PALPA, WAB-R, RCBA-2
  - Gates-MacGinitie Reading Tests\(^{(27)}\)
  - Woodcock Reading Mastery Tests\(^{(28)}\)
  - Nelson-Denny Reading Test\(^{(29)}\)

- Improved functional reading ability
  - CADL-2, ASHA-FACS, RCBA-2

- Family/caregiver is educated regarding acquired surface dyslexia and ways to communicate more effectively with the patient

**Maintenance or Prevention**

- Clinic-based treatment should eventually be transferred to home-based activities so that the patient and caregivers can continue treatment independently

**Patient Education**

- Patient and family education should include information about the effects of acquired surface dyslexia, including treatment options and prognosis. When possible, the partner or patient’s family should be educated about facilitative techniques to use when assisting the patient with communication and reading

**Note**

- Recent review of the literature has found no updated research evidence on this topic since previous publication on May 20, 2016

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**Coding Matrix**

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

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

26. La Pointe LL, Horner J. Reading Comprehension Battery for Aphasia. 2nd ed. Austin, TX: Pro-Ed; 1998. (PP)
33. Hills AE. The role models of language processing in rehabilitation of language impairments. Aphasiology. 1993;17(1):5-26. (C)