



**CONFIDENTIAL**

**Reassessment and Treatment Plan – Spring 2018**

<b>Date of Reassessment:</b> 2/5/18	
<b>Name:</b> Zachary Holm	<b>Spouse:</b> Sara Holm
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<b>DOB:</b> 3/1/1972	<b>Alt. Telephone:</b> 775-772-0398
<b>Age:</b> 45	
<b>SLP:</b> Rachael Walden, M.S., CCC-SLP	<b>Referred By:</b> Emily Smith, M.D.
<b>Graduate Clinician:</b> Emily Harris, B.S., Angelie Bala, B.S.	<b>CPT Code:</b> 92507
<b>ICD-10 Code(s):</b> I69.320 Aphasia following cerebral infarction, I69.390 Apraxia following cerebral infarction	

**I. Background Information:**

Mr. Zachary "Zack" Holm is a 45 year old male who has been receiving speech therapy at the University of Nevada, Reno Speech and Hearing Clinic since April 28<sup>th</sup>, 2017. Mr. Holm was initially referred by Dr. Emily Smith and was diagnosed with nonfluent aphasia, anomia, and apraxia of speech (AoS) following cerebral infarction.

Mr. Holm works as the owner and manager of his own contracting company and lives with his wife Sara in Reno, Nevada.

Previous treatment periods have focused on goals and objectives that are the most functional in relation to Mr. Holms' lifestyle, such as increasing speech intelligibility and expressive language skills. Mr. Holm has a history of being highly motivated during therapy sessions and continues to look for ways to challenge himself. It has also been reported that writing is a relative strength that Mr. Holm uses often to compensate for his apraxia of speech. This will be Mr. Holm's 6th treatment period.

**Medications:**

- Pradaxa (dabigatran etexilate) 150mg, 2x/daily
- Atorvastatin (manufacturer: Apotex) 10 mg, 1x/daily
- Folic acid, 800 mcg, 1x/daily
- D<sub>3</sub>2000 IU, 1x/daily

**II. Reassessment:**

**A. Expressive Language Skills**

**Correct Information Units:**

Correct information unit (CIU) is a means of assessing overall language performance in those who have aphasia. Scoring is based on specific rules that create a system for measuring the effectiveness of the client's communication in connected speech. The CIU system looks at communicative informativeness and communicative efficiency (Nicholas & Brookshire, 1993). It must be noted that percent-CIUs nor words-per-minute alone will not provide a



complete picture of a speaker's efficiency. In CIU analysis, the accuracy, relevance, and informativeness of the words produced by the individual are evaluated. There is no indication of the relative importance of the information conveyed or whether information has been left out (Nicholas & Brookshire, 1993).

**Descriptive CIUs:** Mr. Holm's use of Correct Information Units (CIUs) during descriptive tasks was calculated using three different methods. Mr. Holm was asked to describe a picture, to tell the clinician his stroke story, and was then asked what he wanted Speech Pathologists to know in order to work better with him during therapy. Words per minute, CIUs per minute, and percentage of CIUs were calculated for each task:

TASK:	Words Per Minute	CIU Per Minute	Percent CIU
Picture Description	27	15	56%
Stroke Story	43	22	51%
Advice	49	34	69%

Mr. Holm used the technique of writing words that he could not verbalize on the whiteboard and required 1:1 modeling from the clinician to produce them once written. Words that were written on the board but not spoken by Mr. Holm were not counted during calculations. Furthermore, Mr. Holm produced more words and CIUs per minute during tasks that were more personally relevant to him, for example, when asked to tell his stroke story or to give any advice on how to better work with and communicate with him. However, his overall percentages were still low and affected his ability to clearly state the various points he was trying to make. Communication breakdowns in Mr. Holm's expressive language output adversely impacts his daily life. Mr. Holm owns his own construction company where he stated he used to talk to 12 or more clients per day, but currently he avoids speaking with clients entirely. Furthermore, Mr. Holm stated that he travels but is concerned that if he needs to explain something to the TSA or ask for help while traveling, he will be unable to communicate the necessary information. By improving his expressive language skills through increasing the overall percentage of descriptive CIUs used in connected speech, Mr. Holm will be more willing and able to communicate his wants and needs to various people, and his relationship with his clients and his overall professional life will be improved as well.

CIUs are further impacted by Mr. Holm's ability to correctly verbalize numbers during conversational speech, such as times, amounts of money, random numbers and months.

The following results were obtained during assessment of these skills:

- Mr. Holm's ability to verbalize numbers written on a whiteboard was assessed using times, money, and random numbers. Correct responses are in bold:

	Numbers and Responses	Accuracy
Times:	<ol style="list-style-type: none"><li>10:30 → four zero three "oh"</li><li>1:46 → one four six</li><li>4:32 → four three two</li><li>9:15 → seven one five</li><li>7:22 → seven two two</li><li>8:59 → eight five nine</li><li>2:52 → two four two</li></ol>	1/10 = 10%



	8. 5:18 → four one nine 9. 6:05 → six "oh" five 10. 3:47 → three five seven	
Money:	1. \$1.56 → <b>one dollar and five six</b> 2. \$2.10 → two dollars and one "oh" 3. \$1.25 → one dollar and quarters 4. \$3.47 → three and four seven 5. \$5.45 → five four five 6. \$4.75 → four and seven five 7. \$1.69 → one and six five 8. \$8.25 → <b>eight and a quarter</b> 9. \$6.50 → <b>six and fifty</b> 10. \$1.80 → one and eighteen	2/10 = 20%
Numbers:	1. 42 → <b>forty two</b> 2. 58 → forty eight 3. 27 → forty seven 4. 85 → <b>eighty five</b> 5. 34 → forty five 6. 93 → seven three 7. 14 → <b>fourteen</b> 8. 79 → <b>seventy nine</b> 9. 54 → forty five 10. 61 → <b>sixty one</b>	5/10 = 50%

It should be noted that the percentages do not reflect Mr. Holm's approximations. Although some of his productions were not in the expected format, he showed an ability to identify the correct numbers that were written. In the "Times" set, he produced four approximations of the correct response by identifying correct numbers, (e.g. one four six or seven two two). In the "Money" set, Mr. Holm produced four approximations, (e.g. four and seven five). These approximations demonstrate that Mr. Holm's ability to recognize and correctly identify the numbers written in front of him is stronger than his ability to consistently state them in the expected form.

- Mr. Holm's ability to match the correct number with a random month was assessed. Correct responses are in bold:

Month	Written Response	Spoken Response
June	6	Six
March	3	Three
September	10	Ten
May	5	Five
January	1	One
August	8	Eight
October	10	Ten
July	7	Seven
February	2	Two
April	4	Four
Accuracy: 9/10 = 90%		



Dates, times, amounts of money, and other combination of numbers are used daily by Mr. Holm. As the owner of his own construction company, Mr. Holm stated that he relies on others when it comes to tasks that involve numbers as he cannot verbally express what he intends to say. Increasing Mr. Holm's ability to accurately express numbers in their various forms will improve his quality of life both in his occupational and personally.

**Procedural CIUs:** Informativeness and efficiency of Mr. Holm's connected speech in procedural task were reassessed by instructing him to narrate 1) What he did the day before from start to finish, 2) steps he needs to take to get on to the ski hill from the lodge and 3) how to make a peanut butter sandwich. Measurements used were words per minute (WPM), CIU's per minute (CIUs/min), and percent CIU's (%CIU) to reliably quantify speech. These three calculated measures provide information about the efficiency of connected speech.

TASK:	WPM	CIU/min	%CIU
#1	41.2	29.4	71.3%
#2	35.5	25.5	71.8%
#3	26	17.5	67.3%

Mr. Holm appeared to produce more %CIU's when the event in question was recent and of interest. It must be noted that in task #2, Mr. Holm attempted to explain some ski equipment by drawing them on a whiteboard, which may have affected his CIUs/min. For task #3, although Mr. Holm produced a variety of words, the nouns mentioned were not accurate in relation to the topic being discussed.

Mr. Holm's narrative consisted of multiple nonword fillers (i.e., umm), "and," repetitions of new ideas that do not add new information to the utterance, vague words (i.e. "stuff"), and modifiers that are used indiscriminately as fillers (i.e. "generally"). Grammatical errors were also observed such as use of "he" for "she."

As a construction contractor company owner that deals with various people to market his service, being able to explain how certain construction or remodeling is done is an important part of his job description. His ability to communicate his propositions well to prospective customers will not only help his business, but also aid in reestablishing his independence.

#### B. Parts of Speech

Based on Mr. Holm's previous treatment period, reassessment of his use of pronouns, prepositions, determiners, and verbs was conducted. Mr. Holm was shown 10 cards for each part of speech and was asked to fill in the blank with a corresponding word. The results of each probe set are listed below; correct responses are bolded:

	Words Produced	Accuracy
Pronouns	1. The chair 2. Dog 3. Teachers 6. A lot 7. Mixing 8. <b>Herself</b>	1/10 (10%)



	4. Food 5. The car	9. Phone 10. Friends	
<b>Prepositions</b>	1. Of 2. The 3. Yours 4. Me 5. Under	6. Fork 7. Off 8. In 9. Over 10. Both	4/10 (40%)
<b>Determiners</b>	1. Fell 2. Hold 3. Sing 4. The groceries 5. The	6. Mine 7. The office 8. Walking 9. Food 10. Mine	1/10 (10%)
<b>Verbs</b>	1. Jumping 2. Ballet 3. Whispering 4. Playing 5. Knocking	6. Snowman 7. Water 8. Reading a book 9. Wet 10. Swinging	6/10 (60%)

Mr. Holm showed difficulties with all four parts of speech that were probed during reassessment. Verbs were a relative strength for Mr. Holm. A majority of Mr. Holm's incorrect responses were semantic paraphasias such as "chair" used in the sentence "\_\_\_\_\_ may be seated" and "phone" used in the sentence "May \_\_\_\_\_ take a message?".

To test Mr. Holm's ability to select the proper answer when provided with two choices, a dynamic assessment was given only for determiners. The same cards were shown with the same sentences, but two options were written on the whiteboard, one incorrect and one correct. Given 10 opportunities, Mr. Holm achieved a score of 10/10 (100%).

### C. Boston Diagnostic Aphasia Examination (BDAE-3)

The **Auditory Comprehension** standard form was administered to quantitatively reassess Mr. Holm's ability to comprehend commands and complex ideational material with increasing complexity. Only the following portions of the BDAE auditory comprehension subtest were used in non-standard fashion to gain information. The results are as follows:

TASK	SCORE	ACCURACY
Commands	13/15	86%
Complex Ideational Material	7/12	58%

Mr. Holm was able to follow commands with increasing length and complexity. However, difficulties were noted on his understanding of prepositions and adjectives (i.e. "other side" and "each"), resulting in point deductions. Within the complex ideational material portion, Mr. Holm appeared to have difficulties understanding adjectives (i.e. heavier). Difficulties understanding prepositions and adjectives can cause a communication breakdown for Mr. Holm and his communication partner. It is significant to understand and be able to use these concepts appropriately to effectively get a point across or to implement a task that is given to him. This is especially significant for Mr. Holm due to his job in a construction and



contracting business. For example, telling a contractor to build a stairway next to the small room when he really meant building one underneath the big room are two different things that could cause him a lot of problems. It is recommended that prepositions and adjectives be targeted in therapy.

The Oral Reading portion of the Reading short form subtest was administered to quantitatively reassess Mr. Holm's ability to orally read basic words, and sentences. Only the following portions of the BDAE oral reading portion were used in non-standard fashion to gain information. The results are as follows:

TASK	SCORE	ACCURACY
Basic Oral Word Reading	3/15	20%
Oral Reading of Sentences with Comprehension	0/15	0%

Mr. Holm's showed difficulties reading words with more than 1 syllable. He also presented with semantic and phonemic paraphasias (i.e. "circular" for "circle," "fourteen" for "fifteen"). Similar errors were observed when Mr. Holm's was reading sentences (i.e. "after riding the 44 minute of [Λrɔɪzə] e sinshore" for "After driving for forty-five minutes they arrive at the seashore.") Being able to accurately read and/or recognize words allows the person to focus their attention more on the meaning of the text rather than on decoding them. Difficulties in this area will leave Mr. Holm little attention for understanding the meaning of the text and will leave him less time to make connections of the text and his background knowledge right away. This is especially important for Mr. Holm as he often goes on trips and takes care of his own contracting business.

### III. Observations

#### Assessment Day 1:

Mr. Holm arrived at the clinic by himself. He engaged in conversation and initiated them as well. He openly expressed his concerns and used a whiteboard and a marker to aid him in remembering and verbalizing a word. He appeared to be in good spirits and was very motivated to work. He was also observed to self-monitor and self-correct.

#### Assessment Day 2:

Mr. Holm was compliant during his session and informed the clinician of his hopes for this semester. He stated that he would like to place a focus on his ability to verbalize numbers as this is something that he feels comes up in his life every day, but is a difficult task for him. Mr. Holm benefits from having a whiteboard available for him to write down words or parts of words that he is unable to speak. At various points in the session, Mr. Holm required phonemic cues or 1:1 modeling from the clinician to produce words he could not verbalize on his own. Furthermore, Mr. Holm showed the ability to self-correct. For example, he said "four -- no, um, five" counting on his fingers to get to the word "five", which was the target word.

### IV. Summary of Findings

Mr. Holm showed a weakness in his production of correct information units during connected speech in descriptive tasks. The correct verbalization of numbers was a general



weakness for Mr. Holm, however, associating the names of months with their corresponding numbers was a relative strength. He exhibited deficits in the production of correct parts of speech as well (e.g. pronouns, prepositions, determiners, and present-progressive verbs). These aspects of Mr. Holm's expressive language all impact his reduced percentage of CIUs in descriptive tasks. Mr. Holm also demonstrated weakness in production of correct information units during connected speech in procedural tasks due to his difficulties with verbalizing appropriate nouns and verbs. Comprehension is another area of concern as was demonstrated by his difficulties with comprehending written passages. However, this is not a top priority for Mr. Holm at the moment, but will still be monitored. He also exhibited difficulties following directions that involve prepositional phrases. Mr. Holm also exhibited difficulties in orally reading basic words. Mr. Holm will benefit from further instruction and practice focusing on these concepts.

**V. Treatment Plan:**

- **Goal 1:** Increase the percentage of CIUs in connected speech.
  - **Rationale/Research Citations:** Correct information unit (CIU) is a means of assessing overall language performance in those who have aphasia and looks at communicative informativeness and communicative efficiency (Nicholas & Brookshire, 1993).
  - **Baseline:** Please see Procedural task chart above.
  - **Objective 1:** Mr. Holm will increase %CIUs in procedural tasks by answering How-to questions within 5-steps using nouns that are accurate in relation to the topic being discussed in 8/10 opportunities, with minimal (1-3) clinician assistance, across 3 sessions.
  - **Objective 2:** Mr. Holm will increase %CIUs in procedural tasks by answering How-to questions within 5-steps using verbs that are accurate in relation to the topic being discussed in 8/10 opportunities, with minimal (1-3) clinician assistance, across 3 sessions.
  - **Objective 3:** Mr. Holm will increase %CIUs in procedural tasks by answering How-to questions within 5-steps by appropriately using temporal concepts (first, second, third/next, then, last) in 8/10 opportunities, with no more than 1 clinician assistance, across 3-sessions.
  - **Objective 4:** Mr. Holm will increase %CIUs to 85% in descriptive tasks using unfamiliar stimuli across two sessions with minimal clinician support.

- **Baseline:**

TASK:	Words Per Minute	CIU Per Minute	Percent CIU
Picture Description	27	15	56%
Stroke Story	43	22	51%
Advice	49	34	69%

- Mr. Holm's ability to verbalize numbers, associate months with the correct number, and use past tense verbs were also assessed as these are aspects of Mr. Holm's speech that contribute to his expressive language.



- **Baseline:** Mr. Holm was shown a picture and asked "What did they/he/she do?" He produced 0/10 (0%) past tense verbs when provided with 10 opportunities.
- **Baseline:** Mr. Holm's ability to verbalize numbers written on a whiteboard was assessed using times, money, and random numbers. Mr. Holm achieved 1/10 (10%) accuracy when assessing his ability to vocalize times, 2/10 (20%) when assessing his vocalization of money amounts, and 5/10 (50%) when assessing his vocalization of random numbers.
- **Baseline:** Mr. Holm's ability to match the correct number with a random month was assessed. He achieved 9/10 (90%) correct responses by first writing the number on the board and then verbalizing it.
- **Objective 5:** Mr. Holm will increase procedural %CIUs as evidenced by context-appropriate verb + object agreement in answering a 5-step how-to question with 80% accuracy with minimal clinician support (1-3x) across three sessions
- **Objective 6:** Mr. Holm will increase procedural %CIUs by using appropriately conjugated verbs that are context-related in answering a 5-step how-to question with 80% accuracy, with minimal clinician support (1-3x) across three sessions
- **Goal 2:** Increase accuracy in recognition of high frequency sight words
  - **Rationale/Research Citations:** Although not probed, it was observed that Mr. Holm is having difficulties with recognizing High frequency sight words. Mastery of high frequency sight words is known to promote reading comprehension (Dolch, 1936).
  - **Baseline:** He appeared to have difficulties recognizing function words (e.g., prepositions, auxiliaries, quantifiers, and pronouns.)
  - **Objective 1:** Mr. Holm will independently demonstrate recognition of high frequency sight words by accurately pointing to the word requested by clinician within 5 seconds with 80% accuracy.
  - **Objective 2:** Mr. Holm will orally read high frequency sight words with minimal clinician support (1-3x) with 80% accuracy.
- **Goal 3:** Increase accuracy in production of parts of speech in spontaneous sentence production.
  - **Objective 1:** Mr. Holm will increase accuracy in production of pronouns to 80% at the sentence level with moderate clinician support across two sessions.
    - **Baseline:** 1/10 = 10% accuracy
  - **Objective 2:** Mr. Holm will increase accuracy in production of prepositions to 80% at the sentence level with moderate clinician support across two sessions.
    - **Baseline:** 4/10 = 40% accuracy
  - **Objective 3:** Mr. Holm will increase accuracy in production of determiners to 80% at the sentence level with moderate clinician support across two sessions.
    - **Baseline:** 1/10 = 10% accuracy





- **Objective 4:** Mr. Holm will increase accuracy in production of present progressive verbs to 90% at the sentence level with moderate clinician support across two sessions.
  - **Baseline:** 6/10 = 60% accuracy

**VI. Frequency and Anticipated Duration of Therapy:**

This reassessment documented a significant communication disorder resulting in difficulties with producing correct information units in both procedural and descriptive tasks, difficulties in reading, and in comprehension due to difficulties with prepositions and adjectives.

It is recommended that Mr. Holm attend speech and language therapy 4x a week for the duration of the Spring 2018 treatment period at the UNR Speech and Hearing Clinic. It is not anticipated that the impairments identified will self-correct without skilled intervention. Services provided in this clinic are not of an educational nature.

Increasing expressive and receptive language should be the focus of therapy.

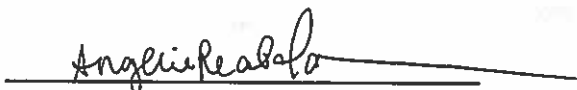
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