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Interprofessional Collaboration with Aphasic Patients

Introduction

Every day, the general population uses expressive and receptive language to carry out activities of daily living (ADLs) automatically, without recognizing the intricate neural networks within the brain allowing them to do so. For the most part, it is not until these skills are lost or depleted that one can begin to appreciate the ability to use language to express wants, needs, and general thoughts. One population that faces these difficulties is patients with aphasia (PWA). Aphasia is a communication disorder that results from an acquired injury to the brain and affects language use and processing (ASHA, 2016a). The term “aphasia” comes from Greek roots, with ‘a’ meaning without and ‘phasia’ meaning speech (Liddell et al., 1996). This derivation is not entirely correct, as aphasia is primarily a language disorder manifested from damage to the brain, which negatively impacts speech production (ASHA, 2016a). Thus, a person isn’t necessarily left “without speech” but rather without some or all of the receptive and expressive language skills they previously had.

Causes & Prevalence of Aphasia

Aphasia is most commonly caused by a stroke, which can be ischemic or hemorrhagic. An ischemic stroke occurs when there is a blockage that prevents blood from flowing to a region of the brain. A hemorrhagic stroke occurs when a blood vessel ruptures and damages the surrounding brain tissue. Aside from a stroke, aphasia can also be manifested from a traumatic brain injury, brain tumors, brain surgery, brain infections, and other neurological diseases such as dementia. With any injury that impacts the language centers of the brain, speaking, listening, reading, and writing skills may be compromised.

It is estimated that approximately one million people, or 1 in 250 in the United States today suffer from aphasia (Aphasia Information Page: National Institute of Neurological Disorders and Stroke, 2016, para. 1). Furthermore, according to the National Stroke Association, as of 2008, there are 80,000 new cases of aphasia per year in the United States. The rising incidence and prevalence of aphasia can be attributed, in part, to the United States population increasing and aging. The incidence of stroke doubles with each decade of life after age 55, therefore more people are reaching the age in which they are more prone to suffering a stroke. Moreover, there has been a decrease in emergency response time for stroke as well as improvement in acute intervention procedures and medication, which influences the stroke survival rates (Harvey, 2016). With these increased survival rates extending the lifespan of stroke patients, health professionals can expect to be assisting them with the various deficits acquired from their cardiovascular accident and any other brain injury.

Characteristics of Aphasia

In order to assess and treat PWA efficiently, professionals must familiarize themselves with the terminology used when describing the variety of characteristics and deficits associated with this complex disorder. Aphasia subtypes can be differentially diagnosed by certain characteristics, such as repetition skills, auditory comprehension and fluency level. The core symptom across the aphasia subtypes is anomia, which is a deficit in a PWA's word finding ability (Manasco, 2014). This leaves the patient with difficulty naming people and common objects due to the brain damage. Unique speech patterns may also be exhibited in PWA, such as agrammatism, in which function words like articles, prepositions, personal pronouns, and verbal

inflections are omitted, or paragrammatism, in which grammatical morphology is not used correctly, usually due to the substitution of one morpheme for another (Harvey, 2015).

Word production errors, or paraphasias are a common symptom of aphasia. Subtypes of these include semantic paraphasias, which refer to word substitutions (e.g., "doctor" for nurse), and phonemic paraphasias, which are sound substitutions (e.g., "doctin" for doctor). Neologisms, or made up words, may result from these errors and contribute to jargon, or incoherent, meaningless sentences (Harvey, 2015).

It may be a challenge for PWA to clearly and efficiently express their thoughts and ideas to others. Rather than using a concise, commonly known expression, the patient may be verbose in his or her description, resulting in circumlocution. Furthermore, they could exhibit *conduit d'approche*, which is described as "the tendency...to make repeated attempts at a word (e.g., for pretzel, "trep . . . tretzle . . . trethle . . . tredfiles . . . ki") that do not necessarily result in closer approximations to the target" (Saffran, 2000, para. 1). These attempts demonstrate the patient's awareness of what the word should sound like and the discontent with his or her efforts. *Conduit d'ecart* indicates repeated attempts that get further from target (Harvey, 2015).

There are a number of repetitive behaviors that occur in PWA. For example, the patient may perseverate on an action or utterance, meaning they continue to repeat or prolong that response even after the stimulus that prompted it has stopped. Palilalia is when the individual involuntarily repeats his or her own words or phrases with increasing speed while clarity and volume decreases. Similarly, a stereotypic utterance may be apparent, in which the patient repeats a particular syllable, word, or phrase frequently and sometimes as an emotional exclamation. On the other hand, echolalia is when the individual involuntarily repeats someone

else's words. Any one or combination of these symptoms will cause prosodic variation, affecting the rhythm, stress, and intonation of speech.

Auditory comprehension is another significant language component that is almost always affected by aphasia. It can be defined as the ability to decode verbal input (Helm-Estabrooks, Albert, & Nicholas, 2014). Relative to the level of speech production ability, auditory comprehension ability can either be worse, better, or approximately equal. This in turn helps make the diagnosis of a specific type of aphasia more accurate. Auditory comprehension deficits can vary from being incapable of understanding: a single word, single sentences, multiple-step instructions, or a narrative discourse. Because of this wide range of deficits, flexible and variable stimuli are used to assess the level of auditory comprehension. Furthermore, a person's ability to read and write, specifically understanding and producing text from the letters to the paragraph level, may be impaired with this type of disorder (ASHA, 2016a).

Disorder

Aphasia is a language disorder that affects a person's fluency, auditory comprehension, repetition skills, as well as overall receptive and expressive language (ASHA, 2016a) The older adult population tends to be most affected by aphasia, but this disorder can occur in anyone regardless of age, gender, nationality, and other characteristics (Engelter et al., 2006). It may manifest from a stroke, traumatic brain injury, brain tumors, and various medical procedures. While language is impaired, an aphasic patient's intelligence is unaffected (ASHA, 2016a). Lesions in specific anatomical locations will detrimentally affect particular areas of language, as seen in the charts below.

Aphasia can be broken down into three categories: nonfluent, borderline fluent, and fluent. The subtypes of aphasia, each lesion site, and the associated features can be found in the charts included below (Harvey, 2015):

* denotes primary feature

Nonfluent

<u>Type of Aphasia</u>	<u>Lesion Site</u>	<u>Fluency</u>	<u>Auditory Comprehension</u>	<u>Repetition</u>	<u>Features</u>
Broca's	Left, lateral frontal; pre-Rolandic area	0-5 Words	Good	Poor	Anomia* Agrammatism/Substantive Words
Transcortical Motor	Anterior frontal paramedian; anterior and superior to Broca's area	0-5 Words	Good	Good	Impaired Initiation* Anomia Incomplete Sentences
Mixed	Variable	0-5 Words	Poor-Fair	Poor	Anomia*
Global	Large perisylvian area extending deep into the subjacent white matter	0-5 Words	Very Poor	Poor	Profound Anomia* Stereotypical Prosodic Variation

Borderline Fluent

<u>Type of Aphasia</u>	<u>Lesion Site</u>	<u>Fluency</u>	<u>Auditory Comprehension</u>	<u>Repetition</u>	<u>Features</u>
Anterior Capsular/ Putaminal	Capsular/ putaminal lesions anterior superior to white matter	6-8 Words	Good	Good	Anomia Hypophonic Dysarthria Phonemic/ Semantic Paraphasias Range of Grammatical Constructs
Posterior Capsular/ Putaminal	Capsular/ putaminal lesions posterior white matter	6-8 Words	Poor	Poor	Anomia Hypophonic Semantic/ Phonemic/ Neologistic Paraphasias
Thalamic	Thalamus	6-8 Words	Highly Variable	Good	Hypophonic Paraphasic errors Perseverations

Fluent

<u>Type of Aphasia</u>	<u>Lesion Site</u>	<u>Fluency</u>	<u>Auditory Comprehension</u>	<u>Repetition</u>	<u>Features</u>
Wernicke's	Posterior third of superior temporal gyrus	9 or more words	Poor	Poor	Anomia Prosodic speech with many errors* Perseverations
Transcortical Sensory	Posterior parieto-temporal, sparing Wernicke's area	9 or more words	Poor	Good	Anomia Nonspecific words Semantic paraphasia* Perseverations
Conduction	Supramarginal gyrus and underlying white matter pathways, Wernicke's area	9 or more words	Good	Poor	Anomia Self-Corrected phonemic paraphasias* Conduit d' approche/ d' ecart
Anomic	Angular gyrus, second temporal gyrus	9 or more words	Good	Good	Anomia Nonspecific words Circumlocutions* Paraphasic errors*

Treatment

Aphasia treatment is highly variable and is individualized to address the specific needs of the client. According to the American Speech-Language-Hearing Association (ASHA, 2016a), aphasia treatment generally focuses on restoring language abilities or developing compensatory strategies to aid with communication. The variability in each aphasic profile lends itself to individualized strategies that target the specific errors each patient demonstrates. ASHA (2016a) advises that therapy focus on strengthening patient skills that are still intact in order to support communication, as well as incorporating compensatory strategies to make up for the acquired deficits. These may include educating and training the patient and caregivers to use augmentative and alternative methods of communication (AAC), expressing wants and needs through gestures or writing, or using other support strategies to promote total communication.

An important consideration in planning treatment is whether or not skills and strategies can be generalized to most, if not all communicative contexts. With the ever-changing status of PWA, it is advised that the speech-language pathologist (SLP) keep an open line of communication with the patient and caregivers, continuing to educate them about the nature of the disorder, the course of treatment, and prognosis for recovery throughout the entire process.

It is important to note that treatment should address every type of communication modality, including but not limited to verbal expression, reading and writing, alternative and augmentative communication (AAC) devices, and gestures. The vast majority of treatment occurs in a medical setting, as aphasia typically affects individuals who have suffered a stroke or brain injury (ASHA, 2016a). More specifically, these settings can be: inpatient, outpatient, home health care, and skilled nursing facilities. Treatment generally addresses specific cognitive skills such as executive functioning, as well as expressive and receptive language. ASHA (2016a) utilizes a “Framework for Outcome Measurement” (FROM), which is a four-component Venn diagram that evaluates a person’s quality of life. Explicitly, the diagram considers a person’s: body function/structure, environment, activities/participation in social settings, and personal factors/identity.

Team Approach to Treatment

In addition to SLPs, other potential members of the aphasia care team include: occupational and physical therapists, clinical psychologists, neurologists, doctors, nurses, and social workers, among others. The team composition is dependent on the specific needs and goals of the patient. Each professional contributes to the group with his or her own clinical expertise and judgment. Each discipline’s approach to assessment and treatment is based on

foundational principles supported by external scientific evidence. Sometimes, these principles overlap across several disciplines. Therefore, in order to provide quality services that reflect the needs and values of the patient, it is paramount that each discipline not only work in collaboration with the others, but with the patient and caregivers as well. This topic is relevant to the field of SLP and the previously mentioned disciplines because it has a significant impact on service delivery in the associated workplaces.

Recovery

A typical question asked by patients and their families is “how much recovery can we expect to see over time?” This undoubtedly is a valid question and is a tricky one to answer both correctly and honestly. Recent medical advances have improved the potential for acute recovery, which works by inhibiting lasting damage to the neural tissue caused by a stroke. Unfortunately, not all strokes or injuries are treated as quickly.

A common term associated with aphasia is spontaneous recovery, which is the functional restoration of the neurological structures that were directly undamaged by the injury but received associated deficits due to nearby swelling, abnormal blood flow, and so forth. Aphasia recovery is contingent upon a myriad of factors, including random chance. Some factors include, but are not limited to: aphasia type, lesion size and location, gender, age of onset, handedness, pre-injury intelligence, and other personality factors (Knauff et al., 2009). It is important to note that although emerging evidence suggests these factors play a significant role in determining recovery time, supplementary research is needed to make conclusions. Furthermore, there is a common misconception regarding aphasia recovery known as plateauing. This misleading notion states that after the initial burst of spontaneous recovery, subsequent recovery plateaus, or no

additional recovery should be expected (Helm-Estabrooks et al., 2014). It is likely that the PWA has not plateaued, but rather needs adjustments in their goals and objectives (Helm-Estabrooks et al., 2014).

Due to the idiosyncratic nature of aphasia, it is misleading to compare certain subtypes to one another, and thus compare two individuals with the disorder. While there are deficits that vary in skill set and severity, each aphasic patient has a unique damage composition that manifests itself in very different ways. Patients with a more severe form of aphasia, such as global, have a reduced chance of regaining pre-injury levels of functioning. Additionally, the closer the lesion is to language areas of the brain, the more challenging recovery is. It is intuitive to assume that the larger the lesion size, the more severe the aphasia and subsequently, the reduced likelihood of recovery.

Functional neuroimaging studies have suggested that female and male brains process and organize language in differing patterns (Helm-Estabrooks et al., 2014). Specifically, females tend to utilize both the left and right hemispheres when processing language, whereas males predominately utilize the left. Because aphasia is usually caused by left hemisphere lesions, it may be inferred that women potentially have a higher chance at showing recovery (Sarno, Buonaguro, & Levita, 1985).

Regarding age of onset, there are fundamental differences in terms of neurology. First, younger people generally have greater neuroplasticity, which is the brain's ability to adjust and adapt to environmental, behavioral, and neurological changes (Bayles & Tomodea, 2010). Also, there is a dearth of research regarding longitudinal recovery in younger people. The etiology for disparate age groups needs to be taken into consideration. With younger people, their cause of

aphasia is more likely due to traumatic brain injuries, congenitally weak blood vessels, and ruptured aneurysms. These specific etiologies manifest themselves in very different ways in terms of aphasic characteristics. To summarize, younger people potentially have a greater chance of a positive outcome, but varying etiologies and a lack of research prohibit this from being a conclusive factor (Bayles & Tomodea, 2010).

Handedness is another factor that hypothetically impacts recovery. To elaborate, about 95% of right-handed people are left-hemisphere dominant for language. About 30-35% of left-handed people are either right-hemisphere dominant or bilateral dominant. Using both hemispheres or mostly the right tends to help individuals avoid most of the typical left-hemisphere damage caused by aphasia (Helm-Estabrooks et al., 2014).

Finally, the presence of additional mental disorders, such as depression or paranoia, can impede recovery progress. As Helm-Estabrooks et al. (2014) states in the *Manual of Aphasia and Aphasia Therapy*, “It would seem reasonable to assume that people with chronic depression, for example, will not recover as well as people who have positive emotions” (p. 176). The author notes a clinical study conducted by behavioral neurologist Frank Benson that attempted to find a connection between aphasia type and personality type. The results suggested that people with Broca’s aphasia were more likely to be depressed, whereas people with Wernicke’s aphasia were more likely to be neutral or upbeat emotionally. Unfortunately, this study is one of the few that investigates this connection, and thus, more supporting research is needed to effectively draw conclusions. All in all, using a holistic framework and considering major personality traits for an aphasic client is necessary to estimate potential recovery.

Interprofessional Education

According to ASHA (2016b), “There is a growing emphasis on interprofessional education in health care as a result of research demonstrating the benefits of interprofessional collaborations in health care that require continuous interaction, coordinated efforts, and knowledge sharing among healthcare professionals” (ASHA, 2016b, para. 1). Consequently, Falk, Hult, Hammar, Hopwood, & Dahlgren (2013) advised that this collaboration “across professional boundaries is seen as a necessity in the future to achieve sustainable and safe healthcare” (p. 476). With this understanding, it comes as no surprise that training students together will soon be in standards for higher education.

In the late 1980s, the World Health Organization (WHO) recognized that, if health professionals were taught in the same educational setting and learned to collaborate as a team during their student years, they were far more likely to work effectively together in a clinical setting (WHO, 1988). Incorporating this approach to higher education may assist students in broadening their knowledge base and viewing their expertise within a larger context that is influenced by various team members. Furthermore, this facilitated collaboration may serve as a reminder to each student across disciplines that he or she serves a specific role on a team whose common goal is to meet the patient’s needs. With this developed perspective and knowledge, students may feel more prepared and confident applying these skills in professional settings with their respective collaborators.

There are numerous reasons as to why students from different healthcare majors should be trained to work together. This approach to education has the potential to not only benefit the students, but their future patients as well. In fact, ASHA (2016b) notes that improvement in

patient outcomes and provider satisfaction is evident when there is interprofessional collaboration. Students develop a limited understanding of the tools available to them when they only discuss this topic within their respective major. On the other hand, education across disciplines promotes a more thorough understanding and more effective utilization of resources. Students across healthcare disciplines may benefit in future practice with the opportunity to learn about each other's scopes of practice and the content areas that are intertwined across relevant disciplines. Falk et al. (2013) found that this opens up contexts for negotiations and may promote problem solving skills and critical thinking. Taking the time to practice collaboration in the undergraduate and graduate years allows students to develop a "greater understanding of their respective professional competences" (Falk et al., 2013, p. 477), how those competences influence and fit in with the patient care team, and ultimately, how they affect the welfare of the patient.

In an interprofessional study, Hood et al. (2014) found that cross collaborative training may lead students to think about who they are expected to be, who they might be, and who they would like to be in these collaborative learning contexts, all of which contribute to the construct of their professional identity (p. 120-121). This professional identity is important to establish in the early stages of education and training in order to prepare students for similar situations in professional practice. With the prevalence of inter-education and cross-training appearing in the literature, it is imperative that higher education institutions apply this information in the academic and clinical settings to better prepare pre-professionals for the dynamic workplace and care team.

ASHA (2016c) emphasizes the importance of collaboration in the profession and advises SLPs to “maintain collaborative and harmonious interprofessional and intraprofessional relationships...” (ASHA, 2016c, principle of ethics IV). This applies when working with the wide array of professionals involved in the assessment and treatment of PWA. Multidisciplinary teams work together with aphasic patients to improve outcomes. Specifically, SLPs are looking to improve patient quality of care while exercising independent professional judgment (ASHA, 2016c, principle of ethics IV).

There are some unorthodox programs that aim at promoting collaboration and interdisciplinary education, such as the Sea to Sky Aphasia Camp (“Sea to Sky Aphasia Camp”). Essentially, this program is a recreational-based camp that focuses on providing education to PWA, their families, and health care students in an outdoor recreational setting. Students studying SLP, nursing, physical therapy, occupational therapy, physiotherapy, and more are invited to apply for this program. Experienced health professionals work with the multidisciplinary students in order to let them lead activities for PWA. This allows the students to engage in hands-on care while promoting collaboration amongst various disciplines. Although this is not inherently a medically-based setting, the students in each field are able to experience and reflect on the concept of interprofessional collaboration and apply these invaluable skills in any workplace.

Another valuable resource for students and professionals alike is a specific edition of the 2013 *Journal of Clinical Practice in Speech-Language Pathology* (Volume 15, Number 3), that focuses on interprofessional education and practice. This issue contains a variety of studies, workshops, and resources that share similarities with the *Speech-Language Pathology & Nursing*

Interdisciplinary Learning Project (SNILP) at Illinois State University. An especially relevant workshop consisted of a joint effort by both the Royal Talbot Rehabilitation Centre & the La Trobe University in an effort to provide a collaborative experience for SLP students. The students underwent a one-day communication skills workshop that focused on developing relevant knowledge, communication skills, and overall confidence when working with adults with communication disorders. Retired professors “acted out” certain types of aphasia and the students had to collaborate to try to figure out what type it was. The students initially were given a brief informational session to familiarize themselves with the expectations of the activity. Next, they spent about 20 minutes talking to the “patient” while collaborating with educators about their questions and observations. They rotated from client to client, gaining a breadth of experience and practicing various patient care strategies. Once completed, they were given a debriefing about their performance. They were asked to rate their perception of the workshop and how effective they believed it to be. All in all, the ratings were quite positive, although the authors concluded that more substantial research is needed to solidify these assertions.

Unfortunately, interprofessional education and collaboration has not been fully implemented in SLP programs. It is an admittedly arduous task to locate modern established research studies or programs that use this idea as its crux. However, that does not insinuate that it is an unattainable goal. Many health programs are beginning to seriously incorporate this notion into their curriculum, realizing the long-term benefits that will undoubtedly improve patient care and treatment in the future.

Simulation

Judy

I found the simulations with the nursing students to be valuable and eye opening learning experiences that brought up several clinical implications to consider in the “real world.” Each opportunity to interact with a “patient” and “caregiver” while collaborating with the nursing student truly pushed me outside my comfort zone and led me to reflect on the different roles we each played in the situation. Having another SLP student in the room was helpful in reducing anxiety in an unfamiliar context as well as for promoting teamwork, communication, and sharing ideas. In this stress-inducing situation, I began to consider the expectations of the supervisors, the expectations I set for myself, and what I was actually able to accomplish within a short period of time. The debriefing sessions held after each simulation helped facilitate further reflection regarding the roles of each discipline in the assessment of the patient. Discussion also revolved around instances that caused confusion or raised thought-provoking questions. This time to debrief contributed to the behavioral changes I made going into the following simulations. I noticed a significant increase in my comfort level and confidence through interactions with the simulation participants from the first simulation to the last one, but still feel that there is a lot of room for further education and practice to improve upon these perceptions.

Being provided with information regarding the nursing and SLP scope of practice, various disorders, and approaches to patient care in weekly lectures was helpful in laying down the foundation of knowledge to be shared by both the nursing and SLP program students. However, at times, it felt like we were given broad information that skimmed the surface of what we needed to know before the simulations. While we learned about the characteristics of certain disorders we would come across, we did not really discuss specific assessment strategies to

implement in the medical setting. Coming into this experience with a limited background of the common disorders SLPs encounter in the medical setting, such as dysphagia and cognition, I felt incompetent and unprepared to conduct a bedside swallow evaluation along with cognitive assessment tasks in the first simulation. It would have been nice to have exposure to specific types of tasks and procedures SLPs and nurses use in practice when assessing patients. This would have served as an opportunity to learn from each other and discover areas of overlap within our scopes of practice. At the same time, not having this exposure forced us to negotiate and problem-solve in the moment during the first simulation and encouraged flexibility and open communication from both disciplines.

Max

Overall, I found the simulations to be quite beneficial as a student. It provided experience working with real people, as opposed to a medium such as Simucase. Additionally, it allowed us as aspiring clinicians to practice and hone our skills “in the moment.” A large portion of being a professional SLP is planning, but equally as important is being able to think on your feet and be flexible. A clinician can plan a session/assessment down to the last detail, but planning an initial session with a client and actually carrying it out according to plan does not occur very often. Furthermore, it was enjoyable working with students in another department. Collaboration is and will continue to be a crucial aspect of providing effective treatment and assessments. This study allows us as graduate students to get hands-on experience doing so, which unfortunately is a rarity in many curriculums today.

Having this independent study take place during the first semester of graduate school gave me mixed feelings. On a positive note, it was nice to ease into simulated “therapy” sessions

with a partner. Having another graduate student work alongside you eases the anxiety and helps promote teamwork and effective communication. In the moment, it is easy to forget to ask a specific question or to miss a step during a bedside evaluation. Being paired up with someone else allows one another to “watch each other’s back” so to speak.

There are some aspects I would like to improve for the future, however. I know planning and implementing a collaborative study like this is a complicated process, but I would feel much more comfortable if this independent study took place after we completed some of our medically-based courses, such as aphasia and motor speech disorders. Coming into graduate school, I personally had very little knowledge of these disorders and how they manifest themselves in terms of speech/language strengths and weaknesses, behaviors, salient neuromuscular features etc. I would feel much more comfortable and confident going into these simulations with more background and medically-based knowledge. Furthermore, it would be even more beneficial if we would need to administer and score a bedside evaluation for each simulation. That would give us more practical and real-life experience.

Another part I felt like I could have learned more with was evaluating multiple patients within a specific time-frame. In other words, an SLP working in a medical facility does his or her “rounds” and sees many patients throughout the day. I know it would be a difficult task to coordinate in terms of scheduling and making sure there are enough “patients,” but I feel as though it would align more closely with what a SLP does in a medically-based field.

Video

Our video will focus on demonstrating the right and wrong ways to approach patient care in the medical setting; More specifically, assessment, communication strategies, and

interprofessional collaboration. The viewer will learn how to interact appropriately with the patient, nurse, caregiver, and the specific type of language that should be utilized. The viewer will also use this video as a guideline to fine-tune their clinical skills pertaining to aphasia. A supplemental checklist will be provided to help guide the viewer from start to finish.

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