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Developing a Culture of Successful Communication in Acute Care Settings: Part II. Solving Institutional Issues

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Abstract

Purpose: Establishing services for hospitalized patients with complex communication needs (CCNs) requires identifying and addressing both patient-based and institutional barriers. Although the previous paper (Marshall & Hurtig, 2019) focused on patient-based barriers, this paper addresses overcoming institutional barriers.

Method: We present a series of cases to illustrate the institutional challenges in meeting the CCNs of patients in an acute care setting.

Results: Each case illustrates how the deployment of augmentative and alternative communication tools required addressing institutional/systems barriers and how critical collaborations help patients with CCNs to more effectively communicate with caregivers and participate in their care.

Conclusion: Building a culture of improved patient-provider communication involves establishing a wider range of interprofessional collaborations and shared resources in order to effectively provide patients with CCNs the tools to summon assistance and communicate with their caregivers.

It has been well documented that hospitalized patients can face communication barriers that can have negative impacts on their health outcomes (Blackstone, Beukelman, & Yorkston, 2015; Hurtig, Alper, & Berkowitz, 2018; Hurtig, Czerniejewski, Bohnenkamp, & Na, 2013; Hurtig & Downey, 2009; Hurtig, Nilsen, Happ, & Blackstone, 2015). With some notable exceptions (see Blackstone et al., 2015), hospitals have addressed the communication barriers by using generic communication boards and paper and pencil solutions and, for the most part, have not implemented a wider range of augmentative and alternative communication (AAC) tools. Clearly meeting the complex communication needs (CCNs) of all patients falls within the speech-language pathologist's (SLP) scope of practice (ASHA, 2016, n.d.). The failure to implement such AAC tools can be attributed to the belief that

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hospitalized patients are only facing a temporary barrier to communication and that SLPs cannot perform an AAC evaluation and train the patient and caregivers to use the AAC-selected strategies. To some extent, this belief is a reflection of institutional barriers faced by the SLPs (e.g., insufficient time, limited resources, training). Sadly, this leaves SLPs facing what can feel like insurmountable challenges in meeting the CCNs of hospitalized patients and may reflect that, in practice, the hospital has not established addressing barriers to patient-provider communication as part of its core mission. Because the typical patient will be interacting with many nurses, physicians, other health professionals, and family members, any approach to implementing an AAC program will require a culture change and a more interdisciplinary approach. Altschuler and Happ (2019) have pointed out that hospitals must support greater collaboration between SLPs and nurses if they wish to be effective in meeting the communication needs of patients.

In the previous paper (Marshall & Hurtig, 2019), we presented a series of cases that illustrated some of the challenges of providing AAC and assistive technology (AT) to meet the range of patient needs. In this paper, we present some cases to illustrate both the challenges and some of the solutions that have emerged to overcome institutional barriers and to establish a culture of improved patient-provider communication for hospitalized patients with CCNs. In order to ensure patient confidentiality, we have assigned each patient a pseudonym and have modified portions of their stories. Presentation of these de-identified cases has been cleared by the University of Wisconsin-Madison Office of Compliance.

Critical Partnerships

The Waisman Center Communication Aids and Systems Clinic (CASC) and inpatient SLPs at University of Wisconsin Health University Hospital (UWUH) and American Family Children's Hospital (AFCH) have established direct lines of communication and are collaborating on increasing the training of nurses and other staff in order to increase the identification of and provision of services for patients with CCNs. A full description of the facilities and their use of AAC/AT can be found in the previous paper (Marshall & Hurtig, 2019). In that paper, we reported that being able to provide AAC services to inpatients resulted in an increase in consults. That increase has put a strain on the availability of AAC tools and the staff to provide AAC services to the inpatient population.

The collaboration of CASC with Voxello on the clinical evaluation of the noddle smart switch and the noddle-chat communication tool expanded the options available to SLPs in order to provide patients greater access to the nurse call system and to provide them a tool to better communicate with caregivers when their medical condition precludes their use of oral and written modes of communication. A fuller description of the Voxello technology was provided in the previous paper (Marshall & Hurtig, 2019) and can be found on the Voxello website (<https://www.voxello.com>).

As reported in that paper, access to the noddle and noddle-chat had major impacts on the state of AAC service provision at UWUH and AFCH. In addition to providing a tool for patients with the most CCNs, it also enhanced the CASC's loaner library of tools that could be implemented with the inpatient population. Access to these high-tech tools across units at

UWUH and AFCH also led to an increase in consults and better patient-provider communication.

Overview of Barriers

As the CASC and inpatient SLPs began collaborating on providing AAC services to inpatients, they identified a set of barriers to effective communication. Although some of these barriers were patient specific (e.g., physical, language, cognitive, end of life), there were barriers that could be thought of as (a) hospital system-specific (e.g., the location of CASC relative to UWUH, consult identification, scheduling, discharge planning), (b) staff training and implementation-related (e.g., shift changes, staff time and knowledge, room and unit changes, and positioning changes), and (c) technology-related (e.g., role of low technology, availability of equipment, and equipment management). In the first paper (Marshall & Hurtig, 2019), the focus was on addressing the more patient-specific barriers and the approaches to implementing or adapting technology to meet a particular patient's needs. In this paper, the presented case studies illustrate the more general systems and implementation challenges that were encountered, and similarly can be taken to illustrate the critical thinking and problem solving that occurred, and continues to occur, at UW Health.

Case Studies

Aaron

Aaron is a 21-year-old male admitted to the trauma unit for a spinal cord injury following a motor vehicle accident. His injuries resulted in quadriplegia and the need for mechanical ventilation. Aaron spent over a week intubated and alert on the trauma unit, communicating by nodding/shaking his head in response to yes/no questions posed by the medical team and family members. A consult for an AAC evaluation was placed on the day that Aaron was faced with having to make a decision between receiving a tracheostomy (and going to rehab) and opting to withdraw life-support measures.

At the time of consult, Aaron had already participated in a discussion regarding next steps in his care, though limited by the use of his established yes/no communication method. Aaron's family and medical team were under the impression that Aaron did not want a tracheostomy and had elected to withdraw life-support measures. This information was communicated to the evaluating SLP prior to her evaluation and highlighted the communication barriers specific to this patient and at the system level.

To meet this patient's immediate need for supporting communication and participation in his medical decision making, the evaluation occurred as planned. Given the urgency, there was not enough time to complete a full high-tech AAC evaluation prior to implementing an AAC strategy. Instead, the SLP introduced low-tech communication boards and the partner-assisted scanning (PAS) technique. The therapist utilized the medical decision-making templates available with the noddle-chat software to structure conversation. These boards were designed to provide patients with the ability to ask common questions, express opinions, and make statements regarding a targeted medical procedure (see Figure 1). For Aaron, these boards provided him with the ability to ask questions as well as respond and

make his wishes known. Without the tool, he may not have been able to or thought to ask follow-up questions. Additionally, PAS was utilized with a keyboard template to support novel message generation to further expand Aaron's communication.

With the introduction of these AAC strategies, Aaron was able to communicate far more during the discussions surrounding his care. The staff learned of Aaron's history of prior medical treatments and his mistaken fear that the tracheostomy would be performed while he was awake. Aaron made clear that although he was worried about the tracheostomy, he did want to continue his care and work toward rehabilitation. Aaron's situation highlighted for all involved that relying on yes/no responses alone is never enough for a patient to be able to truly participate in critical medical decisions. Although Aaron's immediate communication needs were met and his story ended positively, there was more work to be done at an institutional level.

As stated initially, Aaron spent over a week intubated and alert without a means for novel message generation. The staff had reported that they were able to communicate with Aaron through use of yes/no questions and his attempts at mouthing around his endotracheal tube. As so vividly highlighted by Aaron's experience, these tools alone cannot be a sufficient means for meeting all communication needs during a hospitalization. Had an alternative not been found, life-support might have been erroneously withdrawn.

The task then shifted to identifying and implementing a system-wide solution to overcome any delays in identifying patients who would benefit from an AAC consult. To begin, collaborations were initiated with key stakeholders involved in patient care in the trauma unit. Following Aaron's discharge, the chaplain who was directly involved with Aaron's care expressed interest in establishing a partnership with the consult service. She shared that the hospital chaplains are often consulted immediately for any new trauma and have faced their own ongoing challenges with patient-provider communication. To support their goals and communication needs, specific spiritual and religious conversation boards were generated and shared with the team along with providing training on how to use the PAS technique. This led to goals to establish more formal partnerships with other members of the critical care team including respiratory therapy, occupational therapy, and nursing.

Aaron's nurse stated that she did not know that additional communication tools were available beyond the generic laminated communication boards and the white boards available in inpatient rooms. Although formal trainings on the PAS technique and other ways to adapt communication for individuals with CCNs have been provided to the trauma unit staff in the past, it is evident that more is needed, in part, because of unit staff turnover or staff being pulled from other units where patients typically did not have problems communicating.

Samuel

Samuel is a 36-year-old man admitted following recurrent headaches and vestibular issues. He was ultimately diagnosed with terminal brain cancer and given a life expectancy of 3–4 months. Unlike the other case studies, at the time of Samuel's initial AAC consult, he was communicating verbally and presented with intact vision and motor skills. However, his

neurologists projected that Samuel would lose the ability to speak, see, and control upper extremities in 2–3 weeks as a function of the rate of the tumor's growth and its location. Samuel and his family had connected with hospice and planned a discharge from the hospital as soon as he was medically stable.

Although a decision to transition to hospice care had been made, Samuel had not yet made any other end-of-life (EOL) decisions. Understandably his diagnosis came as a shock and he had not yet developed a will, advanced directives, or detailed any other EOL wishes. Reasonably, Samuel was unsure about what questions to even ask. He was often silent during medical rounds, frozen and unable to ask questions of his physicians. Changes in his memory function further reduced Samuel's ability to maximally participate in medical rounds and have all of his questions answered.

The focus of the AAC evaluation was to identify a system that could be adapted to meet Samuel's changing motor and sensory needs. The noddle switch and the noddle-chat communication tablet were selected as they offer the ability to use the same communication content in both direct selection and scanning/auditory scanning modes. Like in Aaron's case, the noddle-chat medical decision-making boards were utilized and the CASC therapist-initiated cotreatment with both the hospital chaplain and hospice staff. Samuel, his family, and his care team worked together to go through each board one-by-one and customize the questions and statements to best meet Samuel's needs. Samuel took part in customizing the pages of the noddle-chat to support his ability to ask all the questions he wanted to ask during rounds.

Additionally, Samuel took an active role in programming other pages of the noddle-chat boards, including basic cares, preferred leisure activities, and sentiments for family and friends. Figure 2 illustrates one of the boards that allowed Samuel to more actively participate in conversations about his prognosis. This was particularly reassuring for Samuel because not all of his family members were able to travel immediately to be with him. Preprogramming messages ensured that Samuel was still able to share his sentiments as his disease progressed. In addition to supporting communication, taking a role in programming the noddle-chat strengthened Samuel's learning of how the noddle system worked in preparation for his physical decline.

Initially, it had been planned for Samuel to transition from using direct selection to scanning on the noddle-chat. However, as Samuel's physical status deteriorated, it became evident that the cognitive and physical demands of using scanning would not be the best use of Samuel's strength and attention. As Samuel was preparing for his discharge to the hospice facility in a week, it unfortunately became clear that the noddle-chat would not be available in that environment. As a result, the focus of Samuel's intervention shifted to family and caregiver training on how to use the low-tech technique of partner-assisted auditory scanning (see Figure 3 in Marshall and Hurtig [2019] for instructions on using partner-assisted auditory scanning). Samuel's custom noddle-chat boards were printed and put into a low-tech book to bring with him to hospice.

For Samuel, the early AAC consult led to him having increased autonomy in EOL decision making. Beginning intervention before his physical decline made it possible to support his evolving communication needs and allowed him to sustain relationships throughout disease progression. As in Ted's case, both low- and high-tech tools sustained Samuel's communication with his caregivers throughout disease progression.

Ross

Ross, a 24-year-old male, was admitted following a ruptured aneurysm in his cerebellum. He presented with severe ataxic movements and ataxic dysarthria. He was unable to coordinate breath for speech during trials of a Passy Muir Speaking Valve or control his upper extremities to utilize direct selection on communication boards provided to him by his unit. Ross suffered from severe nausea in addition to a significant depression secondary to this unexpected change in status. The noddle with noddle-chat communication device, accessed via the AbleNet Grasp switch, was ultimately selected for Ross; however, functional implementation was limited.

Although Ross presented with his own patient-specific barriers (e.g., physical status, ability to participate), the barriers that most impacted device implementation were system wide. These system barriers involved: (a) the scheduling of his AAC consult visits, (b) the availability of the range of equipment and tools needed to complete the feature match to identify the best tools to support Ross' communication needs, and (c) incomplete communication at hand-offs and discharge to rehabilitation facility.

Scheduling consult visits was a consistent problem that significantly interfered with Ross' ability to participate in treatment sessions to learn to use the AAC strategies that were presented to him. Often when the CASC SLP would arrive for her session with Ross, he was nauseous or fatigued from physical therapy, or he would decline the session in order to rest. As mentioned, the CASC is an outpatient clinic housed across the street from UWUH. The therapists have a set outpatient schedule and, as such, are unable to flex schedules in order to come back at a different time to work with Ross. To address the immediate scheduling barrier, collaboration was initiated with Ross' entire care team to schedule CASC as Ross' first therapy appointment of the day. Ross' nurse was contacted prior to the CASC therapist traveling across the street to ensure Ross was awake and agreeable to the scheduled therapy session.

Another barrier that arose with Ross was availability of equipment at the bedside. First off, his AAC feature match process was complex and a variety of switches and tools needed to be trialed before identifying the solution that addressed Ross' needs and abilities. Again, since CASC is located across the street from the hospital, the only tools available for a trial were those brought by the CASC therapist for each appointment. On multiple occasions, the therapist identified that another switch or accommodation could be helpful for Ross; however, the tool was located across the street. By the time the therapist traveled back and forth, Ross was often too fatigued to continue participation or was already scheduled for another therapy. To overcome these barriers, the therapist created an "evaluation suitcase" in which considerably more equipment could be transported between CASC and the inpatient units, increasing access to tools that may be needed within a session.

Additional barriers arose at the time of Ross' discharge to a skilled nursing facility (SNF). CASC staff were not notified of Ross' discharge, as it occurred over a weekend. There was no time for coordination of care to ensure Ross would have access to his communication system upon discharge. Furthermore, Ross' communication device was misplaced, as no one was available to pick it up when the room was cleaned after he was discharged. Ultimately, an inpatient SLP located the device after many hours of looking and also identified broken and missing cords. Following Ross's discharge, coordination of care was established via phone with the SNF. To allow Ross continued access to some of the tools he began to use as an inpatient, the staff of the SNF was provided the contact information for the device vendor to support setting up the appropriate communication tools, if indicated, for Ross.

Overall, Ross' case highlighted an abundance of barriers, many completely outside the control of Ross and his therapists. However, it is important to remember that barriers do not have to lead to failure, and that often the biggest barriers lead to crucial institutional practice changes. Ross' case initiated greater planning on how the AAC service can best meet the needs of patients with CCNs moving forward. Table 1 provides a general description of each of the cases, and Table 2 provides a description of the intervention and charges associated with each case.

Institutional Changes/Next Steps

Each of the three patients had a significant impact on the deployment of AAC services at UWUH/AFCH. As introduced in Ross' case, changes to clinician scheduling systems were introduced. All CASC therapists worked together to adjust their outpatient schedules to ensure that for each hour of the workday, at least one therapist would have a slot blocked off for inpatient visits, thereby providing the capacity to return to see a patient later in the day should an inpatient need arise. The AAC service also tracks patient volume, equipment usage, and staff time for ongoing monitoring of the overall need. Ultimately, this data will guide program development and help support justification of expanded staffing, time allocation, and equipment funding for this crucial service. However, ultimately, the CASC is an outpatient clinic that operates weekdays, 8 a.m.–5 p.m. This results in lack of access to equipment and expertise during weekend, evening, and holiday shifts.

To begin mediating this barrier, the AAC service is working to identify ways to provide staff with access to equipment during these times through onsite equipment storage at both UWUH/AFCH. Onsite storage would provide inpatient staff and nurses with access to equipment when the CASC staff is not available, as well as eliminate the need for an evaluation suitcase, as used with Ross, to transport outpatient equipment between settings. However, before this can be accomplished, additional steps must occur. First, additional funding is needed to secure more inpatient specific equipment. Many of the low- and high-tech tools referenced in each of the case studies were provided from the CASC (e.g., switches, laminated communication boards, iPad). If these tools were permanently moved to the hospitals, outpatients would no longer have access to them. By documenting increased consults and patient outcomes, the AAC team hopes to submit for grants to support funding of additional equipment that can remain in the inpatient setting.

Onsite equipment storage also presents training barriers that must be addressed. Many of the cases we described required dynamic assessment by the team to enable patients to address their CCNs. Because the patients' needs changed and the interventions needed to be modified, it was important to include appropriate nursing and staff education to ensure ongoing SLP and occupational therapist consultations. In the absence of such education, there is a real risk that when a particular AAC strategy is not working, the unit staff might inappropriately judge the patients to not be candidates for an AAC intervention. Having onsite equipment storage offers the option for immediate problem solving and access to tools while waiting for a specialized evaluation.

It is important to note that equipment management presents another barrier for inpatient specific equipment and onsite storage. Each hospital system has its own set of policies and procedures regarding appropriate management of equipment. This applies to both internal wiping of protected health information (Health Insurance Portability and Accountability Act) and external device cleaning/disinfection to meet Joint Commission hospital accreditation standards. This is a time-consuming process and a responsible party has not yet been identified to manage this once equipment is moved. Use of checklists and involvement of hospital information technology will be crucial to a streamlined transition of equipment storage.

In these cases, as in the cases described in the previous paper (Marshall & Hurtig, 2019), it is evident that there is a need for interdisciplinary training to insure everything from consult identification, device implementation, to discharge planning. As stated, "The AAC consult team has set as a priority providing nurses and other care providers with more education on how AAC strategies can be used to support patient-provider communication." As in the cases of Jason and Ted (described in Marshall & Hurtig, 2019), the staff's direct experience working with Aaron initiated a change in culture alongside opportunities for education at a basic level. However, a reactive patient-by-patient culture shift is inefficient and slow. It would take too long to achieve widespread system change. It is therefore necessary to engage a more proactive strategy to enhance patient-provider communication for patients with CCNs. This will require exploring multiple platforms for provider interprofessional education to not only raise awareness of the need to initiate AAC consults, but to also provide training on how to implement AAC strategies at the bedside. Experience is showing that best results may require a combination of e-learning modules, in-person training, or participation in rounds and unit huddles.

Unfortunately, there is limited time and often zero funding to provide any of these trainings. In an effort to begin meeting this need while also training new clinicians, the CASC was approved for an inpatient-focused clinical fellow (CF) in 2019. Funding for a CF at Waisman Center varies slightly from a regular clinical staff member. This allows for more flexibility of a CF's time to offer creative solutions to meet the high demand of AAC training needs. Additionally, the Waisman Center also houses Wisconsin's Leadership Education in Neurodevelopmental and Related Disabilities (LEND) Program. LEND provides interdisciplinary leadership training to graduate students, family members, self-advocates, and select community members to promote supports and services to children with neurodevelopmental disabilities and their families. Through a partnership with LEND, a

team of advanced trainees conducted 2 years of qualitative research on the barriers and facilitators to the use of low-tech AAC supports at AFCH. Through their continued work, a communication cart of low-tech resources and associated e-learning modules have been implemented on one unit at AFCH. The project is ongoing with the goal to expand and adapt this tool to meet the unique needs of each unit.

Perhaps the best sign of success of the CASC-UWUH/AFCH collaboration can be seen in the change in the number of AAC/AT consult requests coming from the inpatient units. Prior to the onset of the collaboration (2017), there were four to eight consult requests per year. Once the project was initiated (2018), the number of new consults averaged at two per month. In 2019, the number of new consults doubled to an average of four per month.

Conclusion

As we have seen, success in meeting the needs of patients with CCNs requires building and sustaining a hospital-wide culture of communication. Altschuler and Happ (2019) described the collaboration between SLPs and nursing that is critical to meeting the needs of patients. Collectively we can look to the institutions that have achieved success in overcoming the institutional barriers for guidance and suggestions on how to move forward (see Blackstone et al., 2015). However, the resources these institutions have in place were not implemented overnight. SLPs working to build an AAC program alone with no time, funding, or equipment must remember to not be discouraged or abandon the goal when progress feels slow, or when they are met with resistance. Although barriers faced at any particular institution may vary and the process of building a culture of communication may be driven by that institution's organizational governance structure, the target should involve ensuring that all patients can actively participate in their care and participate in medical decision making.

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References

- Altschuler T, & Happ MB (2019). Partnering with speech language pathologist to facilitate patient decision making during serious illness. *Geriatric Nursing*, 40, 333–335. 10.1016/j.gerinurse.2019.05.002 [PubMed: 31103328]
- American Speech-Language-Hearing Association. (2016). *Scope of practice in speech-language pathology* [Scope of practice]. Available from <http://www.asha.org/policy/>
- American Speech-Language-Hearing Association. (n.d.). *Augmentative and Alternative Communication* [Practice portal]. Retrieved from <http://www.asha.org/Practice-Portal/Professional-Issues/Augmentative-and-Alternative-Communication/>
- Blackstone S, Beukelman D, & Yorkston K (2015). *Patient-provider communication: Roles for speech-language pathologists and other health care professionals*. San Diego, CA: Plural.
- Hurtig RR, Alper RM, & Berkowitz B (2018). The cost of not addressing the communication barriers faced by hospitalized patients. *Perspectives of the ASHA Special Interest Groups*, 3(12), 99–112. 10.1044/persp3.SIG12.99 [PubMed: 30854467]

- Hurtig RR, Czerniejewski E, Bohnenkamp L, & Na J (2013). Meeting the Needs of Limited English Proficiency Patients. *Perspectives on Augmentative and Alternative Communication*, 22(2), 91–101.
- Hurtig RR, & Downey DA (2009). *Augmentative and alternative communication in acute and critical care settings*. San Diego, CA: Plural.
- Hurtig RR, Nilsen M, Happ EB, & Blackstone S (2015). Acute Care/Hospital/ICU-Adults In Blackstone S, Beukelman D, & Yorkston K (Eds.), *Patient-provider communication in healthcare settings: Roles for speech-language pathologists and other professionals*. San Diego, CA: Plural.
- Marshall S, & Hurtig R (2019). Developing a culture of successful communication in acute care settings: Part I solving patient specific issues *Perspectives of the ASHA Special Interest Groups*. Advance online publication 10.1044/2019_PERS-SIG12-2019-0015

Ventilation			
Why am I on a ventilator?	When will I come off the ventilator?	Can I come off the ventilator?	I want to come off the ventilator.
What happens if I am taken off the ventilator?	I understand what can happen if I am taken off the ventilator.	I understand that if I wish to live I must stay on the ventilator.	I understand that without the ventilator I would die.
I want to be taken off the ventilator.	Don't take me off the ventilator.	Can I have a ventilator at home?	Can I have a ventilator in a nursing home?
I understand.	I don't want to talk about this right now.	When do I have to decide?	I do not understand.

Figure 1.
Example of medical decision-making board.

Reaction to Prognosis				
I would like to talk to my family.	What are my treatment options?	This is a difficult decision	Please leave me alone.	Don't leave me alone.
Please tell me more.	Is it normal to feel this way?	I have accepted my current status.	I have not accepted my current status.	I want to discuss spiritual matters.
I am ready to talk about this.	I am not ready to talk about this.	I have a positive outlook.	I am experiencing negative emotions.	I will not give up.
Yes	No	Maybe	Later	

Created by the
Communication Aids and
Systems Clinic (Pager
#0408). Adapted from
the Noddle Chat
Communication System,
property of Voxello

Figure 2.
Talking about prognosis.

Table 1.

General description of each case.

Patient	Age	Admitting condition	Cognitive status	Language/Literacy status	Prior experience with technology	Length of intervention during hospitalization
Aaron	21	MVA trauma	OK	OK	Yes	~1 week
Samuel	36	Terminal brain cancer	Declined in orientation and cognitive functioning	OK	Yes	6 weeks total with frequency changing based on need
Ross	24	Ruptured aneurysm	OK	OK	Yes	2 weeks

Note. MVA = motor vehicle accident.

Table 2.

General description of the intervention for each case.

Patient	CASC session frequency	CASC session length	CASC % of session spent on caregiver training*	CASC billing codes for evaluation	CASC billing codes for treatment	Other billing codes*	Inpatient SLP visit frequency
Aaron	Initial evaluation and two follow-up visits	30	25%	92607	92609	Speech assist	4–5/week
Samuel	Two set up visits and 1/week follow-up	60	75%	92607	92609	Speech assist	4–5/week
Ross	Attempted daily for 2 weeks	15 min, if able to participate	50%	92607	92609		4–5/week

Note. CASC = Communication Aids and Systems Clinic; SLP = speech-language pathologist.

* Only direct patient care was billed under codes 92607 and 92609. Caregiver training and technical assistance was captured via an unbilled “speech assist” code that is used to track time spent on nonbillable services.