A Demographic Study of AAC/AT Needs in Hospitalized Patients

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Abstract

In 2012, the Joint Commission issued a mandate that accredited hospitals must take into consideration the needs of patients with complex communication needs. Stemming from this mandate came recommendations for hospitals to collect baseline data of the number of individuals in their care with complex communication needs. This is a demographic study in response to their recommendation. Researchers at the University of Iowa sampled the electronic medical records of patients across 7 days to determine the number of patients who met candidacy requirements for augmentative alternative communication or assistive technology. Our census data indicate there is a significant need for patients in acute care settings to have access to alternative communication and the nurse call systems. The need appears to be greater in the intensive care units, but is not limited to this patient population. Overall, patients had greater AT needs than AAC needs in all locations. We recommend future research to investigate service delivery models to improve communication barriers that may exist between hospital staff and patients.

In 2005, approximately 790,257 people were mechanically ventilated (Wunsch et al., 2010) and long before these individuals participated in any form of swallowing assessment, they faced the inability to communicate using typical speech output. During one of the most stressful and life changing moments of their lives, these “silent patients” could not express their most basic needs, nor could they participate in life or death health care decisions. Professionals should address the communication needs of these patients. The American Speech-Language-Hearing Association’s (ASHA’s) definition of the scope of practice for speech-language pathologists (SLPs) establishes the profession as the one responsible for addressing these needs (ASHA, 2005, 2007).

A range of researchers support the importance of communication during the critical time of hospitalization, indicating a relationship between patient-provider communication and positive health outcomes (Bartlett, Blais, Tamblyn, Clermont, and MacGibbon, 2008; Costello, 2000; Divi, Koss, Schmaltz, & Loeb, 2007; Dowden, Honsinger, & Beukelman, 1986; Downey & Hurtig, 2006; Hurtig & Downey, 2009; Patak, Gawlinski, Fung, Doering & Berg, 2004). These

studies identify and highlight the language-communication barriers that result in the patient's inability to:

1. access health care,
2. participate in treatment planning,
3. participate in critical decision-making involving life or death or quality of life issues,
4. inform medical providers of new or changing symptoms, and
5. express dissatisfaction with the care provided to them.

When communication barriers are not addressed, the patient may be at risk for potential adverse effects (The Joint Commission [JC] Sentinel Events, 2011). The Department of Health and Human Services, Office of the Inspector General recently released a report on the incidence of adverse events in hospitals for Medicare beneficiaries (Levinson, 2010). This report, based on patients discharged from hospitals in 2008, found that 13.5% of patients experienced adverse events. One and half percent of the patients experienced an adverse event that contributed to death. This translates to approximately 15,000 deaths per month. Landrigan and colleagues (2010) found that, even with increased awareness surrounding the importance of safety in hospitals, the number of patients harmed by medical interventions has remained high (18% of admissions) and that 63% of those injuries were preventable. Poor patient-provider communication often was a contributing factor to preventable harms. Bartlett and colleagues (2008) reported that intensive care unit (ICU) patients with a physical communication problem were three times more likely to experience an adverse medical event. Several studies examining patient-provider communication have indicated the quality of the communication also plays a role in medical outcomes and in the measures of patient and caregiver satisfaction (Balandin, Hemsley, Sigafoos, & Green, 2007; Finke, Light, & Kinko, 2008; Hemsley, Balandin, & Togher, 2007; Hemsley, Balandin, & Worrall, 2011; Hoffman et al., 2005). Similar communication barriers have been associated with adverse events in the hospitalized pediatric population as well (Cohen, Rivara, Marcuse, McPhillips, & Davis, 2005).

One way to improve patient-provider communication is to support communication with augmentative alternative communication (AAC). Typically, AAC involves attempts to compensate, temporarily or permanently, for the impairments, activity limitations, and participation restrictions of individuals with complex communication needs (CCN). Some hospitalized patients may be unable to communicate orally due to mechanical ventilation. These mechanically ventilated patients are prime candidates for AAC use. Recently, several hospitals across the nation have begun to regularly implement AAC solutions for these patients (Costello, 2000; Hurtig & Downey, 2009). Professionals can implement simple-to-complex AAC strategies in the acute care setting. These strategies can include low-tech picture boards, writing, partner-assisted scanning, and mid- and high-tech speech-generating devices.

Calling the nurse is the patient's first step to effective communication in a hospital. Unfortunately, a large number of individuals are unable to access their nurse call due to frailty or paralysis resulting from a traumatic injury or illness. Research (Bartlett et al., 2008; Dasta, McLaughlin, Mody, & Piech, 2005; Divi et al., 2007) has shown that the inability to communicate effectively and/or access the nurse call can compromise a patient's physical and psychological health. Interestingly, there is little, if any, published data on the number of patients unable to access the nurse call. In addition, access to an effective nurse call being part of a patient's right to communicate, the inability to access a functional nurse call may be a significant safety issue as well. Thus, any effort to enhance patient-provider communication will need to address the patients' ability to access the nurse call system as well. In this context, the term assistive technology (AT) refers to an adapted nurse call intervention. An adapted nurse call provides a patient with limited or impaired motor abilities the ability to access the nurse call system using a variety of switch interfaces connected to the traditional nurse call system.

The changing cultural climate in the United States, as well as increased awareness of disabilities, has led to the Joint Commission (JC) on national hospital accreditation to identify the specific needs of hospitalized patients with communication disabilities resulting from pre-existing conditions, medical interventions, or by reason of limited English proficiency (LEP). The JC views effective communication, cultural competence, and patient- and family-centered care as important components of safe, quality care (The Joint Commission on Accreditation of Healthcare Organizations, 2010a, b; see also Blackstone, Garrett, & Hasselkus, 2011, Blackstone, Ruschke, & Wilson-Stronks, 2011). Recently, the JC issued a revised set of standards to advise hospitals on the care of patients with communication disabilities entitled the "Patient-Centered Communication Standards for Hospitals" effective, July 2012 (The Joint Commission, 2010b; Table 1). To inform and aid hospitals in implementing the new standards related to patient rights and responsibilities and the provision of care in the context of patient-provider communication, the JC also published a monograph entitled *Advancing Effective Communication, Cultural Competence, and Patient-and Family-Centered Care: A Roadmap for Hospitals* (The Joint Commission, 2010a). One goal of this monograph is to identify strategies to meet patients' communication needs. Among the range of strategies, the JC has for the first time identified AAC as one way of providing patients with the means to communicate with their caregivers.

Table 1. Patient-Centered Communications Standards for Hospitals

RI.01.01.01	
The hospital respects, protects, and promotes patient rights.	
RI.01.01.03	
The hospital respects the patient's right to receive information in a manner he or she understands.	
EP1	The hospital provides information in a manner tailored to the patient's age, language, and ability to understand.
EP 2	The hospital provides interpreting and translation services, as necessary.
EP 3	The hospital communicates with the patient who has vision, speech, hearing, or cognitive impairments in a manner that meets the patient's needs.
RI.01.02.01	
The hospital respects the patient's right to participate in decisions about his or her care, treatment, and services.	
EP 1	The hospital involves the patient in making decisions about his or her care, treatment, and services.
PC.02.01.21	
The hospital effectively communicates with patients when providing care, treatment, and services.	
EP 1	

EP 2	The hospital communicates with the patient during the provision of care, treatment, and services in a manner that meets the patient's oral and written communication needs the provision of care, treatment, and services in a manner that meets the patient's oral and written communication needs.
PC.02.03.01	
The hospital provides patient education and training based on each patient's needs and abilities.	
LD. 03.04.01	
The hospital communicates information related to safety and quality to those who need it, including staff, licensed independent practitioners, patients, families, and external interested parties.	
EP 1	Communication processes foster the safety of the patient and the quality of care.
EP 3	Communication is designed to meet the needs of internal and external users.
EP 5	Communication supports safety and quality throughout the hospital.
EP 6	When changes in the environment occur, the hospital communicates those changes effectively.

Note. RI=Rights and Responsibilities; EP=Elements of Performance; PC=Provision of Care; LD=Leadership.

The JC recommended that institutions collect baseline data to determine if they are prepared to implement the new standards with their existing service delivery model (The Joint Commission, 2010a, b). Thus, hospitals need to determine how many patients are at risk for demonstrating CCN during their hospitalization secondary to medical interventions such as intubation or tracheotomy and to determine if these patients receive services to improve their patient-provider communication. Recalling that use of mechanical ventilation is common (Wunsch et al., 2010), Dasta and colleagues (2005) reported that 36% of individuals admitted to intensive care units require mechanical ventilation leaving them unable to speak for a period of time. This suggests that the percentage of patients with potential CCN is significant. A hospital's simple census of patients on respiratory support by itself cannot identify how many patients will need some form of AAC to be able to communicate, because such a census would likely include comatose and sedated patients. There are no published data available that identify how many patients on ventilator support are conscious and need to communicate with medical staff and family.

The goal of the current study was to obtain an accurate census of the number of patients who met AAC/AT candidacy requirements at University of Iowa Hospitals and Clinics (UIHC) over the course of a 7-day period, and secondarily to determine the number of patients meeting candidacy requirements for AAC/AT services in addition to, or as a complementary service to, the traditional speech-language pathology service. By presenting this case study of one large hospital's actual need, we hope to illustrate that the number of patients meeting candidacy requirements is not trivial and represents a challenge that must be addressed across the nation. We also hope to demonstrate that the use of existing charting data can be informative to support the need for a service delivery model for AAC in the acute care setting.

Methods

This study was based on automated reports generated by the University of Iowa Hospitals & Clinics electronic medical records software (Epic, 2012). UIHC is a tertiary care training facility, with 729 staffed beds and 30,982 admitted inpatients per year (UIHC, 2008). The electronic medical records program made it possible to obtain de-identified reports on every current inpatient, which included (1) medical records number, (2) date, (3) hospital unit, (4) patient age, (5) if an airway device was being used, (6) consciousness level, (7) if the patient was using a communication aid/device, (8) the patient's Riker sedation-agitation scale score, and (9) the patient's ability to access nurse call. The report fields were populated by information charted by the nurses in individual patient flow sheets and from the respiratory therapists' flow sheets. The Riker-Sedation Agitation Scale (SAS) is a measurement tool hospitals use to assess the level of distress and consciousness a patient demonstrates during her or his hospitalization. In our study, all of the ICU floors used the SAS to report on the patient. A score of 7 indicates a patient is dangerously agitated. A score of 6 indicates a patient is very agitated requiring restraint. A score of 5 indicates the patient is anxious or physically agitated but calms down. A score of 4 indicates the patient is calm, cooperative, and easily aroused. A score of 3 indicates the patient is sedated, difficult to arouse, but wakens and follows simple commands (Fraser & Riker, 2001; Stawicki, 2007). For purposes of obtaining a representative census, we generated reports daily over a 7-day period.

Patients meeting our AAC candidacy criterion were patients 3 years old or older, identified as having a Riker-Sedation Agitation Score of ≥4, and an airway device (intubation or tracheostomy). Patients meeting our AT candidacy criterion were 3-years or older, identified as having a Riker-Sedation Agitation Score of ≥4, and identified as being unable to independently access the nurse call system. There were no patients across the 7-day period who had a score greater than 5 on the Riker Sedation Agitation Scale. If there were patients with a score of 6 or 7 on the Riker Sedation Agitation Scale, we would have included them as candidates for AAC or AT services. We did not include patients in the Post Anesthesia Care Unit (PACU), the Operating Rooms (OR), or the Labor and Delivery Unit (L&D) in any of our data analyses. We identified patients as "ICU patients" if they were located in the Pediatric Intensive Care Unit, Surgical Intensive Care Unit, Burn Unit, Respiratory Intensive Care Unit, or the Medical Intensive Care Unit. We did not include patients who may have had pre-existing communication impairments limiting their ability to speak, patients who were English as a second language users, or patients who did not speak English at all. Furthermore, we did not include patients who were deaf or hard of hearing in this survey or patients who have a communication disorder (recent or chronic) as a result of a stroke or traumatic brain injury.

From the reports, we were able to tabulate the number of patients according to the number of days during the study interval that they were admitted in the hospital and the number of days that they met the AT or AAC candidacy criteria. Additionally, we were able to determine the number of days individual patients met the candidacy criteria across their hospital stays. We did this to determine whether or not the patients had needs requiring follow up or if their needs were short term (i.e., limited to a single day).

Results

Total Census

The Epic-based reports identified 629 unique patients who met our age and alertness inclusion criteria over the 7-day sampling period across the entire hospital. Epic reports identified an average of 477 (range=420–510) inpatients per day. On average, the ICUs housed 91 (range=81–99) patients per day. There were, on average, 386 (range=334–427) non-ICU patients per day. The weekday admissions averaged 110 patients per day and weekend admissions averaged 75 patients per day. Table 2 presents the number and percentage of the unique patients by the duration of their hospitalization over the sampling week.

Table 2. Candidacy by Length of Hospitalization Over Sampling Period

Duration	Unique Patients	AT	AT All Days	AAC	AAC All Days	Both	Both All Days
1 Day	258 (41%)	15 (6%)	15 (6%)	9 (3%)	9 (3%)	2 (1%)	2 (1%)
2 Day	113 (18%)	11 (10%)	8 (7%)	5 (4%)	2 (2%)	2 (2%)	1 (1%)
3 Day	91 (14%)	15 (16%)	7 (8%)	6 (7%)	3 (3%)	6 (7%)	3 (2%)
4 Day	78 (12%)	14 (18%)	7 (9%)	10 (13%)	3 (4%)	4 (5%)	1 (1%)
5 Day	31 (5%)	8 (26%)	1 (3%)	1 (13%)	0 (0%)	0 (0%)	0 (0%)
6 Day	33 (5%)	4 (12%)	2 (6%)	7 (21%)	0 (0%)	2 (6%)	0 (0%)
7 Day	25 (4%)	4 (16%)	0 (0%)	4 (16%)	0 (0%)	2 (8%)	0 (0%)
Total	629	71 (11%)	40 (6%)	42 (7%)	17 (3%)	18 (3%)	7 (1%)

AAC Candidacy

Of the 629 unique patients, 7% (an average of 34 patients per day) of the hospital's total inpatient population were found to meet the candidacy criterion for AAC services (see Figures 1 and 2). For ICU patients, the percentage of individuals meeting the candidacy criterion is much higher at 33%. On average, 22 patients per day in the ICU met candidacy criterion (see Figures 3 and 4). If we look at the percentage of non-ICU patients (see Figures 5 and 6), 3% (an average of 11 patients per day) of this patient population met the AAC candidacy criterion.

AT Candidacy

The Epic reports identified 14% (an average of 66 patients per day) of the hospital's total inpatient population as meeting the AT candidacy criterion (see Figure 1 & 2). An average of 33% (30 patients per day) of ICU patients met AT candidacy criterion (see Figures 3 & 4). When we look at the percentage of non-ICU patients (see Figures 5 & 6), the percentage of patients meeting the AT candidacy criterion is 9% (average of 36 patients per day).

Combined AT and AAC Candidacy

Patients who meet both AT and AAC candidacy criteria would require considerably more time to evaluate and treat. An average of 4% (21 patients per day) of the total inpatient population met the candidacy criteria for both types of service (see Figures 1 & 2). An average of 19% (17 patients per day) of patients in the ICUs met candidacy criteria for both services (see Figure 3 & 4). When we look at the percentage of non-ICU patients (see Figures 5 & 6), the percentage of patients meeting both the AT & AAC candidacy criteria is 1% (average of four patients per day). Thus the patients with significant medical problems requiring intensive care were more likely to require both AT and AAC services.

Figure 1. Percentage of Total Hospital Patients who Are Candidates

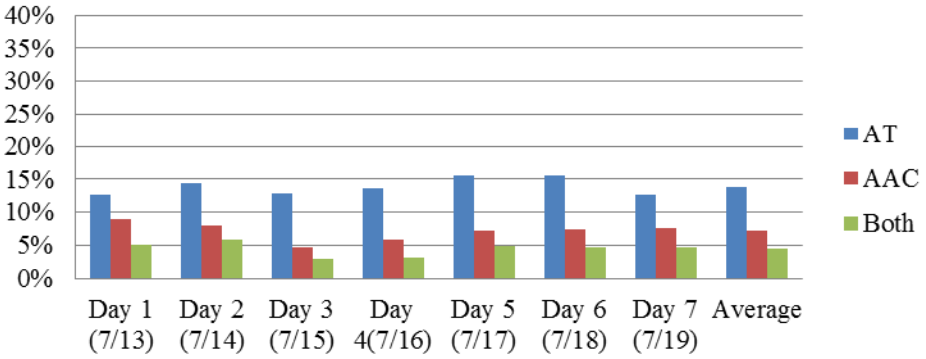


Figure 2. Number of Total Hospital Patients who Are Candidates

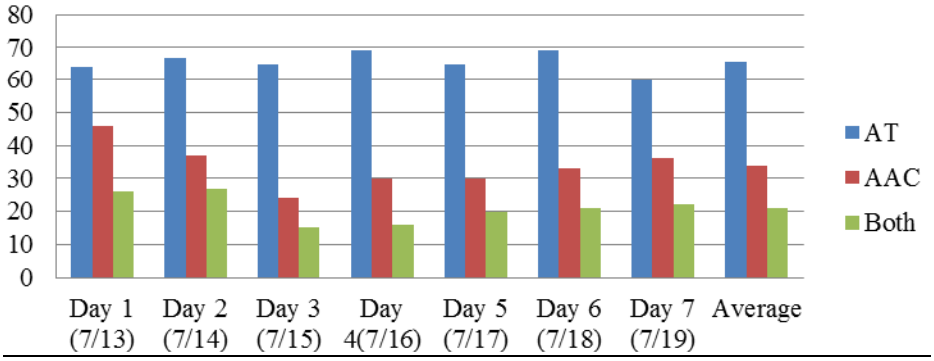


Figure 3. Percentage of ICU Hospital Patients who Are Candidates

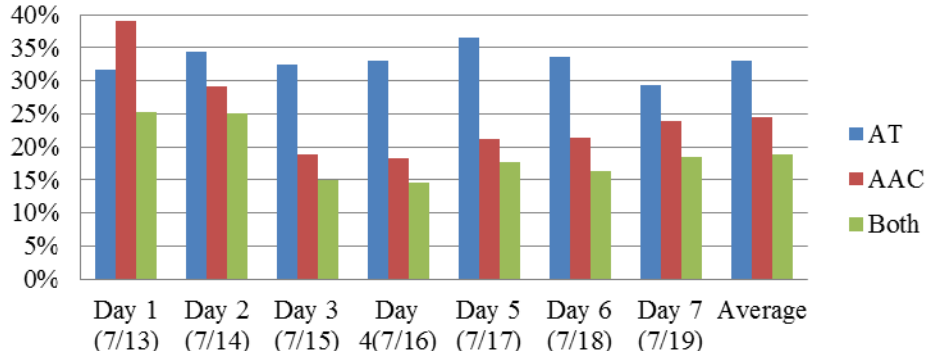


Figure 4. Number of ICU Hospital Patients who Are Candidates

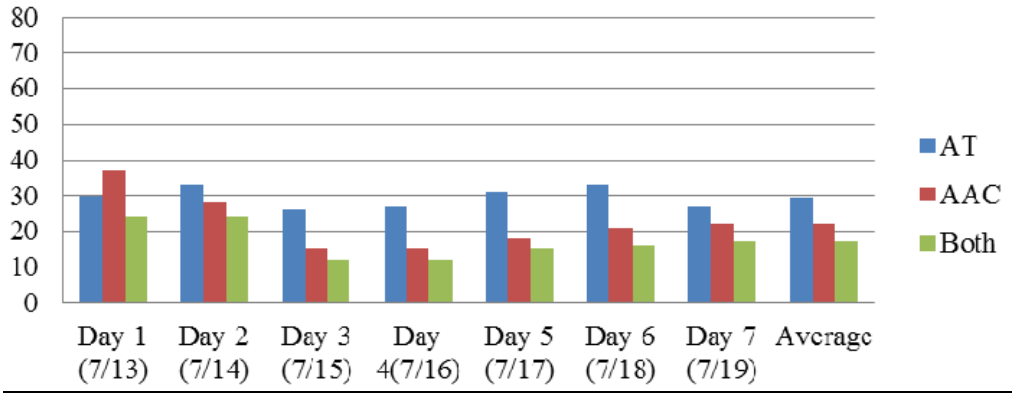


Figure 5. Percentage of Non-ICU Hospital Patients who Are Candidates

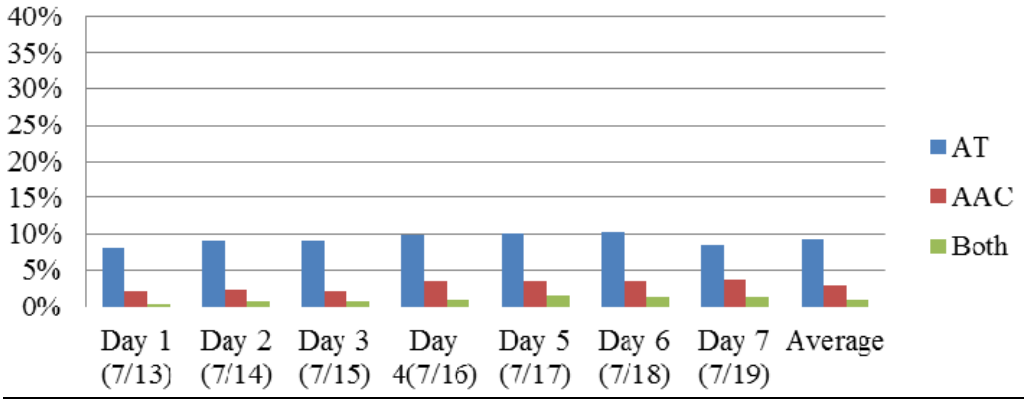
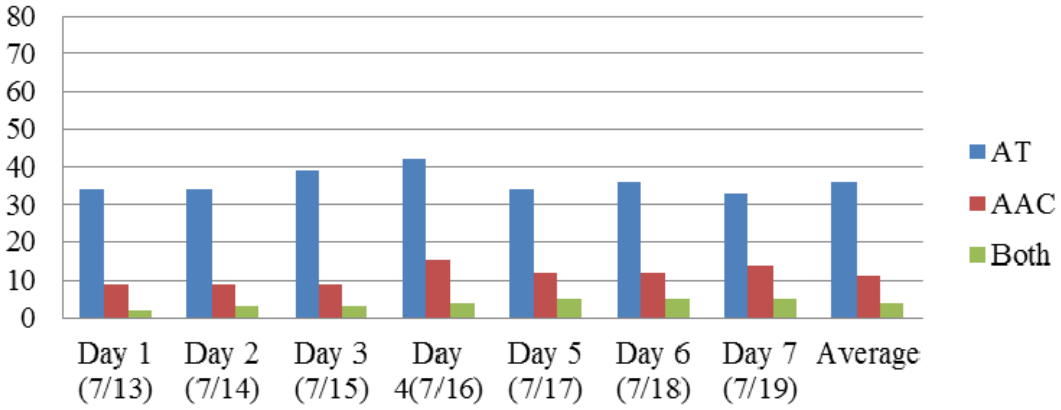


Figure 6. Number of Non-ICU Hospital Patients who Are Candidates



Duration of Need/Candidacy

Of the 25 patients who were hospitalized for the entire 7-day data collection period, 10 patients (48%) needed some kind of AT/AAC service. When we look at all unique patients (629) who needed services each day, regardless of the duration of their hospitalization in our sampling window, 40 patients (6%) needed only AT services; 17 patients (3%) needed only AAC services, and 7 patients (1%) needed both AT and AAC.

An examination of each successive daily census also generated a breakdown of how many new versus carryover patients would need AT/AAC services. Of the daily average of 78 patients who needed some form of AT/AAC service, approximately 22% were new patients. This percentage is consistent with an earlier 7-day sample where approximately 30% of the patients with AAC needs and approximately 20% of the patients with AT needs were new patients each day.

Discussion

Our census data indicate that there is a significant need for patients in acute care settings to have access to alternative communication and the nurse call systems. The need appears to be greater in the intensive care units, but is not limited to this patient population. Overall, patients had greater AT needs than AAC needs in all locations. This reflects the higher incidence of weakness or motor impairments than complex communication needs requiring an intervention. The needs across time remain impressive, indicating that patients meeting AAC/AT candidacy criterion typically require some kind of service for the duration of their hospitalization.

The Department of Otolaryngology database of SLP service provision agreed that this need is unmet (M. Karnell, personal communication, November, 2011). The database indicated that the speech-language pathology team at UIHC, who were responsible for speech and swallowing services, provided services to an average of 28 inpatients per day. At the time of the study, there were five full time speech-language pathologists (SLPs) working at UIHC. The SLPs respond to consults for patients who have or are expected to have speech, language, voice, and swallowing disorders. Therapy services are provided when necessary. Additionally, because we know from the ASHA workload surveys (ASHA, 2009) that most hospital SLPs don't indicate AAC as a portion of their workload, we must assume that most hospital speech-language pathology programs are, for the most part, not currently meeting the needs of many CCN patients.

In our experience, professionals must monitor patients meeting the AAC/AT candidacy criteria closely for changes in motor, health, and communication status. Their communication needs may change from day-to-day requiring time consuming modification and/or programming of their AAC systems.

The AAC/AT needs estimates based on our census survey are likely underestimates of the actual need for AAC/AT services given that we did not attempt to identify patients with pre-existing communication impairments, aphasia and dysarthria. The SLP staff who cover the inpatient neurology unit estimate seeing five to six such patients each day (K. Bryant, personal communication, 2011). The real challenge we face, given the incidence data, is developing a service provision model that addresses all of the acute care patients' communication needs. Hospitals and the profession of speech-language pathology should work together to identify a model that will ensure that qualified personnel address patients' communication needs as well as their swallowing needs. It may not be realistic to assume that the current workforce can meet all of the swallowing and communication needs of patients. The SLPs at UIHC already fill their schedules without the added responsibility of addressing the needs of the CCN population. Meeting these additional needs will certainly require additional SLP staff to evaluate and treat this group of patients.

Institutions may be concerned about the cost of providing an AAC/AT service. It is not unrealistic to project that the benefits of providing an AAC/AT service include,

1. compliance with JC standards relating to patient communication,
2. minimizing costly adverse events that result from poor patient-provider communication,
3. increased patient and care provider satisfaction as a result of improved patient-provider communication,
4. and the reimbursement for billable units associated with AAC service provision,

Institutions may need to consider funding alternatives to support an AAC/AT service that are not solely dependent on the professional fee for service model that is currently used to support hospital SLP staff lines (Table 3). One alternative funding model would fully support the AAC/AT service's SLP lines as a component of the hospital's per diem charge. The per diem charge includes support of services provided by the departments of Nursing and Social Work. In this model, SLPs would be on call to provide direct patient services and would be responsible for all in-service training of hospital staff on strategies for enhancing patient-provider communication and dealing with patients with CCN. A second alternative model is a hybrid model that would provide partial support for the SLP lines from the per diem charge. This would cover the costs of the SLPs providing in-service training on enhancing patient-provider communication and maintaining the hospital's inventory of AAC/AT tools. The direct service to patients would continue to be supported by the billable professional services. The benefits of having an AAC/AT service could far outweigh the cost of providing this mandated and necessary service. There is no question that future research is needed to directly quantify the extent of each of these benefits.

Table 3 Comparison of AAC/AT service delivery models.

	Traditional	**Bundled**	**Hybrid**
Cost of Service	Covered by fees	Covered as component of the per diem charge	Fees high-tech services and component of per diem charge
Who initiates consult for services	Physician	Physician or RN	Physician or RN
Equipment purchase and maintenance	Maintained by AAC/AT services	Maintained by hospital	Maintained by both AAC/AT service and hospital

To promote the establishment of an AAC service at an institution that does not currently support AAC in acute care settings, it will be important to identify the patient population, workforce requirements, as well as benefits of reimbursement and benefits of compliance with JC standards. We hope that our approach may provide a model for other institutions to use to gather baseline data on their patients' communication needs. Spreading the word that AAC intervention in the hospital setting is an important and valuable treatment tool that is acknowledged by ASHA, the JC, and medical health professionals will help address the communication needs of this silent population and hopefully lead to better care outcomes.

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