Running head: Environmental Factors that influence communication for people with communication disability in hospital

Title: Environmental Factors that influence communication between people with communication disability and their healthcare providers in hospital: A review of the literature within the ICF framework

Abstract

The importance of effective healthcare communication between healthcare providers and people needing healthcare is well established. People with communication disabilities are at risk of not being able to communicate effectively with their healthcare providers and this may directly compromise their health, healthcare and their right to actively participate in decisions about their healthcare. This paper reviews the literature on the environmental factors that influence communication between adults with communication disabilities and their healthcare providers in the acute hospital setting within the framework of the World Health Organisation’s International Classification of Functioning, Disability and Health (ICF; WHO, 2001). It focuses in particular on the environmental factors that facilitate or create barriers for people with communication disabilities because environmental factors can be modified so that acute care hospitals can become more accessible communicative environments for all people. This paper describes the particular environmental factors that have been identified in acute hospitals that influence the ability of people with specific types of communication disabilities and their healthcare providers to communicate. It then goes on to describe the common environmental factors that have been identified across people with different types of communication disabilities when they are communicating with their healthcare providers. This paper concludes with suggestions for directions of future research.
The environmental factors that influence communication between adults with communication disability and their healthcare providers in acute hospitals: A review of the literature within the ICF framework

Introduction
Effective communication between people who need healthcare and people who provide healthcare is fundamental to the delivery of high quality healthcare services. Effective communication improves people’s immediate health (Stewart, 1995), their overall health outcomes (Di Blasi, Harkness, Ernst et al., 2001) and helps to ensure that people’s rights, concerns and needs are respected (Bensing, Verhaak, van Dulmen et al., 2000).

People with communication disabilities that is, people with physical and/or physiological impairments that affect their ability to communicate (WHO, 2001), are at risk of not being able to communicate effectively with their healthcare providers. This is particularly the case when people with communication disabilities are admitted into the acute hospital setting. Not only are people acutely ill, they are also communicating in an unfamiliar environment and with healthcare providers who may not know how best to communicate with them. As a consequence they are at risk of discrimination in healthcare, receiving suboptimal healthcare, having their right to be actively involved in their healthcare compromised and having poorer long term health outcomes than people without communication disabilities.

Healthcare providers from a range of different disciplines are concerned with ensuring all people, including those who have communication disabilities, can communicate as effectively as
possible when they are patients in acute care hospitals. This is reflected in the research literature on healthcare communication with people who have communication disabilities that is published across many fields and disciplines including speech pathology (eg, Kagan, 1995; McCooey - O'Halloran, Worrall, & Hickson, 2004; Yorkston, 1992), audiology (eg, Peberdy, Eastman, Pichora-Fuller et al., 1984; Potl & Hickson, 1990) and nursing (eg, Happ, 2001; Tolson, 1997).

There is also a growing body of literature on the experiences of adults without specific communication disabilities communicating with healthcare providers in acute hospitals. This literature includes communicating with the elderly (Park & Song, 2005), people with poor literacy (Arthur, 1995) and people admitted into acute hospitals who have a different language and/or cultural background from their healthcare providers (eg, Plunkett & Quine, 1996). There is also literature on the experiences of people with communication disabilities in other healthcare settings such as primary care (eg, Hoffman, Yorkston, Shumway-Cook et al., 2005; Law, Bunning, Byng et al., 2005) and residential care (Hickson, Worrall, Wilson et al., 2005; Lubinski, 1981).

The literature described above has focused on the experiences of people with particular characteristics in particular healthcare settings. However there is also a substantial body of research that has investigated how healthcare providers and people in general communicate. This research has also been conducted from a range of perspectives including sociology, linguistics, and psychology as well as health disciplines such as medicine and nursing. Issues of concern in healthcare communication generally include; the doctor-patient relationship, making accurate
medical diagnoses, explaining risk, and providing education and information about specific health conditions (Roter & Hall, 2006).

Therefore there are many different aspects to healthcare communication. In attempting to address this complex issue individual research studies have focused on specific issues, with specific groups of people, in specific healthcare settings. This has at least two consequences. First, while research on the experiences of people with one particular type of communication disability, e.g., hearing impairment, can provide a deeper understanding of the issue, it can also lead to thinking about the needs of people with this specific communication disability in isolation from the needs of people with other types of communication disabilities and people without communication disabilities. Second, the research on healthcare communication between people with communication disabilities and their healthcare providers has focused on the communication issues that arise because of the person’s communication disability. While this is important, it has meant that research with people with communication disabilities has not typically investigated issues such as ‘communicating risk’ or ‘education about the health condition’ that are often the focus of research with people without a communication disability. Similarly, research into ‘communicating risk’ or ‘education about the health condition’ has not included people with communication disabilities.

One way to draw this literature together is to evaluate it within an overarching theoretical framework. The World Health Organisation’s International Classification of Functioning, Disability and Health (ICF; WHO, 2001) may provide a useful framework to do this for two reasons. First, the ICF combines both medical and social models of health and therefore may
provide a way to integrate research findings from these different perspectives (WHO, 2001). Second, the ICF is an international framework that has been used by people working in a range of different disciplines and so may provide a common language with which to integrate research from different countries and different disciplines (WHO, 2001).

**The ICF**

The ICF proposes that a person’s health status is the result of the dynamic interaction between a person’s physical and psychological functioning, his or her daily activities and roles, his or her environment and his or her personal characteristics (WHO, 2001). The Body Structures and Functions component of the ICF describes a person’s physical and psychological functioning. The Activities and Participation component of the ICF describes a person’s daily activities and roles. The Environmental Factors component describes a person’s physical, social and attitudinal environment as well as his or her broader social environment, including the informal and formal systems, services, laws and ideologies of his or her society (WHO, 2001). The Personal Factors component describes the individual’s personal characteristics, and refers to the person’s particular background, including his or her age, gender, language, upbringing, education and so on (WHO, 2001). The interaction of the four components of the ICF is depicted in Figure 1 below.

Insert Figure 1 here

According to the ICF, people with communication disabilities includes people who have impairments in any body structures and/or body functions that are involved with communication.
This includes the body structures and body functions of hearing, vision, speech, language and cognition and may also include body structures and functions that are involved with other types of communication such as facial expression, body language, gestures, sign language and Braille. Importantly, the ICF also suggests that a person’s overall health condition, which in this context is ‘his or her overall communication ability’, will depend on the interaction between the person’s communication related Impairment/s (Body Functions and Structures) and the complexity of the communication activity (Activities and Participation), and the person’s healthcare environment (Environmental Factors), and the person’s individual characteristics (Personal Factors). For example, a person’s overall ability to communicate will be influenced in part by the degree of his or her communication related impairments but will also be influenced by the communication activity, for example whether the person is describing symptoms or understanding the risks involved in a medical procedure, the knowledge and communication skills of healthcare providers and the person’s age, language and cultural background and so on.

The role of environmental factors in influencing communication between people with communication disabilities and their healthcare providers in the acute hospital setting may be particularly important. This is because any changes in the knowledge, communication skills and attitudes of healthcare providers may result in more effective communication with other people with communication disabilities who need acute healthcare services. In addition, any changes to the hospital’s physical environment, systems, services and policies that either remove barriers to communication or facilitate more effective communication for people with communication disabilities may also benefit people with communication disabilities admitted into the hospital in the future. Thus, addressing environmental factors may be an effective and efficient way to
support both people with communication disabilities and their healthcare providers in the acute hospital setting.

**Aims**

This review has three main aims.

1. To summarise the literature on the environmental factors that influence communication between adults with specific types of communication disabilities and their healthcare providers in the acute hospital setting within the framework of the ICF. This includes adults who:
   - have pre-existing communication disabilities, including hearing, vision, and acquired physical and/or cognitive impairment and physical and/or cognitive developmental disability;
   - experience the sudden onset of communication disability secondary to stroke and traumatic brain injury (TBI);
   - experience a communication disability secondary to medical intervention.

2. To identify and describe the common environmental factors that affect communication for adults across different types of communication disabilities and their healthcare providers in acute hospitals.

3. To identify areas for future research.

**Methods**

The keywords ‘communication or communicating and hospital’ and ‘communication or communicating and patient’ were searched together with the keywords ‘hearing’, ‘visual, vision
or blind’, ‘developmental disability’, ‘learning disability’, ‘stroke’, ‘aphasia’, ‘dysarthria’, ‘traumatic brain injury’, ‘intensive care unit’, ‘critical care’ and ‘communication disability and disabilities’, in the abstracts of articles in the databases Medline, PubMed, CINAHL, Health Source Nursing/ Academic edition and PsycINFO from 1995 to 2007. Only research studies that investigated environmental factors that influenced communication between adults with any types of communication related impairment/s and their healthcare providers, where these people were inpatients or outpatients in acute hospitals were included in this review. Secondary sources identified in these research studies were also searched.

**Results**

*Adults who are deaf or hearing impaired in acute hospitals*

Eleven publications, consisting of seven articles and four abstracts, were identified that investigated the environmental factors that affect communication between adults who are deaf or hearing impaired in acute hospitals and their healthcare providers. These articles are summarised in Table 1 below.

Insert Table 1 here

A range of different research methodologies have been employed to describe the experiences of adults who are deaf or hearing impaired in acute hospitals. Surveys (Hines, 2000; RNID, 2004) and focus groups (Iezzoni, O'Day, Killeen et al., 2004; Witte & Kuzel, 2000) have been conducted to investigate the healthcare experiences of people who are deaf or hearing impaired. Davies and Channon (2004) conducted semi structured interviews with six adults who are deaf to
understand their experiences in hospital radiology departments in particular. To date, only Davies and Channon (2004) have explored the experiences of healthcare providers (radiographers) communicating with people who are deaf in hospitals. The remaining studies found consisted of surveys and questionnaires and mainly investigated particular issues, for example, the healthcare providers’ and patients’ hearing aid knowledge and skill.

It is possible that the surveys conducted by Hines (2000) and RNID (2004) may underestimate the extent of the problems experienced by people who are deaf or hearing impaired overall. This is because the adults surveyed in the Hines’ study were attending lip reading classes and the adults surveyed in the RNID study were linked in with support organisations for the deaf or hearing impaired. It is likely that these services would have provided these adults with the opportunity to learn a range of communication skills to help them cope with communication situations in hospital (Hines, 2000). Finally, all the studies found have investigated people’s experiences. No research to date has explored the effects of any intervention strategies to enhance communication between adults who are deaf or hearing impaired and their healthcare providers in acute hospitals.

The research that has been conducted indicates that there are many different environmental factors that affect communication between healthcare providers and adults who are hearing impaired or deaf in hospital. These factors are described here in relation to: (i) healthcare providers’ knowledge and skills (ii) healthcare providers’ attitudes (iii) the physical hospital environment and (iv) health care services, systems and policies.
i) Healthcare providers’ knowledge and skills. One key environmental factor is the importance of the skills and knowledge of healthcare providers in communicating with people who are hearing impaired or deaf. Research indicates that all hospital employees need to be aware that the person may have a hearing impairment (Davies & Channon, 2004; Heron & Wharrad, 2000; Mulley & Ng, 1995) and need to have the skills and knowledge to communicate effectively with him or her (Hines, 2000; Iezzoni et al., 2004; RNID, 2004). This includes knowledge about the effect of a healthcare provider’s accent on a person’s ability to understand (Hines, 2000) and to how to operate and fit hearing aids, as many people need assistance with these when they are patients in hospital (Cantley, Pound, & Macdonald, 1996). The skills and knowledge of communication partners are included in the ‘Support and relationships’ chapter of the ICF Environmental Factors component.

ii) Attitudes. The attitudes of healthcare providers were also identified as a critical environmental factor (Iezzoni et al., 2004; Witte & Kuzel, 2000). For example, people who are deaf experienced significant communication barriers when healthcare providers had a pathologic view of deafness, lacked respect for their intelligence, motivation and desire to participate in their health care and lacked understanding and respect for Deaf culture (Iezzoni et al., 2004). The ‘attitudes’ of healthcare providers are described in the ICF Environmental Factors chapter ‘Attitudes’.

iii) The physical hospital environment. The physical environment of the hospital can also create barriers to or facilitate communication for people who are deaf or hearing impaired. Physical barriers included inadequate signage (which means people with hearing impairment have to ask
for directions), high levels of background noise, poor lighting, lack of visual display boards and lack of assistive listening devices (Hines, 2000; Iezzoni et al., 2004; Mulley & Ng, 1995). Radiology departments and operating theatres present particularly challenging physical environments for people who are deaf or hearing impaired. Technicians often need to stand behind protective screenings, lights are often dimmed and during some procedures (eg, magnetic resonance imaging) people need to have their hearing aids removed (Davies & Channon, 2004; Hines, 2000; Iezzoni et al., 2004). People undergoing surgery also have their hearing aids removed. In addition staff wear face masks that prevent the person from lip reading, further exacerbating a person with a hearing impairment’s difficulties. These physical barriers can be overcome but only if staff are aware of the person’s difficulties and make the effort to compensate for them (Iezzoni et al., 2004). Physical barriers and facilitators are described in two chapters of the ICF; ‘Products and technologies’ and ‘Natural environment and human made changes to environment’.

iv) Services, systems and policies. Other types of environmental factors also influence communication between healthcare providers and people who are hearing impaired or deaf. These can occur at the level of the hospital ward and hospital administration. The ICF incorporates all these environmental factors in the chapter on ‘Services, systems and policies’. Research has indicated that health service networks and individual hospitals need to commit personnel and material resources so that all hospital employees can acquire the communication skills, knowledge and attitudes that will enable them to facilitate communication with people who are deaf or hearing impaired (RNID, 2004). The environmental factors identified in this
literature review that affect people who are deaf or hearing impaired in hospitals are included in Table 4 below.

*Adults who are blind or visually impaired in acute hospitals*

Only two were found on the healthcare experiences of people who are blind or visually impaired, including their experiences in acute hospitals. Nzegwu (2004) surveyed 832 people who are blind or partially sighted about their healthcare experiences and O’Day and colleagues conducted focus groups to investigate the healthcare experiences of 19 people who are legally blind (O’Day, Killeen, & Iezzoni, 2004).

Many different environmental factors were identified in these studies that affected the ability of people who are blind or visually impaired to access healthcare.

i) *Healthcare providers’ knowledge and skills.* As in studies of adults with hearing impairment, the knowledge and skills of healthcare providers were identified as a major factor that could either facilitate a person’s access to healthcare or create barriers. People reported that healthcare providers need to be more aware of their needs, particularly in relation to ‘non-technical’ assistance. For example, outpatients reported need privacy and assistance when filling out forms, and guidance to get from waiting rooms to consultation rooms (O’Day et al., 2004). Inpatients reported that they need to be told where food, drink and medicines are being placed and need assistance getting to and from bathrooms (Nzegwu, 2004).

ii) *Attitudes.* The attitudes of healthcare providers were also reported to be a very important factor for people with visual impairment. Some people with visual impairments describe that
they did not feel respected by their healthcare providers or treated as people who can contribute to their own care and recovery (O'Day et al., 2004). Healthcare providers with negative attitudes towards people with visual impairments may have a direct impact on these people’s ability to receive adequate healthcare. For example, 13% of people attending eye outpatient clinics stated that they felt unable to ask their doctors as many questions as they wanted to, felt they were not listened to and that their opinions were not taken seriously (Nzegwu, 2004).

**iii) The physical hospital environment.** Many physical factors create barriers for people who are blind or partially sighted as well. For example, almost all outpatients (90%) and inpatients (96%) accessing hospital services reported that written documentation was not provided in their preferred format, for example, large print versions, Braille or audiotape (Nzegwu, 2004; O'Day et al., 2004). Other physical factors that create barriers include the quality of the hospital signage and the physical location of reception areas and clinics (Nzegwu, 2004).

**iv) Services, systems and policies.** Nzegwu (2004) suggests that hospital staff require support to develop greater awareness, facilitative attitudes, knowledge and skills to support people who are visually impaired or blind in acute hospitals. Healthcare providers also need the physical resources to provide healthcare information in alternative formats. In addition, resources are also needed to ensure the needs of people with visual impairment are considered in hospital design (O'Day et al., 2004). These environmental factors need to be addressed at the level of hospital systems and services.
Adults who have a developmental and/or learning disability in acute hospitals

Nine published research articles, employing a range of different research methodologies described the experiences of adults with a developmental disability (e.g., cerebral palsy) and/or a learning disability in acute hospitals and these are summarised in Table 2 below.

Table 2 about here

Iacono and Davis (2003) and Mencap (2004) conducted large scale surveys of people with developmental disability or learning disability about their healthcare experiences in acute hospitals. Short and in-depth semi-structured interviews have also been used to explore the experiences of people with learning disability and/or developmental disability, their parents and support workers in acute hospitals (Balandin, Hemsley, Sigafoos et al., 2007; Fox & Wilson, 1999; Hart, 1998; Hemsley & Balandin, 2004; Hemsley, Balandin, & Togher, 2007; Iacono & Davis, 2003). Cumella and Martin (2004) used a consensus methodology to determine what constitutes good practice in this area. Finally, Hannon (2004) used semi-structured interviews to explore the effect of an intervention to improve access to healthcare for people with learning disability (Hannon, 2004). These studies describe the issues for people with developmental disability or learning disability and their family and carers in the acute hospital. Only one study was found that investigated the effect of preadmission assessment on the experiences of people with learning disability in hospital (Hannon, 2004).

A range of different environmental factors that affected the ability of people with developmental and/or learning disability in hospital were identified.
i) Healthcare providers’ knowledge and skill. One common environmental factor to emerge from these studies related to healthcare providers’ knowledge about developmental disability or learning disability. Another factor related to healthcare providers’ ability to communicate with these patients. Hospital staff’s lack of understanding and knowledge of many aspects of developmental disability and/or learning disability may limit their ability to communicate effectively with people with developmental or learning disability and this may directly affect healthcare providers’ ability to provide appropriate and adequate care (Balandin et al., 2007; Fox & Wilson, 1999; Hart, 1998; Iacono & Davis, 2003; Mencap, 2004). For example, 39% (46 out of 119) of people surveyed by Iacono and Davis (2003) reported that they could not get to the toilet when they needed to, 18% did not get enough to drink and 13% did not get enough to eat. Another barrier to communication was healthcare providers’ lack of knowledge and skill using augmentative and alternative communication aids, such as communication boards (Balandin et al., 2007; Hemsley & Balandin, 2004). One factor that may improve healthcare providers’ knowledge of a person with a learning disability is by conducting a preadmission assessment (Hannon, 2004). This was reported to provide healthcare staff, particularly staff who were unfamiliar with the person with a learning disability, with the information they needed to care for the person (Hannon, 2004).

ii) Family and carer support. The presence of family members and/or personal carers is also as an important factor that influences the ability of people with learning or developmental disabilities to communicate with healthcare providers in the acute hospital setting (Balandin et al., 2007; Cumella & Martin, 2004; Fox & Wilson, 1999; Hemsley & Balandin, 2004; Iacono & Davis, 2003). Parents act as interpreters and advocates on behalf of their adult children with
learning or developmental disabilities in hospital, teach healthcare staff how best to communicate with their child and often carried out basic nursing care as well (Hemsley & Balandin, 2004). The presence of family members and personal care providers is included in the ICF chapter on ‘Support and relationships’.

iii) Attitudes. The attitudes of healthcare providers’ are also a significant environmental factor for people (Balandin et al., 2007; Cumella & Martin, 2004; Fox & Wilson, 1999; Iacono & Davis, 2003). Healthcare providers’ attitudes may be inferred by how healthcare providers interact with people with a learning and/or developmental disability. For example, adults with a learning disability who participated in the consensus conferences conducted by Cumella and Martin (2004) described physicians and surgeons who appeared to have positive attitudes towards people with a learning disability in that they used pictures and easy English to explain medical treatments in a way that the person with a learning disability could understand. However, more often adults with a learning disability described hospital staff who may have had more negative attitudes. These staff were reported to be embarrassed, sometimes reluctant to talk directly to the person and failed to determine the extent that the person could understand and give consent (Cumella & Martin, 2004).

iv) The physical hospital environment. Physical factors are also identified in this research. Picture-based information to help people with learning disabilities understand hospital menus, identify key health carers and find important places are suggested as ways to facilitate more effective communication (Cumella & Martin, 2004). The availability of communication boards on the ward is also a way that may facilitate communication (Balandin et al., 2007). A physical
barrier to communication is the absence of the person’s augmentative and alternative communication (AAC) device (Balandin et al., 2007). However carers who have supported people with complex communication needs in hospital believe that it would not be possible for the people that they support to use their AAC in hospital. Carers provided a range of reasons including that the AAC device would not be safe in hospital, that it was too valuable to risk getting lost or damaged and that physical access to the device would be difficult (Hemsley & Balandin, 2004).

v) Services, systems and policies. Additional environmental factors at the level of hospital systems, services and policies are also reported in these research studies. People with complex communication needs identify the need for nurses to receive training to increase their knowledge on communicating with people with complex communication needs in hospital (Balandin et al., 2007). Hospital policies and practices are also needed to support parents and carers of people with learning and/or developmental disability when they are in hospital (Hemsley et al., 2007). In particular hospital policies are required that recognise the knowledge and expertise of parents, inform them of their rights and responsibilities and clarify who is responsible for what aspects of the person’s care (Hemsley et al., 2007). Given the importance of parents and support workers to people with learning and/or developmental disability when they are in hospital it is also necessary to clarify any confusion about who is responsible for meeting the costs of having a person’s paid carers attend hospital with them (Cumella & Martin, 2004). Other environmental factors at the level of services, systems and policies include employing healthcare providers to carry out preadmission assessments (Hannon, 2004) and/or act as facilitators to support
Adults who have a communication disability secondary to stroke in acute hospitals

Three studies and one report were identified that described environmental factors that affect communication between healthcare providers and people with aphasia in acute hospitals after stroke. Parr and colleagues conducted in-depth interviews with 50 people about their life experiences with aphasia including their experiences in an acute hospital. The interview data was analysed using the framework method (Parr, Byng, Gilpin et al., 1997). Cottrell and Davies (2004) interviewed seven people with aphasia and conducted a focus group with six carers of people with aphasia to understand their experiences in hospital. Data from the interviews and focus group were descriptively analysed (Cottrell & Davies, 2004). Sundin, Jansson and Norberg (2000) adopted a phenomenological hermeneutic approach to explore the perspectives of 10 nurses who had been identified by colleagues as particularly successful communicating with people with aphasia. Finally Kagan and LeBlanc (2002) reported on the development of accessible healthcare services for people with aphasia across a health service network.

No research was found that described the experiences of people with other types of acquired communication disability, such as dysarthria following stroke in the acute hospital setting. The environmental factors that affect communication between healthcare providers and people with aphasia are described below.
i) Healthcare providers’ knowledge and skill. Interviews with people with aphasia suggest that some barriers to communicating relate to the healthcare providers’ lack of knowledge about aphasia and lack of skills communicating with them (Cottrell & Davies, 2004; Parr et al., 1997). For example, one man with aphasia recalls “I tried to tell the nurse I wanted to go to the toilet. But no one would … er…she kept pulling me down the corridor” (p.17, Parr et al., 1997).

ii) Attitudes. These research studies also suggest that the attitudes of healthcare providers may also be very important. Nurses and doctors who ‘talk over’ people with aphasia, leaving people with aphasia feeling shunned and pushed aside (Parr et al., 1997) may have negative attitudes about the capabilities of people with aphasia. In contrast, positive attitudes about people with aphasia are suggested when nurses describe the importance of creating ‘an openness’ in their relationships with people with aphasia. This openness enables them to tune into their own and the person with aphasia’s feelings which guides them in the interaction (Sundin, Jansson, & Norberg, 2000). Creating openness includes relating to the patient as a unique human being, who is equal and worthy and showing the person with aphasia that they had the time to listen (Sundin et al., 2000).

iii) The physical hospital environment. People with aphasia report that having access to visual information as well as verbal information assists them to communicate (Cottrell & Davies, 2004). No other factors in the physical environment were found in these studies.

v) Services, systems and policies. Environmental factors that influence communication between healthcare providers and people with aphasia have also been identified at the level of hospital
services, systems and policies. Kagan and LeBlanc (2002) describe a joint collaboration between speech therapists, an aphasia advocacy group, the area stroke network and district health council to address barriers relating to healthcare providers knowledge and skills. In collaboration with other services the authors developed guiding principles for best practice in stroke care to raise awareness and recognition of the importance of communicative access for people with aphasia (Kagan & LeBlanc, 2002). This work resulted in government funding for the development of communication training packages for healthcare providers across the district (Kagan & LeBlanc, 2002).

**Adults who have communication disability secondary to traumatic brain injury**

Balandin and colleagues (2001) investigated the experiences of people with severe communication impairment in acute hospitals and this included one participant with a traumatic brain injury (TBI) (Balandin, Hemsley, Sigafoos et al., 2001). This study is described below in the section on adults who have different types of communication disabilities. No other research on the factors that influence communication between people with TBI and their healthcare providers in acute hospitals were identified.

**Adults who have communication disability secondary to medical intervention: the intensive care unit**

Many people experience a temporary communication disability as a result of medications such as sedatives, or medical procedures such as mechanical ventilation (Fried-Oken, Howard, & Stewart, 1991). Permanent communication disabilities can also occur as a result of surgery, such as laryngectomy or resection of oral or pharyngeal cancer (Ward & van As-Brooks, 2007).
Adults admitted into the intensive care unit (ICU) of an acute hospital are by definition critically ill and require significant medical intervention, which often results in the person having a temporary communication disability. Therefore, the ICU provides a unique communication environment to explore the range of environmental factors that may facilitate or create barriers to communication between people who are critically ill and the healthcare providers who care for them.

Fourteen studies were identified that describe environmental factors that influence direct communication between critically ill people in ICU and their healthcare providers. A summary of these studies is provided in Table 3 below. It is likely that the environmental factors that facilitate or create barriers to communication with critically ill people in ICUs will depend in part on the person’s medical condition (the nature and severity of impairments), and the subsequent medical interventions (eg, medically induced coma, mechanical ventilation) and the person’s prognosis (eg expected recovery or palliative care).

Table 3 about here

A range of qualitative methodologies including autobiographical narrative, participant observation, interviews, questionnaires and surveys were employed to understand the perspectives of people who have been critically ill in ICU and the perspectives of their healthcare providers. Only Happ and colleagues (2004) have investigated the effect of an intervention to improve a patient’s ability to communicate in the ICU.
Although many different environmental factors were identified by staff and/or patients that were perceived to influence communication in ICUs what stands out in this literature is that critically ill people in ICU are very reliant on healthcare providers (usually nurses) to initiate communication (Patak, Gawlinski, Fung et al., 2004). However when patients are provided with a speech generating device they were observed to initiate more communicative attempts themselves (Happ, Kenney Roesch, & Garrett, 2004).

i) Healthcare providers’ knowledge and skill. This literature indicates that healthcare providers need considerable knowledge and skills to communicate effectively with critically ill people in ICU. For example, nurses need knowledge and skills to communicate with patients who are sedated, unconscious patients (Trovo de Araujo & Silva, 2004) and with patients who are awake but on mechanical ventilation and unable to speak (Patak et al., 2004). Specific communication skills that nurses use include ‘asking the right questions’, ‘asking questions that could be answered with a yes or no’, ‘asking enough questions’, ‘being able to lip read’, ‘offering pen and paper or a communication board when I’m not feeling exhausted’ and ‘reading aloud as I write’ (Magnus & Turkington, 2006; Patak et al., 2004; Wojnicki-Johansson, 2001). Healthcare providers also need knowledge and skills to ensure that patients have a way of initiating communication and to support patients who use alternative communication methods, including speech generating devices (Fried-Oken et al., 1991; Happ et al., 2004).

In addition, healthcare providers also need to know when communication has not been successful so that they can revise their strategies (Usher & Monkley, 2001). This can be difficult. Wojnicki-Johansson (2001) found nurses in ICU do not always accurately judge when communication has
or has not been successful and often overestimate the effectiveness of their communication with patients. Judging that communication has been successful may serve to protect nurses emotionally from having to deal with subsequent feelings of frustration, incompetence and powerlessness that may occur when communication is unsuccessful (Bergbom Engberg & Haljamae, 1993; Magnus & Turkington, 2006). Nurses also describe that they sometimes limit communication with patients who are sedated because they feel discouraged when patients are not responsive (Alasad & Ahmad, 2005). Limiting communication with patients who are awake but on mechanical ventilation may also serve to limit the need to respond to patients’ requests and patients’ feelings of agitation, anxiety and irritability (Alasad & Ahmad, 2005).

Nurses have identified other characteristics about themselves that they believe impact on their ability to communicate with patients. These include their years of experience working in ICU, their personal concerns, their feelings of uncertainty about the patient’s medical condition (Bergbom Engberg & Haljamae, 1993) and their knowledge of the person’s cultural and language background (Halligan, 2006).

ii) Family and friends. Another important environmental factor is the presence of the patient’s family and friends. While some nurses (17 of the 27 nurses interviewed) reported that the presence of an anxious spouse or relative is a barrier to communicating with patients, nurses also acknowledge that the presence of family assists them in getting to know the patient as an individual (Bergbom Engberg & Haljamae, 1993). Critically ill people themselves have also reported that having people that they feel very close to nearby provides communication
advocates for them, particularly when they are attempting to complain or make staff aware of pain or discomfort (Bergbom & Askwall, 2000).

### iii) Attitudes

The literature also indicates that the attitudes of healthcare providers are very important environmental factors affecting communication with patients in the ICU. People report feeling encouraged to communicate when cared for by healthcare staff who give verbal reassurances, and who are kind, patient and available (Fried-Oken et al., 1991; Patak et al., 2004). Healthcare staff described as patient and available are reported as more likely to get to know the person better and to develop specific communication skills, both of which are suggested to further facilitate communication (Magnus & Turkington, 2006). In contrast, people report that they feel discouraged and impeded in their ability to communicate when healthcare staff are mechanical, inconsistent and inattentive (Grandberg, Bergbom Engberg, & Lundberg, 1998; Patak et al., 2004; Robillard, 1994).

### iv) The physical hospital environment

The physical environment of ICUs presents communicative challenges for people who are critically ill and their health care providers. One physical environmental factor that is reported to facilitate communication in this review is the availability of communication aids such as pen and paper, alphabet boards, communication charts and speech generating devices (Fried-Oken et al., 1991; Happ et al., 2004; Magnus & Turkington, 2006; Robillard, 1994).

### v) Services, systems and policies

Many environmental factors identified in this literature review also occur at the level of hospital services, systems and policies. Staff shortages and lack of time
to get to know patients are reported to be barriers to effectively communicating (Beckstrand, Callister, & Kirchhoff, 2006; Bergbom Engberg & Haljamae, 1993; Magnus & Turkington, 2006). This may be the result of insufficient funding, recruitment and/or rostering issues. Poor communication and lack of agreement between members of the healthcare team about intervention plans and goals also make direct communication with the patient difficult. Therefore ward policies and procedures are required to facilitate communication of information within healthcare teams (Beckstrand et al., 2006; Halligan, 2006). In addition, if the presence of the person’s family or friends does facilitate better communication with the patient, then hospital systems and policies need to be in place to support the presence of these people (Beckstrand et al., 2006).

*Adults with different types of communication disabilities in hospital*

Finally, three studies were identified that have explored communication between people with different types of communication disability and their healthcare providers in hospital (Balandin et al., 2001; Byng, Farrelly, Fitzgerald et al., 2005; Hemsley, Sigafoos, Balandin et al., 2001). Balandin, Hemsley and colleagues explored the factors that influence communication between people with severe communication disabilities and their healthcare providers in acute hospitals. In one study (Hemsley et al., 2001), the authors conducted semi-structured interviews with 20 nurses who had cared for patients who had a severe communication disability. In the second study (Balandin et al., 2001), 10 people who had a severe communication disability in hospital participated in semi-structured interviews. Four of the people interviewed had a pre-existing severe communication disability secondary to a neurological impairment and six people had experienced the sudden onset of a severe communication disability secondary to a neurological
Environmental factors affecting communication in acute care hospitals

impairment. In both studies data were analysed quantitatively and qualitatively by descriptive analysis. Byng and colleagues conducted interviews and focus groups with 30 people with different types and degrees of severity of communication disability (eg, aphasia, dysarthria, dysphonia, dysfluency and dyslexia) and 24 health and social care staff (four of whom were from the acute hospital sector) about healthcare decision making (Byng et al., 2005).

i) Healthcare providers’ knowledge and skill. People with severe communication disability described that the knowledge and skill of the nurses in communicating with them was very important in experiencing communicative success. Nurses and patients described a range of strategies that nurses used including stopping and taking the time to listen, ‘asking yes/no questions’, watching for facial expression and repeating back what has been understood (Balandin et al., 2001; Hemsley et al., 2001). Barriers to successful communication included feeling uncertain and frustrated when communication was unsuccessful and a lack of knowledge about alternative communication systems (Hemsley et al., 2001). Communication skills and strategies, both the person’s with the communication disability and the healthcare provider’s were also identified as important for people with communication disabilities that were less severe (Byng et al., 2005).

ii Family and friends. People with severe communication disability also described the importance of relatives or close friends in helping them communicate with their healthcare providers, by advocating and interpreting on behalf of the patient as well as bringing in materials to help develop communication systems (Balandin et al., 2001).
iii) **Attitudes.** Both healthcare providers and people with different types of communication disability also described factors related to the healthcare providers’ attitude that influenced successful communication (Byng et al., 2005). Attitudes that facilitated more successful communication included being patient, kind and being willing to keep trying when the first attempt was unsuccessful (Balandin et al., 2001; Hemsley et al., 2001).

iv) **The physical hospital environment** These studies revealed some additional physical environmental factors that affected communication as well. Factors that facilitated communication include having a quiet environment (Byng et al., 2005; Hemsley et al., 2001) and written information in ways people could understand (Byng et al., 2005). Whereas physical barriers included the lack of readily available AAC supports such as alphabet boards, difficulty accessing and using nurse call buzzers and difficulty accessing and using AAC systems at night (Balandin et al., 2001; Hemsley et al., 2001).

v) **Services, systems and policies.** Other factors in this research occurred at the level of hospital systems, services and policies. Nurses reported that information about the patient’s communication status was of limited use and that bedside demonstrations as well as support from speech therapists would assist (Balandin et al., 2001; Hemsley et al., 2001). People with communication disabilities and healthcare providers interviewed by Byng and colleagues (2005) also identified the importance of training to improve healthcare providers’ knowledge about the person’s disability specifically and disability in general.

Table 4 here
Findings of the review

This review adopted the WHO ICF framework to describe the environmental factors that affect communication between adults with different types of communication disabilities and their healthcare providers in acute hospitals. While there is some research on the environmental factors that influence communication between healthcare providers and adults with hearing impairment, adults with developmental or learning disability and adults with communication disability in ICUs in acute hospitals, there is relatively little research on the environmental factors that affect people with visual impairments, people with communication disability secondary to stroke and people with TBI. In addition, there is no research on the environmental factors that influence communication between healthcare providers and people with dementia in acute care settings.

By reviewing the literature on people with separate types of communication disability together within the one theoretical framework several features emerge. First, as Table 4 indicates, many of the same environmental factors have been identified by people with different types of communication disabilities and healthcare providers as important in influencing communication. The finding is consistent with the research findings of Byng and colleagues (2005). It is clear from this review that healthcare providers need knowledge about different types of communication disabilities. Cunningham and Archibald (2006) suggest that healthcare providers may also need to know how their understanding of a communication disability may influence the way they interact with the person. Although no research described the experiences of healthcare providers and/or people with dementia communicating in acute hospitals, Cunningham and
Archibald (2006) suggest that healthcare staff who understand dementia from a biomedical perspective are more likely to think about the person with dementia as having a disease process which results in cognitive loss and inability. Hence communication breakdown may be more likely to be viewed as a result of the person’s dementia. In contrast, healthcare staff who adopt a more psychosocial perspective may be more likely to consider the person’s dementia as a disability, rather than as a disease, where with sufficient support, the person may be able to communicate and contribute to their own care. That is, communication success or breakdown is more likely to be viewed as a result of the interaction between the healthcare provider and the person with dementia, where with additional support from the communication partner more successful communicative interaction may be possible (Cunningham & Archibald, 2006).

Healthcare providers also need knowledge about how to use different communication aids, eg hearing aids, communication boards and AAC devices. Furthermore, they need specific communication skills to effectively communicate with people with different types of communication disabilities. Resources are available to help healthcare providers acquire the knowledge and skills to be able to communicate more effectively with people who have hearing impairment, visual impairment (Baker, 2002; Hearnburg Johnson, 2002; McConnell, 2002; Redmond, 1996; Sommer & Sommer, 2002) and aphasia (Holland & Halper, 1996; Kagan, 1995). Training programmes are also being developed in collaboration with people who have aphasia to assist healthcare providers become more aware of the range of barriers that these people face (Parr, Pound, & Hewitt, 2006). For people with pre-existing communication disabilities, family, friends, support workers and people with communication disabilities
themselves are also valuable sources of information about the person’s communication disability and about effective ways to communicate with him or her.

This literature review also indicates that regardless of the type of communication disability a person has, the attitudes of healthcare providers can also create barriers to or facilitate communication with people who have communication disabilities. Healthcare providers and patients themselves say that healthcare providers who are respectful, open and willing to communicate with people who have communication disabilities facilitate more effective communication.

There are also many physical factors in the hospital environment that influence the ability of people with different types of communication disabilities and their healthcare providers to communicate. People with hearing impairment and people in ICU identified background noise as a barrier to communicating effectively with healthcare providers. For example, oxygen delivered through a face mask creates between 75-90dB of background noise at the level of the person’s ears (Hamill-Ruth, Ruth, Googer et al., 1998). Radiology equipment also creates significant background noise (Moelker, Maas, & Pattynama, 2004). Aspects of the physical hospital environment have also been identified as potential barriers for people with dementia and include excessive stimuli in the immediate environment, poor lighting, lack of picture supports (Goff, 2000) and the placement and function of nurse call bells (Duffy, Mallery, Gordon et al., 2005).

Other studies identified physical barriers that related to the lack of information in communicatively accessible formats. Some accessible healthcare information is available for
people with aphasia and learning disabilities (Cottrell & Davies, 2006; Kagan, Winckel, & Shumway, 1996; Mencap, 2004; Parr, Pound, Byng et al., 1999; Valuing people, 2007). Information is also available for healthcare providers to develop accessible healthcare information for people (Murphy & Cameron, 2002; Murphy, Tester, Hubbard et al., 2005; Owens, 2006; Worrall, Rose, Howe et al., 2007).

Hospital services, systems and policies were identified across this review as critical to supporting healthcare providers’ in developing the knowledge, skills and attitudes they need in order to communicate effectively. This finding is supported by Ylvisaker and colleagues (1993a) who describe the development of a communicatively accessible hospital environment for people who had sustained a TBI. The primary aim of this intervention was to improve the person’s communication ability and it did this in part by creating a positive communicative culture (Ylvisaker, Feeney, & Urbanczyk, 1993a, 1993b). The authors state that the development of an accessible communicative environment for people with a TBI in hospital was dependent on the whole facility adopting a philosophy that valued and rewarded effective communication (Ylvisaker et al., 1993a, 1993b). The commitment of hospital administrators is required to ensure hospital wards have the necessary resources and systems in place to provide communication devices such as assistive listening devices, AAC resources and different types of nurse call buzzers. Hospital systems also need to be in place so that healthcare providers have the skills and resources to provide information in communicatively accessible formats for people who need them.
Potential barriers to communication between healthcare providers and people with dementia in the acute hospital setting have also been identified that would require commitment from hospital administrators responsible for hospital systems, services and policies to address (Cunningham & Archibald, 2006; Goodall, 2006). Multiple bed moves during hospital admission, multiple healthcare providers and rapid treatment protocols have all been identified as factors that can potentially exacerbate a person’s level of confusion and agitation and consequently reduce his or her ability to communicate (Cunningham & Archibald, 2006). This has led to a call for the creation of special care units within hospitals for people with dementia (Goodall, 2006).

Hospital services also need to be in place so that healthcare providers have access to resource personnel such as speech therapists, audiologists and specialist nurses to help them to communicate as effectively as possible with people who have communication disabilities. Although healthcare providers’ knowledge and skills in communicating was identified as an important environmental factor in this review, speech therapists were rarely identified as a support and resource. Speech therapists have skills to support people with communication disabilities and healthcare providers to communicate more effectively (Costello, 2000; Dowden, Honsinger, & Beukelman, 1986; Fried-Oken et al., 1991; Mitsuda, Baarslag-Benson, Hazel et al., 1992). There may be other barriers related to the role of speech therapists in the acute hospital setting that may be limiting this avenue of support (Armstrong, 2003; McCooey - O'Halloran et al., 2004; McCooey, Toffolo, & Code, 2000). In addition, psychology or counselling services may also need to be available to support healthcare providers who are expected to communicate openly with people who are critically or terminally ill.
Finally, hospital administration is also responsible for addressing major environmental barriers related to building design, such as inadequate hospital signage. This has already occurred at the Princess Alexandra Hospital in Brisbane, Australia. The barriers to communication for both staff and patients who are deaf or hearing impaired have been investigated and resources such as assistive listening devices, volume control phones, and email facilities have been made available. (Forster, 1999).

Other environmental factors that influence communication between healthcare providers and people with communication disability in acute hospital settings occur at the level of the community, government and the law. Kagan and LeBlanc (2002) demonstrate how working with a community group and government resulted in additional funding for training and education of healthcare providers working with people with aphasia. Another example of addressing barriers for people with communication disabilities accessing healthcare in hospitals at the level of government is being carried out by the Office of Civil Rights (OCR) in the US Federal Human and Health Department. The OCR is collaborating with hospitals across 13 states in the USA to both increase hospitals’ awareness of their legal obligations to provide accessible health care services in accord with the American Disabilities Act, and provide hospitals with support to develop more accessible healthcare services for people with hearing impairment (US Department of Health and Human Services, 2007).

Although not directly identified as an environmental factor in this review, advocacy groups such as RNID and Mencap also play an important role in funding research into the needs of people with communication disabilities in hospitals. The findings of these research studies also serve to
Environmental factors affecting communication in acute care hospitals

raise public awareness about the issue. For example, the recent report ‘A simple cure’ by the RNID, resulted in positive media coverage about the difficulties people who are deaf or hearing impaired experience in hospitals (Adams-Spink, 2004; Gould, 2004). The legal environment is also an important factor that influences communication between people with communication disabilities and their healthcare providers in hospital. For example, successful legal action by people who are deaf has resulted in significant changes to some hospital services in the USA (see "United States of America vs Silver Hill Hospital", 2002; "Posner vs Parkway Hospital", 2004).

The second main feature to emerge from this review is that almost all of the research presented in this review focussed on identifying and describing the environmental factors that influence communication between people with communication disabilities and healthcare providers in acute care hospitals. Only in the areas of people with learning disability and people with communication disability in the ICU have researchers begun to investigate the effect of interventions to improve communication with healthcare providers in the acute hospitals.

**Limits of this review**

This review did not search for any studies on the acute hospital healthcare experiences of people with specific medical conditions that are associated with communication disabilities such as motor neurone disease or multiple sclerosis. Also this review did not include studies on the experiences and perceptions of critically ill people and their healthcare providers in other specialist wards such as cardiac care units who may also have had communication disabilities. These studies may include additional environmental factors not identified in this review. Finally, as described at the beginning of this review, the environmental factors that influence
communication between people with communication disabilities and their healthcare providers are only one part of the picture. Personal factors, such as a person’s language and cultural background, his or her previous experience in the acute hospital setting, level of education and willingness to communicate with healthcare providers (WHO, 2001) are other important aspects that also need to be considered.

**Directions for future research**

More research is needed to better understand the experiences of people with communication disabilities and their healthcare providers in acute hospitals, particularly in relation to people with communication disability secondary to stroke, vision impairment, dementia and traumatic brain injury. However, further research is needed to understand the environmental factors that create barriers to or facilitate communication for people with different types of communication disabilities and for people who have multiple communication disabilities in acute hospitals. To date research has tended to rely on methods such as interviews, focus groups, surveys and questionnaires. Apart from two studies conducted in ICU, no other studies used direct participant observation as a research method. Direct observation of the interactions between people with communication disabilities, the people in their support network and their healthcare providers may not only provide a valuable alternative perspective on the environmental factors that occur in this setting but also provide a better understanding about the ways in which environmental factors such as ‘healthcare providers’ attitudes’ are expressed (Morse & Richards, 2002).

Research is needed to investigate the effect of interventions to remove environmental barriers and enhance environmental facilitators for people with communication disabilities in the acute
hospital setting. Finally, research is also needed to determine which environmental barriers need to be targeted first. For example, this literature review indicates that providing communication aids for use on hospital wards may not be beneficial without support at the level of hospital systems, services and policies to encourage staff in the use of communication aids.

Healthcare professionals and researchers from various disciplines are concerned with understanding the factors that influence the ability of people with communication disabilities and their healthcare providers to communicate successfully. This provides an excellent opportunity for collaboration across people in different disciplines in future research. The findings of future research also need to be integrated with the literature on the healthcare experiences of people without communication disabilities. Healthcare communication, which includes a range of interrelated research areas (including medicine, ethics and social science, and addresses issues such as disclosing results, shared decision making, adherence to healthcare recommendations, risk communication and patient satisfaction), does not tend to include the experiences of people with communication disabilities. Through joint research collaborations and publications in healthcare communication journals, the experiences of people with communication disabilities are more likely to be heard in the broader field of healthcare communication research.

This review indicates that adults with different types of communication disabilities face many different environmental barriers to communicating with their healthcare providers in acute hospitals. The number and complexity of these environmental factors also indicates that the development of communicatively accessible hospitals will require commitment from
governments, healthcare services and healthcare professionals and most importantly the collaboration of people with different types of communication disabilities.
References


Augmentative communication in the medical setting (pp. 5-58). Tuscon: Communication skill builders.


Murphy, J., & Cameron, L. (2002). Talking mats and learning disability: A low tech communication resource to help people to express their views and feelings. Stirling: Psychology Department, University of Stirling.


Environmental factors affecting communication in acute care hospitals


United States of America against Silver Hill Hospital settlement agreement under the Americans with disabilities act 1990 (Washington D.C. 2002).

United States of America Norman Posner and Queens Independent Living Center Inc against Parkway Hospital Inc (United States district court Eastern district of New York 2004).


Ylvisaker, M., Feeney, T., & Urbanczyk, B. (1993a). Developing a positive communication culture for rehabilitation: Communication training for staff and family members. In C. Durgin (Ed.), *Staff development and clinical intervention in brain injury rehabilitation* (pp. 57-85). Gaithersburg, Md: Aspen publishers.


Table 1: Research literature on the experiences of people who are deaf or hearing impaired in acute hospitals

<table>
<thead>
<tr>
<th>Authors Year</th>
<th>Country</th>
<th>Purpose of study</th>
<th>Methodology</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>RNID (2004)</td>
<td>UK</td>
<td>To describe the healthcare experiences of adults who are deaf or hearing impaired</td>
<td>Quantitative analysis of mailed out survey</td>
<td>866 hearing impaired and deaf adults</td>
</tr>
<tr>
<td>Davies and Channon (2004)</td>
<td>UK</td>
<td>To describe the experiences of hearing impaired adults in the hospital medical imaging department</td>
<td>Constant comparative analysis of semi structured interviews</td>
<td>4 radiographers and 6 deaf adults</td>
</tr>
</tbody>
</table>
| Iezzoni et al (2004) | USA | To understand the perceptions of adults who are deaf or hearing impaired in doctor patient interactions | 4 focus groups interviews analysed with NVivo software | Group 1 - 8 deaf women  
Group 2 - 6 deaf men  
Group 3 - 6 hearing impaired women  
Group 4 - 6 hearing impaired men |
| Hines (2000) | UK | To describe the experiences of hearing impaired adults who had been hospital patients in the previous 3 years | Mailed out survey | 359 students of lip reading schools |
| Heron and Wharrad (2000) | UK | To investigate the prevalence of hearing impairment and nursing staff awareness of hearing impairment in older hospital patients | Audiometric testing  
Written questionnaire | 21 hospital patients  
15 nurses |
<p>| Witte and Kuzel (2000) | USA | To describe the healthcare experiences of adults who are deaf and use sign language | Independent analysis using an editing approach of focus group | 2 groups of 6-8 deaf adults |</p>
<table>
<thead>
<tr>
<th>Authors</th>
<th>Country</th>
<th>Study Objective</th>
<th>Method</th>
<th>Sample Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Page and Ramesh (2000)</td>
<td>UK</td>
<td>To investigate the presence of hearing devices on hospital wards</td>
<td>Ward survey</td>
<td>25 adult wards of a teaching hospital</td>
</tr>
<tr>
<td>Ahmed, et al (1996)</td>
<td>UK</td>
<td>To determine the equipment on wards to assist with the assessment and management</td>
<td>Ward survey</td>
<td>23 wards of a teaching hospital</td>
</tr>
<tr>
<td>Cantley et al (1996)</td>
<td>UK</td>
<td>To determine how well inpatients and doctors manage hearing aids</td>
<td>Questionnaire</td>
<td>41 patients</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>15 doctors</td>
</tr>
<tr>
<td>Roper (1995)</td>
<td>UK</td>
<td>To investigate the under use of deaf-aid communicators in hospital wards</td>
<td>Survey</td>
<td>56 nurses</td>
</tr>
<tr>
<td>Mulley and Ng (1995)</td>
<td>UK</td>
<td>To investigate the experiences of people with hearing impairment accessing hospital</td>
<td>Questionnaire</td>
<td>53 patients with hearing aids attending the</td>
</tr>
<tr>
<td></td>
<td></td>
<td>outpatient clinics</td>
<td></td>
<td>hospital audiology department</td>
</tr>
</tbody>
</table>

[Insert Running title of <72 characters]
Table 2: Research literature on the experiences of people with developmental disability and/or learning disability in acute hospitals

<table>
<thead>
<tr>
<th>Authors/ Year</th>
<th>Country</th>
<th>Purpose of study</th>
<th>Methodology</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balandin et al (2007)</td>
<td>Australia</td>
<td>To investigate the experiences of people with cerebral palsy and complex communication needs (CCN) in acute hospitals</td>
<td>Thematic analysis of semi-structured interviews</td>
<td>10 adults with cerebral palsy and complex communication needs</td>
</tr>
<tr>
<td>Hemsley et al (2007)</td>
<td>Australia</td>
<td>To understand the experiences of older parents supporting their adults children with cerebral palsy and CCN in acute hospitals</td>
<td>Narrative analysis of in-depth interviews</td>
<td>8 older parents (aged over 60).</td>
</tr>
<tr>
<td>Hemsley and Balandin (2004)</td>
<td>Australia</td>
<td>To understand the experiences of the unpaid carers of people with cerebral palsy and complex communication needs in hospital</td>
<td>Narrative analysis of in-depth interviews</td>
<td>6 support workers who had provided unpaid care for a person with cerebral palsy and complex communication needs in hospital</td>
</tr>
<tr>
<td>Mencap (2004)</td>
<td>UK</td>
<td>To understand the healthcare experiences of people with learning disability</td>
<td>Large scale survey</td>
<td>1,000 people with learning disability</td>
</tr>
<tr>
<td>Hannon (2004)</td>
<td>UK</td>
<td>To investigate the use of preadmission assessment to improve access to healthcare for people with learning disability from four different perspectives; people with a learning disability, their family/carers, hospital staff, and community learning disability nurses.</td>
<td>Framework analysis of semi structured interviews</td>
<td>4 people with learning disability 5 family members/carers 6 hospital staff 5 learning disability nurses</td>
</tr>
<tr>
<td>Authors</td>
<td>Country</td>
<td>Methodology</td>
<td>Participants</td>
<td>Findings</td>
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<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Cumella and Martin (2004)</td>
<td>UK</td>
<td>To explore the experiences of people with learning disability in hospital and identify possible solutions</td>
<td>Consensus development conferences</td>
<td>2 consensus development conferences each consisting of 40 people including people with a learning disability, hospital managers and health professionals, commissioners and members of community learning disability teams</td>
</tr>
<tr>
<td>Iacono and Davis (2003)</td>
<td>Australia</td>
<td>To investigate the experiences of people with developmental disability in acute hospitals</td>
<td>Questionnaires distributed through service organisations. Semi structured interviews analysed by a qualitative data management program.</td>
<td>28 people with disabilities and 295 people who support people with disabilities responded to the questionnaire. 6 adults with disabilities, two parents of adult children with severe and multiple disabilities and a support worker were interviewed</td>
</tr>
<tr>
<td>Fox and Wilson (1999)</td>
<td>UK</td>
<td>To explore the experiences of people with learning disabilities receiving inpatient hospital care</td>
<td>Unspecified analysis of semi structured interviews</td>
<td>Parents of 10 people with learning disabilities</td>
</tr>
<tr>
<td>Hart (1998)</td>
<td>UK</td>
<td>To investigate the experiences of people with learning disabilities in general hospitals</td>
<td>Grounded theory analysis of short, semi structured interviews</td>
<td>13 people with learning disability</td>
</tr>
</tbody>
</table>
Table 3 Research literature on the environmental factors that influence communication between healthcare providers and critically ill people in ICUs

<table>
<thead>
<tr>
<th>Authors Year</th>
<th>Country of study</th>
<th>Purpose of study</th>
<th>Methodology</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnus and Turkington (2006)</td>
<td>UK</td>
<td>To investigate staff and patient perceptions of communication in ICUs</td>
<td>Grounded theory analysis of semi structured interviews and quantitative analysis of ordinal data</td>
<td>9 health care professionals 8 adult patients currently or recently in ICU</td>
</tr>
<tr>
<td>Beckstrand et al (2006)</td>
<td>USA</td>
<td>To identify ways to improve end of life care in intensive care units</td>
<td>Mailed survey</td>
<td>861 critical care nurses</td>
</tr>
<tr>
<td>Halligan (2006)</td>
<td>Saudi Arabia</td>
<td>To describe the lived experience of providing care to Muslim patients</td>
<td>Phenomenological approach used to analyse in-depth interviews</td>
<td>6 female critical care nurses of non Muslim background</td>
</tr>
<tr>
<td>Alasad et al (2005)</td>
<td>Jordan</td>
<td>To describe the lived experiences of critical care nurses in intensive care units</td>
<td>Phenomenological approach used to analyse in-depth interviews and participant observation data</td>
<td>28 critical care nurses in 3 ICUs were interviewed and observed caring for patients in ICU</td>
</tr>
<tr>
<td>Trovo de Araujo et al (2004)</td>
<td>Brazil</td>
<td>To explore ICU nurses’ perceptions on communicating with patients as an effective</td>
<td>Qualitative content analysis of semi structured interviews</td>
<td>10 ICU nurses</td>
</tr>
<tr>
<td>Authors</td>
<td>Country</td>
<td>Objective</td>
<td>Methodology</td>
<td>Sample Size</td>
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<td>----------------------------------------------------------------------------</td>
<td>--------------------------------------</td>
</tr>
<tr>
<td>Patak et al (2004)</td>
<td>USA</td>
<td>To describe the level of frustration experienced by patients on mechanical ventilation and determine the usefulness of healthcare practitioner methods to communicate</td>
<td>Thematic analysis using Nudist qualitative research software of structured interviews and quantitative analysis of questionnaire responses</td>
<td>29 patients, extubated within 72 hours</td>
</tr>
<tr>
<td>Happ (2004)</td>
<td>USA</td>
<td>To investigate the factors related to use of voice output communication aids (speech generating devices) in ICU</td>
<td>Descriptive categorization of data from participant observation and quantitative analysis of structured interviews</td>
<td>11 critically ill adults observed 8 patients interviewed 3 family members interviewed 3 clinicians interviewed</td>
</tr>
<tr>
<td>Wojnicki-Johansson (2001)</td>
<td>Sweden</td>
<td>To study patients’ experiences of communication problems during ventilator treatment</td>
<td>Quantitative analysis of responses to closed questions. Direct quotations only from open ended questions</td>
<td>22 patients interviewed three times over a 2 month period after ventilation</td>
</tr>
<tr>
<td>Usher and Monkley (2001)</td>
<td>Australia</td>
<td>To explore nurses perceptions of effective communication in ICU</td>
<td>Narrative analysis of in-depth interviews</td>
<td>4 nurses identified by senior staff as effective communicators with patients in ICU</td>
</tr>
<tr>
<td>Bergbom and Askwall (2000)</td>
<td>Sweden</td>
<td>To describe patients’ experiences of the presence of people personally close to them whilst in ICU</td>
<td>Hermeneutic approach to the analysis of in-depth interviews</td>
<td>5 people who had previously been in ICU</td>
</tr>
<tr>
<td>First Author(s)</td>
<td>Country</td>
<td>Purpose of Study</td>
<td>Methodological Approach</td>
<td>Number of Participants</td>
</tr>
<tr>
<td>-----------------</td>
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<td>-------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Granberg et al (1998)</td>
<td>Sweden</td>
<td>To describe the experiences of patients in ICU</td>
<td>Hermeneutic approach to the analysis of in-depth interviews</td>
<td>19 patients on ventilation and in ICU for at least 36 hours</td>
</tr>
<tr>
<td>Robillard (1994)</td>
<td>USA</td>
<td>Personal account of being a patient in ICU</td>
<td>Autobiographical ethnographic narrative</td>
<td>1 patient</td>
</tr>
<tr>
<td>Bergbom-Engberg et al (1993)</td>
<td>Sweden</td>
<td>To describe the experiences of nurses communicating with patients on ventilation</td>
<td>Quantitative analysis of questionnaire</td>
<td>27 nurses working in ICU</td>
</tr>
<tr>
<td>Fried-Oken et al (1991)</td>
<td>USA</td>
<td>To assess the effectiveness of augmentative and alternative communication in ICU</td>
<td>Descriptive analysis of structured interviews</td>
<td>5 patients with temporary severe communication disabilities</td>
</tr>
</tbody>
</table>
Table 4: Summary of the environmental factors that influence the ability of people with communication disabilities to communicate in hospital, classified according to the ICF, identified in research studies.

<table>
<thead>
<tr>
<th>ICF ENVIRONMENTAL FACTORS CHAPTER</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CHAPTER 1: PRODUCTS AND TECHNOLOGY</strong></td>
</tr>
<tr>
<td>e 125 Products and technology for communication</td>
</tr>
<tr>
<td>e 1250 general products and technology for communication</td>
</tr>
<tr>
<td>- Nurse call buzzer (SCD)</td>
</tr>
<tr>
<td>- e 1251 Assistive products and technology for communication</td>
</tr>
<tr>
<td>• Assistive listening devices eg hearing aids, volume controlled telephones, visual alarms, visual display boards (HI)</td>
</tr>
<tr>
<td>• Readily available assistive communication devices, eg speech generating devices, pen and paper, alphabet boards (DD, ICU, SCD)</td>
</tr>
<tr>
<td>• Information in communicatively accessible formats eg picture supports, large print, Braille, audiotape (VI, LD, aphasia, MCD)</td>
</tr>
<tr>
<td>• Communication 'passports' (LD)</td>
</tr>
<tr>
<td>e 150 Design, construction and building products and technology of buildings for public use</td>
</tr>
<tr>
<td>- e 1501 Design, construction and building products and technology for gaining access to facilities inside buildings for public use</td>
</tr>
<tr>
<td>• Visual alarms, audio loop systems, visual display boards (HI)</td>
</tr>
<tr>
<td>• Signage (HI, VI)</td>
</tr>
<tr>
<td>• Picture symbols (LD)</td>
</tr>
<tr>
<td>• Location of reception areas (VI)</td>
</tr>
</tbody>
</table>
### CHAPTER 2: NATURAL AND HUMAN CHANGES TO ENVIRONMENT

- **e 240 Light**
  - **e 2401 Light quality**
    - *Lighting (HI)*

- **e 250 Sound**
  - **e 2501 Sound quality**
    - *Background noise (HI, ICU)*

### CHAPTER 3: SUPPORT AND RELATIONSHIPS

- **e 310 Immediate family, e 315 Extended family, e 320 Friends, e 340 Personal care providers**
  - **To advocate for person (LD, DD, ICU, SCD)**
  - **Provide background knowledge of person (LD, DD, ICU, SCD)**
  - **Provide information and skills on communicating with person (DD, LD, ICU, SCD)**
Health professionals:

- **Awareness of person’s communication related impairment (VI, HI)**
- **Awareness that the person may need non technical assistance (eg guidance to get into a consultation room, information about where the meal is) (VI)**
- **Knowledge about the communication related impairment/ disability (aphasia, LD, DD, ICU)**
- **Knowledge of assistive communication devices (eg hearing aids, pen and paper, alphabet boards, AAC devices, how to physically access device) (HI, DD, ICU, SCD)**
- **Knowledge about effect of accent on person’s understanding (HI)**
- **Communication skills eg, ability to modify communication to accommodate the person with the communication disability (eg, speaking rate, volume, personal distance, asking one question at a time or questions that require a ‘yes’ or ‘no’ answer and modifying explanations so that the person understands) (VI, HI, aphasia, DD, LD, ICU, SCD, MCD)**
- **Knowledge about when to actively intervene (ICU)**
- **Knowledge and skills in managing the emotional implications of communicating with critically ill people in ICU (ICU)**
- **Knowledge of person’s cultural background (ICU)**
- **Understanding of the person’s medical condition (ICU)**
- **Personal concerns (ICU)**
- **Concerns about their relationship with the person (ICU)**
- **Judgment of person’s communicative success (ICU)**

**CHAPTER 4: ATTITUDES**

Individual attitudes of health professionals, Societal attitudes amongst healthcare professionals towards
- Communicating: Reflected in how people are spoken to (e.g., with reassurance, respect, kindness, attentiveness, encouragement, really listening, being ‘open to’, giving opportunities for questions, or roughly, mechanically, inattentively, making assumptions about person’s intelligence and motivation, healthcare provider’s feelings around communication failure) (HI, VI, aphasia, DD, LD, ICU, MCD)

- Health care providers’ role (e.g., speech therapists) in hospital (ICU, SCD)

- Disability (DD, LD, MCD)

- Presence of family, friends (DD, LD, ICU, SCD)

- Communicating (VI, HI, aphasia, DD, ICU, MCD)

- Deaf culture (HI)

- Involvement of sign language interpreters (HI)
CHAPTER 5: SERVICES, SYSTEMS AND POLICIES

- **550 Legal services, systems and policies**
  - *Legal action (HI)*

- **555 Associations and organisational services, systems and policies**
  - *Advocacy groups (HI, VI, LD, aphasia)*

- **565 Economic services, systems and policies**
  - *Funding for personal care providers (LD)*

- **585 Education and training services, systems and policies**
  - *Tertiary education of healthcare providers (LD)*

- **580 Health services, systems and policies**
  - **5800 Health Services**
    - *Nurse workload (ICU)*
    - *Learning disability nurse (LD)*
    - *disability facilitator(LD)*
    - *preadmission assessments (LD)*
    - *Speech therapy services to support people who use AAC (ICU, SCD)*
  - **5801 Health Systems**
    - *Conducting audits of hospital’s communication accessibility across health systems in hospital (HI)*
- Providing disability awareness training (HI, VI, DD, MCD)
- Providing communication training (HI, VI, DD, aphasia, MCD)
- Policies and procedures about the role of parents and support workers (LD, DD)
- Establishing policies and procedures eg in operating theatres, radiology departments, the management of assistive listening devices (HI)
- Arranging consistent staffing (ICU)
- Systems for storage/ security for assistive communication devices (HI, SCD)

<table>
<thead>
<tr>
<th>Key: Environmental factors identified in the following research literature</th>
</tr>
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<tbody>
<tr>
<td>HI: Hearing impairment</td>
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<tr>
<td>VI: Visual impairment</td>
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<tr>
<td>DD: Developmental disability</td>
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<tr>
<td>LD: Learning disability</td>
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<tr>
<td>ICU: Intensive Care Unit</td>
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<tr>
<td>SCD: Severe communication disability</td>
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<td>MCD: Mixed communication disabilities</td>
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[Insert Running title of <72 characters]
Note environmental factors identified in the literature on people with dementia or traumatic brain injury have not been included in the table because they have not been identified through research.
Figure Captions

Figure 1. The ICF framework (WHO, 2001)

- Health condition (disorder or disease)
- Body Structures and Body Functions
- Activity
- Participation
- Environmental Factors
- Personal Factors