

# Gerontechnology in Healthcare Settings: Myth or Reality

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*G.Lesnoff-Caravaglia. Gerontechnology in Healthcare Settings: Myth or Reality. Gerontechnology 2005; 4(1): 46-51.* The introduction of advanced technologies into a world increasingly populated by persons aged 65 and older has contributed to the development of new resources for use in diverse areas such as long-term care, acute care settings, home environments, the work place, and recreational facilities. Despite the proliferation of both high technology (robotics, automation) and low technology (personal aids, prosthetic environments), their utilization in healthcare facilities appears to be limited. **Methods** A survey of 134 healthcare institutions in the mid-western portion of the United States (43 long-term care facilities and 91 hospitals) was conducted to determine which, if any, of a selected group of healthcare technologies was utilized or known to the institutions. **Results** indicated that assistive devices are not widely used in either hospital or long-term care facilities. Among hospitals, 36% had heard of the selected devices, 59% were using them, with 5% never having heard of them. Among long-term care facilities, 41% had heard of the selected devices, 53% were using them, and 4% had never heard of them. **Discussion** Such limited utilization and lack of information concerning healthcare technologies can seriously compromise the well-being of the elderly and can significantly erode lifestyle options and affect treatment procedures.

**Keywords:** healthcare institutions, technology, utilization

Acceleration in technological advances, coupled with increases in the aging population, has resulted in two major societal trends: the increasing presence of technological devices in healthcare settings and an older potentially dependent population.

The compatibility of these two contemporary trends is largely dependent upon attitudes toward the elderly and the appropriate utilization of such technologies not only in healthcare but in areas such as the home environment, the workplace, and the community setting<sup>1</sup>. Considerations regarding the quality of life and health-care issues in the future will extend far beyond current expectations,

creating demands for prosthetic environments totally based upon sophisticated technologies which can place the older individual in control. What will be meant by 'independent' living will have less to do with human provision of care and human support systems, and will rest largely upon the latest in technological advances for the manipulation and subjugation of individual life spaces<sup>2</sup>. The future control of lifestyle may well be waged by an aged female and the machine at her bedside<sup>3,4</sup>.

The incursion of advanced technologies into a world increasingly populated by persons aged 65 and older has contributed to the development of new re-

sources for use by the elderly or by providers in areas such as long-term care, hospitals, home environments, the work place, and recreational settings. Despite the proliferation of both high technology (robotics, automation) and low technology (personal aids, prosthetic environments), there has been little systematic evaluation of their utilization in institutions that deal specifically with the healthcare of the elderly<sup>4</sup>. This survey is an attempt to determine the awareness as well as utilization of assistive devices in long-term care facilities and hospitals. The study was conducted to determine whether technologies which have been on the market for at least five years or longer are currently being utilized in the two major institutions providing healthcare to older adults in the mid-western portion of the United States: the long-term care facility and the hospital.

## METHODS

A descriptive letter was sent to the administrator of 200 randomly selected facilities of one hundred beds or more describing the purpose of the survey and requesting a contact person to whom the questionnaire should be addressed. Questionnaires were subsequently distributed to the designated contact of 43 long-term care facilities and 91 hospitals (134 facilities). The questionnaire included 45 items (Table 1), covering categories of assistive devices such as a variety of alarms, advanced bathing systems, miscellaneous assistive devices, walking aids, urinary/fecal controls, speech aids, telephones for the disabled, wheelchair accessories, specialized beds, and modified toilets.

Respondents were asked to check the appropriate columns indicating: currently use, heard of it, or never heard of it; they were also encouraged to list addi-

tional technologies which they may be currently using, but which did not appear on the list. Responses were received from administrators, heads of nursing units, medical directors, and heads of a variety of healthcare departments.

## RESULTS

### Specific systems

#### *Alarm Systems*

Responses from both nursing homes and hospitals indicated that 69% of both types of facilities had heard of alarm systems including detection of residents entering a restricted area, voice alert systems, and wanderers' tracking systems. Alarm systems, however, were used by only 21% of the facilities.

#### *Bathing Systems*

76% of the hospitals and long-term care facilities used advanced types of bathing systems, with 29% having heard of their availability. These included systems with hydraulic lifts, standard baths with modifications such as rails, a mobile carrier bath system, and baths equipped with a safety bench. The mobile carrier bath system was least well known, with 35% indicating never having heard of it.

#### *Assistive Devices*

47% of the hospitals and long-term care facilities used mechanical wheelchairs, remote control for television, large handled cutlery, communication devices for the non-vocal, books on tape for the hearing impaired, Braille reading materials, and large print books for the visually impaired. An additional 44% had heard of these devices, as well as computers for the disabled, remote control for radios, remote control for adjusting draperies and blinds, remote control for lighting, automatic needle threaders, closed captioned television, and lifting aids for bedpans, but did not use them.

Table 1: Questionnaire Categories and Items

Categories of Assistive Devices	Items
<b>Alarms</b>	Detecting residents entering a restricted area Voice alert systems
<b>Advanced Bathing Systems</b>	Wanderers' tracking systems Hydraulic lifts Standard baths with modifications such as rails Mobile carrier bath systems
<b>Miscellaneous Assistive Devices</b>	Baths equipped with a safety bench Mechanical wheelchairs Remote control for television Large handled cutlery Communication Devices for the non-vocal Books on tape for the hearing impaired Braille reading materials Large print books for the visually impaired Computers for the disabled Remote control for radios Remote control for adjusting draperies and blinds Remote control for lighting Automatic needle threaders Closed captioned TV Lifting aids for bedpans
<b>Walking / Mobility Aids</b>	Fixed walking frames Adjustable walking frames Mobile walking frames (with wheels) 'Hip Guard' (a high risk for fracture garment)
<b>Urinary / Fecal Control</b>	Crutches Diapers Body-worn drainage bags Modified bed pans Lifting aid for bed pans Modified commodes Raised toilet seats
<b>Speech Aids</b>	Voice amplifiers Artificial larynx devices Speech synthesis computers
<b>Telephones for the Disabled</b>	Loudspeaker phone Amplifier in the handset Flashing light phone for the hearing impaired The voice dialer Large numbered phone for the visually impaired
<b>Bed and Wheelchair Accessories</b>	Foam cushions Gel cushions Incontinence pads Fully electric or semi-electric beds Manually operated beds

## *Mobility Aids*

Walking aids such as fixed walking frames, adjustable walking frames, mobile walking frames (with wheels), 'Hip Guard' (a high fracture garment), and crutches were utilized by 80% of the hospital and long-term care facilities. 'Hip Guard' was the least well known device and was used by 12% of the facilities.

## *Urinary and Fecal Controls*

Urinary and fecal controls were used by 90% of the hospitals and long-term care facilities, and included diapers, body-worn drainage bags, and modified bed pans. While 47% had heard of the lifting aid for bedpans, 14% utilized this device. Modified toilets such as commodes or raised seats were used by 94% of the facilities.

## *Speech Aids*

Speech aids such as voice amplifiers, artificial larynx devices and speech synthesizers computers were used by 35% of the hospital and long-term care facilities, with an additional 64% having heard of the devices, but had never used them.

## *Telephones*

Telephones for the disabled, such as the loudspeaker phone and amplifier in the handset were used by 47% of the hospital and long-term care facilities. An additional 60% had heard of devices such as the flashing light phone for the hearing impaired, the voice dialer, and the large numbered phone for the visually impaired, but had never used them.

## *Bed and Wheelchair Accessories*

Users of wheelchair accessories such as foam cushions, gel cushions, and incontinence pads were reported by 86% of the hospitals and long-term care facilities. Beds which were fully electric, semi-electric, and manually operated were used by 65% of the facilities.

## **Overall results**

Overall, both hospitals and long-term care facilities indicated low utilization rates and low levels of familiarity with the selected list of healthcare devices including alarms, advanced bathing systems, miscellaneous assistive devices, walking aids, urinary/fecal control, speech aids, telephones for the disabled, wheelchair accessories, specialized beds, and modified toilets (Figures 1,2). These selected assistive devices were used by 56% of both facilities surveyed, while 37% had only heard of the devices, and 5% had never heard of them.

In comparing the responses of long-term care facilities with hospitals, a higher percentage of long-term care facilities had heard of the devices, but a smaller percentage actually used the devices. Out of 91 hospitals, 33 (36%) had heard of the devices, 54 (59%) were using them, with 4 (5%) never having heard of them. In contrast, out of 43 long-term care facilities, only 18 (41%) had heard of the devices, 23 (53%) were using them, and 2 (4%) had never heard of them.

## **DISCUSSION**

Information regarding the availability of many of the assistive devices appears to be more prevalent in long-term care facilities than in hospital settings. Hospitals, however, were more apt to employ assistive devices in patient care. Despite the proliferation of both high technology (automation) and low technology (personal aids, prosthetic environments), their utilization in healthcare facilities appears to be limited. This survey of 134 healthcare institutions in the mid-western portion of the United States (43 long-term care facilities and 91 hospitals) was conducted to determine which, if any, of a selected group of healthcare technologies was utilized or known to the institutions. It was re-

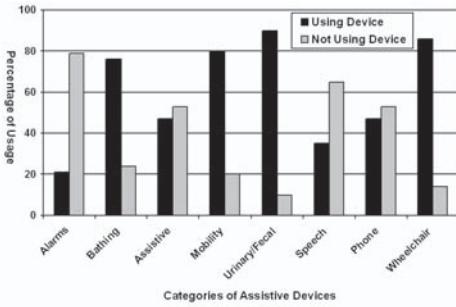


Figure 1: Responses from administrators, heads of nursing units, medical directors, and heads of a variety of health care departments indicating whether they use a specific type of assistive device

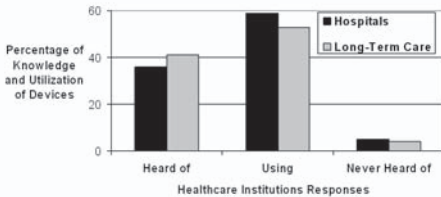


Figure 2: Overall results from a survey of 134 healthcare institutions (43 long-term care facilities; 91 hospitals) conducted to determine which, if any, of a selected group of healthcare technologies was utilized or familiar to the institutions. A higher percentage of long-term care facilities had heard of the devices, but a smaller percentage was actually using the devices. Results show limited utilization and lack of information concerning healthcare technologies

vealed that assistive devices are not widely used in either hospital or long-term care facilities.

## CONCLUSION

It is clear that assistive devices are not as widely used in either hospital or long-term care facilities as their presence might warrant. Although there are a number of factors that can contribute to their under-utilization, one of the most important is that many assistive

devices are simply not prescribed by healthcare providers<sup>5</sup>. Reluctance on the part of healthcare providers to incorporate the use of new technologies or consumer dissatisfaction can be a factor as well<sup>6</sup>. There is the additional problem of reimbursement, with insurance companies (both governmental and private) not providing coverage for assistive devices<sup>7</sup>.

Since many of these devices are labor saving devices and promote the health and welfare of the caregiver, their non-use may result in increased costs to hospitals and long-term care facilities by way of employee disability and poor health<sup>1,3</sup>. In the long run, such employee costs may outstrip the initial outlay required for the introduction of a new technology. Such an analysis could provide an interesting perspective or focus for future studies.

Furthermore, older patients frequently require greater assistance once discharged from the hospital due to diminished abilities<sup>8</sup>. The limited utilization and lack of information concerning technologies among healthcare providers can thus seriously hamper the well-being of the elderly and can needlessly restrict lifestyle options and treatment procedures<sup>9,10</sup>. In addition, efforts on the part of researchers and manufacturers could decline due to the lack of market demand, further exacerbating the problems facing older persons in maintaining optimal lifestyles.

The ethical issue of whether non-use of technologies in healthcare settings can compromise patient health is no longer an academic question. The restricted use or non-use of available technologies can also be viewed as an abrogation of patient rights<sup>10-12</sup>.

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