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Department of Health and Ageing



Australia and New Zealand Horizon Scanning Network

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Vocera[®]: Wireless communication

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PRIORITISING SUMMARY

REGISTER ID: 000121

NAME OF TECHNOLOGY: VOCERA® WIRELESS COMMUNICATION

PURPOSE AND TARGET GROUP: A WEARABLE, WIRELESS, VOICE CONTROLLED COMMUNICATION DEVICE FOR USE IN HOSPITALS

STAGE OF DEVELOPMENT (IN AUSTRALIA):

- | | |
|---|---|
| <input type="checkbox"/> Yet to emerge | <input type="checkbox"/> Established |
| <input type="checkbox"/> Experimental | <input type="checkbox"/> Established <i>but</i> changed indication or modification of technique |
| <input checked="" type="checkbox"/> Investigational | <input type="checkbox"/> Should be taken out of use |
| <input type="checkbox"/> Nearly established | |

AUSTRALIAN THERAPEUTIC GOODS ADMINISTRATION APPROVAL

- | | |
|------------------------------|--|
| <input type="checkbox"/> Yes | ARTG number |
| <input type="checkbox"/> No | <input checked="" type="checkbox"/> Not applicable |

INTERNATIONAL UTILISATION:

COUNTRY	LEVEL OF USE		
	Trials Underway or Completed	Limited Use	Widely Diffused
Australia	✓		
United States	✓		

IMPACT SUMMARY:

Vocera® Communications manufacture the Vocera® Wireless Communication device, which is distributed in Australia by IBM Logicalis. The wireless communication device is designed to provide efficient hands free communication between medical, clerical, management and support staff in busy hospital departments.

BACKGROUND

Hospital wards and departments are busy work places with a high proportion of mobile workers. Clinical decisions may be made more efficiently by doctors and nurses if relevant information is delivered to them promptly. There is evidence that clinical health workers spend a significant amount of time and effort seeking information, such as diagnostic test results, to make informed decisions concerning a patient's treatment (Heslop et al 2003). Traditional phone systems are only effective if workers are located in one location at all times. Conventional cell phones either will not work, or are banned from the hospital environment as they may interfere with sensitive health-care equipment and paging systems often involve long time delays while waiting for a response. Wireless communication is

intended to deliver relevant clinical information to health workers faster and more efficiently, reducing time lags in patient treatment (Vocera Communications 2004b).

The Vocera[®] System is a wearable, voice-controlled communications device, which operates over a wireless Local Area Network (LAN). The system consists of two main components: a small, lightweight badge (actual size 10.5cm x 3.5cm) that can be clipped to a shirt pocket or lapel and the server software. The badge can be activated by the touch of a button or by voice recognition and can be used for one-to-one, or one-to-many communication (Figure 1). In addition there is a telephone interface, which allows calls to be made to and from PABX extensions, voicemail and the public telephone network. The software runs on a standard Microsoft Windows platform and controls and manages call activity (Vocera Communications 2004b).



Figure 1 Vocera communications badge (Printed with permission, Vocera Communications)

CLINICAL NEED AND BURDEN OF DISEASE

A 1995 study conducted in the University Hospital, Denver, estimated that medical staff lost annually approximately 900 hours due to paging delays, 700 hours due to waiting and 500 hours answering calls looking for personnel (Spurck et al 1995).

DIFFUSION

The Vocera[®] communication device is currently being trialled in two pilot studies in Australian hospitals (other than the Blacktown study): one in an emergency department and one in an intensive care unit. Unfortunately these studies are protected by commercial confidentiality (personal communication, IBM Logicalis).

COMPARATORS

The comparators for this technology are conventional hospital communication devices such as direct dial telephones, pager systems, radio paging and cordless telephones.

EFFECTIVENESS AND SAFETY ISSUES

At the 2004 Health Informatics Conference, Hession et al (2004) presented an uncontrolled study assessing the implementation of the Vocera[®] communications system at the Blacktown Emergency Department. Blacktown Hospital is a busy public hospital situated in western Sydney and the Emergency Department sees approximately 28,000 presentations annually. Up to eight doctors and 10 nurses work in the Emergency Department at any one time. The

department may need to communicate with members of staff within the department as well as ambulance, clerical, hospital ward, radiology, diagnostic laboratory, pathology and medical records staff employed elsewhere in the hospital. Time savings after the implementation of the Vocera[®] system during two 10-day periods in 2003, were measured by stopwatch. Before Vocera[®] implementation, there was an average of a two-minute delay to find departmental staff and a 5.8 minute wait after paging an individual. During the trial period, the Vocera[®] system was used an average of 130 times per day. This may represent a conservative saving of between 260 and 783 minutes per day, or 1580 to 4745 hours per year. No data were available on the effect of Vocera[®] on patient waiting times (Hession et al 2004).

Out of the 21 individuals involved in this trial, five had difficulty with the voice recognition feature, which may have been due to a difference in accents between staff with non-English and English as their first language. Males were more likely to be successful than females (no data shown). In addition, power surges occurred during the trial period, which resulted in degradation in the performance of the system (voice recognition failed) (Hession et al 2004).

A comparative study (level III-2) was conducted using Vocera[®] in St Agnes HealthCare, a 299 bed, mixed medical and surgical hospital in Washington, USA. Two wards, similar in case mix, physical layout, staffing and size (32 beds) were assigned to have either Vocera[®] communication or conventional communication and observed for four days (day and night shifts). Data were collected by direct observation, tracking log files on the Vocera[®] server, or by surveying and interviewing staff. Time savings, when extrapolated over a period of one year, amounted to 3,400 hours per year, or 1.7 full time equivalents, when Vocera[®] communication was utilised. Survey results found that 56 and 78 per cent of respondents believed that they had saved at least 30 and 15 minutes per 8-hour shift, respectively (Vocera Communications 2004a).

The impact on patient care and health outcomes is unknown.

COST IMPACT

No information is available regarding the cost of the Vocera[®] system.

ETHICAL, CULTURAL OR RELIGIOUS CONSIDERATIONS

No issues were identified/raised in the sources examined.

CONCLUSION:

Despite the obvious benefits of efficient communication within Australian hospitals there is limited, low level evidence available to evaluate the Vocera Communication device.

HEALTHPACT ACTION:

Technology will not impact significantly in terms of policy or cost burden on the Australian health system. Archive.

SOURCES OF FURTHER INFORMATION:

Hanada, E., Hoshino, Y. & Kudou, T. (2004). 'Safe Introduction of In-hospital Wireless LAN', *Medinfo*, 2004, 1426-1429.

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Mendonca, E. A., Chen, E. S. et al (2004). 'Approach to mobile information and communication for health care', *Int J Med Inf*, 73 (7-8), 631-638.

Spurck, P. A., Mohr, M. L. et al (1995). 'The impact of a wireless telecommunication system on time efficiency', *J Nurs Adm*, 25 (6), 21-26.

Vocera Communications (2004a). *Instant Voice Communication for Mobile In-Building Workers* [Internet]. Vocera Communications. Available from: http://www.vocera.com/pdf/Voc_white_paper.pdf [Accessed 28th September 2004].

Vocera Communications (2004b). *Vocera benefits study at St Agnes Hospital* [Internet]. Vocera Communications. Available from: http://www.vocera.com/PDF/StAgnes_Whitepaper_FINAL_OLD.pdf [Accessed 28th September 2004].

SEARCH CRITERIA TO BE USED:

Hospital Communication Systems/*trends
Hospitals, General
Local Area Networks/trends
Medical Informatics Applications
Point-of-Care Systems/trends
Radio
Telecommunications/*instrumentation/trends