What is e-health and why is it important?

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E-HEALTH IS A collective term that broadly encompasses the disciplines of health informatics, telehealth and e-learning. There are more than 51 detailed definitions of e-health, but the most often quoted is:

> e-health is an emerging field in the intersection of medical informatics, public health and business, referring to health services and information delivered or enhanced through the Internet and related technologies. In a broader sense, the term characterizes not only a technical development, but also a state-of-mind, a way of thinking, an attitude, and a commitment for networked, global thinking, to improve health care locally, regionally, and worldwide by using information and communication technology.[1]

The history of e-health as health informatics now goes back a couple of decades, to the development of the first automated pathology reporting applications that were installed in the very first DOS-based non-mainframe computers, which some will remember had black screens with green writing. e-Health evolved out of the laboratories into hospitals at large, being used as hospital administration systems or information systems that enabled patient scheduling, staff rostering, very limited patient result reporting and, most importantly for their "bottom line", patient billing. Over the years, these early applications have matured, with newer applications added; however, the Holy Grail in health informatics has only very recently been attempted; that of a truly networked electronic patient record.

The history of e-health as telehealth goes back even further. The first recorded instance of the use of telemedicine in Australia occurred in 1917, when Postmaster Tuckett, in Halls Creek, Western Australia, followed instructions telegraphed in Morse code by surgeon J J Holland in Perth to perform surgery on a stockman who had sustained serious internal injuries after falling from his horse.[2] Until the Internet age,

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Abstract

◆ e-Health is a collective term that broadly encompasses the disciplines of health informatics, telehealth and e-learning.

◆ Facets of e-health are reaching a degree of maturity within their development, but without positive direction these ventures will not produce the improvements in health care that could be possible.

◆ The e-health pillar of the Centre for Military and Veterans' Health aspires to be the primary resource to both the Australian Defence Force and the Department of Veterans' Affairs for knowledge and appreciation of the e-health environment, so each organisation can apply e-health for the best benefit of serving military personnel and veterans.

things had not come too much further than that, as the cost of satellite transmission was exorbitant and plain old telephone systems alone did not provide the bandwidth required to enable interventions that would routinely change clinical outcomes. With the advent of personal computers, the Internet and email, the possibilities for diagnostic intervention are nearly endless. Definitions of telehealth versus telemedicine are varied. The areas encompassed by both are amorphous and overlapping, but most agree that telemedicine is a subset of telehealth. With Australia's "tyranny of distance", the use of telehealth in the Australian health paradigm should be self-evident; however, telemedicine use as a discipline is still underserved in rural and remote Australia,[3] because of the lack of reliable Internet connectivity, until recently a lack of any reimbursement model, and the over-reliance on synchronous (video teleconferencing) telemedicine, as opposed to asynchronous (store and forward) modalities.

e-Health, both within Australia and internationally, is about to reach a tipping point, as defined by Gladwell, as a point where three characteristics meet: contagiousness, little causes have big effects, and change happens at one dramatic moment.[4] The Internet has had a profound influence in breaching international borders, enabling the humanitarian reach of telemedicine to benefit remote communities in South-East and South Asia, Eastern Europe, Latin America,[5] rural and remote Australia, and the United States. The Internet has also enabled remarkable inroads in health informatics. Web services have provided the middleware that is now the "glue" that can join many disparate health information applications. Hospitals, and indeed primary care practices, can now be internally networked in a local area network, but

also linked across limitless geography via wide area networks and have remote and secure access to systems via virtual private network interfaces. National bodies such as NEHTA, the National E-Health Transition Authority, have been charged with establishing the standards and regulations by which medical authorities, practitioners, patients and vendors should operate in the e-health paradigm. The bold next step is a nationally accessed individual electronic medical or patient record.

The e-health pillar of CMVH

How does the Centre for Military and Veterans' Health (CMVH) add value in this national equation? CMVH was established in 2004 with a mission to "lead development of innovative solutions in the field of health, well-being and human performance for the Australian Defence Force and veteran communities through research, education and promotion of new initiatives". Our key stakeholders are the Department of Defence and the Department of Veterans' Affairs. The e-health pillar was established within CMVH from the outset with the remit of improving health outcomes by the development of:

- electronic health records;
- telehealth systems;
- connectivity and integration of systems;
- health knowledge networks;
- clinical decision support systems;
- health surveillance systems; and
- operational health support systems.[6]

CMVH has produced national and international scoping studies on e-health initiatives in the wider health sector and specifically Defence and Veterans' Affairs organisations. We have also completed an extensive needs analysis of the e-health requirements of the ADF, based on qualitative input from the Defence Health Services Division, Joint Operations Command, the single Service component Commands, and other Defence organisations.

The e-health pillar collaborates with our sister centre within the University of Queensland, the Centre for Online Health, and has established robust relationships with NEHTA, CSIRO e-Health Research Centre, the Health Informatics Society of Australia and a number of international e-health bodies. e-Health synergies are realised by having an e-health point of contact in each of the CMVH nodes (ie, University of Adelaide and Charles Darwin University, as well as the University of Queensland). We continue to stimulate the advocacy of e-health through the publication of a quarterly CMVH *E-Health* bulletin and by the revitalisation of the E-Health Strategic Research Working Group, whose membership is drawn from Defence, Department of Veterans' Affairs, the Centre for Online Health, and from each node of CMVH. This working group meets quarterly.

Where does the CMVH e-health pillar have a continuing role in assisting our stakeholders? The potential list of issues is infinite. The e-health pillar can assist in the development of patient-centric web portals for medical self-education and wellness management; assist in the development of cost-effective telehealth strategies for outreach to medically underserviced communities, or "reach back" to medical services for deployed ADF formations; and provide advice on systems development life cycle management or enterprise architecture for health informatics systems, including research into cutting edge technologies such as clinical decision support tools based on evidence-based medicine or ontology-based semantic interoperability of systems. The e-health pillar has developed a research proposal in gauging the awareness of e-health technologies in the health sector and in testing the application of teledermatology in a deployment environment.

In conclusion, there is a growing realisation within the Australian health community that facets of e-health are reaching a degree of maturity within their development, but without positive direction these ventures will not produce the complete dividend they are capable of achieving in improved health care. The CMVH e-health pillar aspires to be the primary resource to both the ADF and the Department of Veterans' Affairs in the most au-courant knowledge and appreciation of the e-health environment, from which each organisation can apply e-health technologies for the best benefit of serving military personnel and veterans.

Competing interests

None identified.

References

1. Eysenbach G. What is e-health [editorial]? *J Med Internet Res* [Internet] 2001; 3: e20. http://www.jmir.org/2001/2/e20/ (accessed Sep 2007).
2. House of Representatives Standing Committee on Family and Community Affairs. Health on Line. Report into health information management and telemedicine. Canberra: Commonwealth of Australia, 1997. http://www.aph.gov.au/house/committee/fca/tmreport.pdf (accessed Sep 2007).
3. John Mitchell and Associates. The uneven diffusion of telemedicine services in Australia. TeleMed 98, the Sixth International Conference on Telemedicine and Telecare, Royal Society of Medicine, London, UK, 25–26 Nov 1998. http://www.jma.com.au/unevendiffusion.htm (accessed Sep 2007).
4. Gladwell M. The tipping point, how little things can make a big difference. London: Abacus Publishers, 2000: 9.
5. Linkous J. ATA ninth annual meeting summary. *Telemed J E Health* 2004; 10: 410-412.
6. Centre for Military and Veterans' Health. Annual report 2005. Brisbane: CMVH, 2005. http://www.uq.edu.au/cmvh/index.html?page=63605 (accessed Sep 2007).