



## **Electronic Medical Consultation: A New Zealand Perspective**

C. Brebner  
R. Jones  
J. Krisjanous  
W. Marshall  
G. Parry  
A. Holt

---

**The Information Science  
Discussion Paper Series**

Number 2000/14  
October 2000  
ISSN 1172-6024

## University of Otago

### Department of Information Science

The Department of Information Science is one of six departments that make up the School of Business at the University of Otago. The department offers courses of study leading to a major in Information Science within the BCom, BA and BSc degrees. In addition to undergraduate teaching, the department is also strongly involved in post-graduate research programmes leading to MCom, MA, MSc and PhD degrees. Research projects in spatial information processing, connectionist-based information systems, software engineering and software development, information engineering and database, software metrics, distributed information systems, multimedia information systems and information systems security are particularly well supported.

The views expressed in this paper are not necessarily those of the department as a whole. The accuracy of the information presented in this paper is the sole responsibility of the authors.

### Copyright

Copyright remains with the authors. Permission to copy for research or teaching purposes is granted on the condition that the authors and the Series are given due acknowledgment. Reproduction in any form for purposes other than research or teaching is forbidden unless prior written permission has been obtained from the authors.

### Correspondence

This paper represents work to date and may not necessarily form the basis for the authors' final conclusions relating to this topic. It is likely, however, that the paper will appear in some form in a journal or in conference proceedings in the near future. The authors would be pleased to receive correspondence in connection with any of the issues raised in this paper, or for subsequent publication details. Please write directly to the authors at the address provided below. (Details of final journal/conference publication venues for these papers are also provided on the Department's publications web pages: <http://www.otago.ac.nz/informationscience/pubs/publications.htm>). Any other correspondence concerning the Series should be sent to the DPS Coordinator.

Department of Information Science  
University of Otago  
P O Box 56  
Dunedin  
NEW ZEALAND

Fax: +64 3 479 8311

email: [dps@infoscience.otago.ac.nz](mailto:dps@infoscience.otago.ac.nz)

www: <http://www.otago.ac.nz/informationscience/>

*Electronic medical consultation: a New Zealand perspective*

C. Brebner, R. Jones, J. Krisjanous, W. Marshall, G. Parry and A. Holt

Corresponding authors

Alec Holt [aholt@infoscience.otago.ac.nz](mailto:aholt@infoscience.otago.ac.nz)

Department of Information Science, University of Otago, Dunedin, New Zealand

and

Jayne Krisjanous [Jayne.Krisjanous@vuw.ac.nz](mailto:Jayne.Krisjanous@vuw.ac.nz)

Marketing Department, University of Victoria of Wellington, New Zealand.

## ***Abstract***

Electronic medical consultation is available worldwide through access to the World Wide Web (WWW). This article outlines a research study on the adoption of electronic medical consultation as a means of health delivery. It focuses on the delivery of healthcare specifically for New Zealanders, by New Zealanders. It is acknowledged that the WWW is a global market place and it is therefore difficult to identify New Zealanders' use of such a global market, but we have attempted to provide a New Zealand perspective on electronic medical consultation.

Key words – Electronic medical consultation, on-line health, New Zealand.

## ***Introduction***

Electronic medical consultation as a means of health delivery is available worldwide. While only in its infancy in New Zealand, it is likely to gain momentum and acceptance, and will impact on both the health deliverer and consumer.

Adoption of electronic consultation has the capacity to radically change the environment of health care. Emergence of new business models and social impacts are just two of the areas where there could be significant change.

As technology is embraced by commercial, health and other interests, we see law and governance left struggling to keep up with the changes. Will the gap between the “haves” and “have-nots” widen or close? Has a beast been unleashed, or are we embarking into a brave new world where anyone can access the health information they need, regardless of socio-economic status, race or geographic situation?

We discuss these questions with an emphasis on the New Zealand scene.

## ***Background***

Traditionally, patients and health providers have interacted face-to-face. The arrival of the telephone revolutionised communication yet, it did not significantly alter the way health providers and patients interacted. The introduction of the Internet into the public arena throughout the 1990's has paved the way for significant advances in communication and information exchange in health. The facility of e-mail, via the Internet, allows transmission of a written message to a targeted receiver quickly and efficiently. This article predicts profound alterations in healthcare infrastructure, providing exciting opportunities at all levels of healthcare from individual providers to large multinational corporation initiatives.

E-mail consultation has numerous opportunities for patients including, for example, convenience, the ability to access second opinions and the ability to choose from a wide range specialists who might otherwise have been un-accessible. Jones (2000) suggests that although there are many concerns over the rise of "web doctors", numbers are likely to increase.[1]

A study analysing requests for consultations at a free paediatric e-mail consultation service for parents concluded that:

- Parents would rather use e-mail than face a "harassed" doctor for further explanations,
- Parents were not overly concerned about posting personal details that may not be secure.

The authors concluded that e-mail was a legitimate form for patients to receive disease-specific information in a timely manner [2].

Apparently, many patients find it difficult to discuss embarrassing or "taboo" subjects with their doctors. Howe (1997) reports that this anonymous, faceless form of consultation can be at once personalised and anonymous [3].

In New Zealand, Dr Mulholland, a Taranaki General Practitioner, operates a commercial e-health service called *doctorglobal* that is reported to be outstandingly successful [4]. This type of enterprise is gaining the attention of professional medical associations who believe that some standards and protocols should be set [5]. Conversely, commenting on the launch of *doctorglobal*, Dr Wiles, chairman of the New Zealand College of General Practitioners, described e-mail consultation as “dangerous nonsense” [4]. However, there are publicly funded initiatives in New Zealand taking advantage of the possibilities offered by e-health include: [6]

- The Waikato Tele-dermatology,
- The Waitemata Tele-psychiatry,
- The South Island Tele-medicine Project,
- The Christchurch Tele-medicine Service and
- The New Zealand Tele-paediatric Service.

In researching this article it seems that the positions about the future impact and appropriateness of tele-medicine is polarised. At one pole are the "tele-evangelists" who think tele-medicine will lead to a more patient-focussed model. At the other pole are the “tele-luddites” who think that tele-medicine introduces technology that complicates an already complex healthcare environment and will always come second to face-to-face interactions [7].

### ***Social Implications***

The arrival of e-commerce has caught the health sector unprepared and without existing convention. The speed of in the adoption of electronic medical consultation by innovators has proceeded ahead of the formalisation of any frameworks or guidelines. This has provided a developmental environment relatively unfettered by any of the standards usually applied to a new form of treatment or service.

It is likely that protocols and guidelines will evolve as emerging trends and patterns become more obvious or “pressing”. However, due to a significant gap in the

literature (particularly empirical work) related to social impact, predictions put forward remain as speculation.

There are several relevant potential social effects of e-health, including issues related to equity, consumerism and altered relationships.

### *Equity*

Most national health systems should develop equity policies for electronic medical consultation. While Internet connections are very accessible in New Zealand, computing resources should be made available to the consumer too ensure equity. The profile of the Internet-enabled consumer is significantly skewed to higher socio-economic and better-educated segments [8, 9]. Therefore, patient initiated e-mail consultation may have entry barriers. As well as access to resources, the user must have adequate language, literacy and technical knowledge. This gives several groups, such as, ethnic minorities, the elderly, poor and those with literacy problems a potential equity disadvantage with regard to electronic healthcare options. Some of these may be within. Eysenbach who discusses a potential widening gap between the privileged “Internet-able” and underprivileged populations, who will not be able to participate in Internet-distributed healthcare highlights this [10]. Electronic consultation, however, can also offer significant benefit to some of those arguably disadvantaged in traditional models of healthcare. Tele-medicine, for example, supplied to rural areas could dramatically reduce costs incurred in transfer to specialist care, whilst improving the speed of access (ibid).

Health reforms have resulted in the closure of many regions’ hospitals. Consequently patients may be faced with increasing difficulty in accessing healthcare. Along with this trend, rural New Zealand faces the loss of medical personnel. The Ministry of Health telephone pilot serving parts of the East Coast District of the North island is a pioneer service aimed to address some of these issues and if successful, may well pave the way for the formation of services utilising more sophisticated technology.

Public policy will eventually need to address these issues for the longer term, particularly as public health systems move toward greater use of e-health initiatives. This may mean the eventual supply of resources to selected individuals or groups -

such as the provision of community Internet kiosks or centres. Or make provision as Mulholland suggests through a contact person such as a community nurse, who has access to the internet [4].

### ***Consumerism***

Information technology gives the patient access to a wealth of knowledge and information[11]. An informed patient is capable of participating more actively in health care decisions. This may mean, however, that providers feel faced with more aggressive and demanding patients, who require more time and explanation [12],[5]. Meeting these needs may be difficult within the usual length of commentary supplied in e-mailed responses. Attaching additional information as an accompanying file or document may also be time-consuming to compile and find.

E-mail consultation services may be designed for patients that have an established relationship with a provider, or alternatively, offered as a means of attracting business. Egger, suggests that patients who indicated access to their doctor by e-mail was important to them, then the doctor would consider introducing e-mail to their practices [13]. Feasibly then, offering this service may give future competitive advantage to a health practice.

The advent of the Internet has opened new opportunities for financial gain. In the space of only a few years there has been a burgeoning number of both small and large e-health providers responding to the demands of a new wave of consumer-driven health-care seekers. It is now possible for healthcare suppliers to create revenue unbounded by physical aspects, or even offer niche services on a global basis.

### ***Provider-patient relationships***

The extent to which consultation over the Internet will change the patient-provider relationship is unclear. Stevens, compares the social impact of the Industrial Revolution with that of information technology [14]. Just as the Industrial Revolution ultimately re-ordered traditional relationships, such as how children related to parents or men to women, so it is feasible that the Internet may radically redefine traditional

models. It seems likely that evolution of styles and frameworks will be a response to the many aspects that communication technology brings to the context.

Historically, a patient base would comprise of those who lived or worked near a health practice. The Internet now provides the opportunity for a healthcare seeker to decide where to get information. This may be from a provider far from the patient's locality. A patient may even approach a provider from a different country who is considered a leading expert within a particular field [15].

The adoption of e-mail consultation is by no means the only factor that will influence how patients and practitioners interact in the future. There are other forces that will impact on this interaction including:

- the vast array of information available through websites,
- the increasing financial imperatives for cost constraint and
- the new generations of software and hardware that enable increasingly sophisticated systems of interaction, for example, SendTalk, PowerTalk and streaming video through NetMeeting.

Entering into e-mail consultation with an unknown online provider means the patients take on more responsibility for their treatment. Without the usual tangible evidence that bricks and mortar supply, patients will potentially be exposed to more risk and will have to invest extra time and effort researching questions to ask providers, assessing quality of responses and co-ordinating their own healthcare [16]. There is also significant risk to patients of "surfing" providers and using advice in a piecemeal fashion. Currently it seems unlikely that a provider would happily become involved where multiple consultation and treatment trial is being undertaken, but in the future this might be normal practice.

## *Legal and Ethical Issues*

At present in New Zealand there is no special legislation covering electronic consultation. E-commerce laws are currently being finalised. These will be of a general nature and will need to be adapted to cover e-health [17].

The Health Act (1996) and Privacy Act (1993) are deemed to cover this area [18, 19]. The Privacy Act is intended to promote and protect individual privacy in accordance with the OECD Guidelines (1980). Relevant to the health sector is The Health Information Privacy Code (1994) (<http://www.privacy.org.nz/comply/hinfopc.html>).

Which contains twelve rules regarding use and disclosure of health information. The theme of the code is patient empowerment and informed consent. Four rules of relevance to electronic consultation are Rule 3, Rule 5, Rule 10 and Rule 11.

Rule 3 requires that the consumer be fully informed about the fact that personal information is being collected. This is an area that appears to be poorly adhered to. Although no survey has been conducted to ascertain the level of compliance with the Privacy Act by New Zealand based websites, an examination of over 1400 websites by the US Federal Trade Commission found that although more than 85% of sites collected personal information from consumers, only 2% provided a comprehensive privacy policy [20]. The Privacy Commissioner has warned that he is prepared to act on any breach of privacy under this code [21] although he would seem to prefer self regulation be introduced [22]. This despite the US Federal Trade Commission concluding that "industry's efforts to encourage voluntary adoption of the most basic fair information practice ... have fallen far short of what is needed to protect consumers" [20].

Rule 5 deals with security and storage, and therefore has particular relevance to electronic information. Some of the areas covered are:

- Password protection,
- Screensavers,

- Access control,
- Secure intranets.

Rules 10 and 11 limit health information use and disclosure. If browsing was considered 'use' of information then there are interesting implications. The Privacy Commissioner has deemed that to constitute 'use', data needs to be retrieved and some action taken.

Internationally, there has been the development of several non-profit organizations that aim to ensure ethical use of medical information on the Internet. These include the Internet Healthcare Coalition (<http://www.ihc.net/>) and the Health On the Net Foundation (<http://www.hon.ch/>). The former, via the e-Health Ethics Summit, has drafted the International e-Health Code of Ethics, whilst the Health on the Net Foundation has elaborated a Code of Conduct for medical and health Websites. These codes cover issues of quality, privacy, informed consent and confidentiality, as well as advertising, editorial policy, sponsorship and authorship. The vehicle for implementing the code has yet to be decided although various labelling techniques are under development using both cyber metrics and human ratings systems [23],[24].

## ***Conclusion***

The speed of technological development and the eventual public acceptance of it are difficult to wage. Generally development and acceptance increases daily. Some will embrace the advances, others will be shy and others will disapprove. Electronic consultation and e-health are no different in this respect. It seems the global reach of the electronic arm will always ensure a market. What remains variable, for e-health as for health care in general, are the issues of quality, accessibility and confidentiality. In recent years these issues have been addressed in depth by health and legal organisations. The results provide a good existing framework on which to build and it is here where the challenges lie for the next decade. Specific and special aspects of the doctor-patient relationship and confidentiality exist for e-health. Some we are

aware of, others we will encounter as we go. This is the nature of the internet in that it is dynamic. Control needs to be flexible and manageable otherwise it is open to problems. New Zealand is known for early acceptance of new technologies and our research reflects this. Dr Global (<http://www.doctorglobal.com/>) is here - we expect more will follow. We are not going to see the demise of face-to-face consultations. There is a place for both services. Our challenge is to help make it work for the benefit of all.

### **URLs Accessed**

#### New Zealand Perspectives

- <http://www.doctorglobal.com/>
- [http://www.enigma.co.nz/hcro\\_articles/9810/vol2no12\\_001.htm](http://www.enigma.co.nz/hcro_articles/9810/vol2no12_001.htm)
- <http://www.nzhealth.co.nz/nzdoc/archives.html>
- <http://www.cnn.com/2000/TECH/computing/04/25/nz.doctor.idg/index.html>
- <http://www.xtra.co.nz/homepage/health/main/0,1439,Health%3AAsk+the+Expert%3A,00.html>

#### Others Perspectives

- <http://www.telemedtoday.com/>
- <http://www.telehealthmag.com/>
- <http://www.yi.com/mednet99/index.htm>
- <http://www.askyourdoctoronthenet.com/>
- <http://www.healthfile.co.uk/>
- <http://www.hon.ch/Conduct.html>
- <http://www.mdweb.com/>
- <http://www.la-doctor.com/main-directory.htm>
- <http://www.marketadoctor.com/index.html>
- <http://www.retina-doctor.com/namequery.htm>
- <http://207.198.253.192/default.htm>
- <http://www.ppdnet.com/content/netdisc/doctorcom.htm>
- <http://www.1-800-doctors.com/index.cfm>
- <http://www.e-med.co.uk/home.html>
- <http://www.dis.port.ac.uk/ndtm/>
- <http://www.ihealthcoalition.org/community/join.html>
- <http://www.atmeda.org/news/testimony04112000.htm>
- <http://www.cyberdialogue.com/resource/press/releases/1999/11-03-cch-ehealth.html>
- [http://www.dc.com/deloitte\\_research/featured/e-health/e-health.pdf](http://www.dc.com/deloitte_research/featured/e-health/e-health.pdf)
- <http://tie.telemed.org/legal/>
- <http://telehealth.net/>
- [http://www.doctorgeorge.com/consultation\\_room/index.htm](http://www.doctorgeorge.com/consultation_room/index.htm)
- <http://www.doctors.net.uk/>
- [http://www.nap.edu/html/networking\\_health/ch2.html](http://www.nap.edu/html/networking_health/ch2.html)
- <http://intel.com/intel/e-health/whatishealth.htm>
- <http://intel.com/intel/e-health/tips.htm>
- <http://intel.com/pressroom/kits/events/9810ihd.htm>
- [http://www.noie.gov.au/projects/e-commerce/ehealth/rise\\_of\\_ehealth/ehealth3.htm](http://www.noie.gov.au/projects/e-commerce/ehealth/rise_of_ehealth/ehealth3.htm)
- <http://psychological.com/>
- <http://www.dr-ann.org/>

## References

1. Jones, R., *Developments in consumer health informatics in the next decade*. Health Libraries Review, 2000. **17**: p. 26-31.
2. Borowitz, S. and J. Wyatt, *The origin, content and workload of e-mail consultations*. Journal of the American Medical Association, 1998. **280**(15): p. 1321-1324.
3. Howe, L., *Patients on the Internet: A new force in healthcare community building*. 1997, Medicine on the Net, <http://www.mednet-i.com>.
4. Coddington, *Dot.com.docs*, in *North & South*. 2000. p. 64-67.
5. Kenneth D Mandl, M., MPH, M. Isaac S Kohane, PhD, and P. Allan M Brandt, *Electronic Patient-Physician Communication: Problems and Promise*. Annals of Internal Medicine, 1998. **129**: p. 495-500.
6. *TELEHEALTH APPLICATIONS – NEW ZEALAND*. 2000, Australian New Zealand Telehealth Committee, <http://www.telehealth.org.au/>.
7. Milstein, R., *Telemedicine: Creating virtual certainty out of remote possibilities*. 1999, Department of Human Services (State of Victoria).
8. Katz, J. and P. Aspden, *Motivations for and barriers to Internet usage: results of a national public opinion survey*. 1996, <http://www.markle.org>.
9. Hoffman, D.L. and T.P. Novak, *Bridging the racial divide on the Internet*. Science, 1998. **280**: p. 390.
10. Eysenbach, G., E. Ryoung Sa, and T. Diepgen, *Shopping around the Internet today and tomorrow: towards the millennium of cybermedicine*. British Medical Journal, 1999. **319**: p. 1294.
11. Jadad, A. and A. Gagliardi, *Rating health information on the Internet: navigating to knowledge or to Babel*. Journal of the American Medical Association, 1998. **279**(8): p. 611-616.
12. McCormick, L., *Hey doc, I found this on the Internet*. Medical Economics, 2000. **77**(15): p. 6-8.
13. Egger, E., *Market memo: how technology is changing the health care system*. Health care strategic management, 2000. **18**(1).
14. Stevens, L., *Changing relationships: how the web is altering traditional healthcare models*, in *Medicine on the Net*, [http://www.mednet\\_i.com/](http://www.mednet_i.com/). 2000. p. 6-12.
15. Coile, R., *E-health: Reinventing healthcare in the information age*. Journal of Healthcare Management, 2000. **45**(3): p. 206-210.
16. MacStravic, S., *The downside of patient empowerment*. Health Forum Journal, 2000. **43**(1): p. 30-31.
17. *Electronic Commerce Part Two: A basic legal framework.*, New Zealand Law Commission.
18. Taylor, J. and C.V. Leuven, *Electronic databases e-communication and privacy in the health sector*. Health Manager. **7**(2).
19. Sloan, B., *A practical guide to Health Information and Privacy*. 1999, New Zealand Privacy Commission.
20. Robert Pitofsky and et al, *Federal Trade Commission, Privacy Online: A Report to Congress (June 1998)*. 1998.
21. Sloan, B., *Privacy Protection: A Key to Electronic Commerce. Paper by the Privacy Commissioner, Bruce Sloan, on the occasion of the APEC Electronic Commerce Steering Group Meeting, Auckland*. 1999, NZ Privacy Commission.
22. Sloan, B., *Killing the Goose? Information Privacy Issues on the Web. Notes for an address by the Privacy Commissioner, Bruce Slane, to the Untangling Web Law Conference*. 2000, Privacy Commission.
23. Stephenson, J., *National Library of Medicine to Help Consumers Use Online Health Data*. JAMA, 2000. **283**(13).
24. Eysenbach, G. and T. Diepgen, *Towards quality management of medical information on the internet: evaluation, labelling, and filtering of Information*. British Medical Journal, 1998. **317**(28).