The e health revolution—easier said than done

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Executive summary

E health is seen by some as possibly the most important revolution in healthcare since the advent of modern medicine. E health makes use of developments in computer technology and telecommunications to deliver health information and services more effectively and efficiently. As such, it requires a different and radical way of thinking about the delivery of health services.

Since the 1990s, the potential of e health has been discussed globally, but it remains a work in progress everywhere, albeit that some countries have had more success instigating measures than others. There are many reasons for the slow adoption of e health. These include: the fragmented funding and governance of healthcare services, resistance of professions to changes in existing models of care, a lack of rigorous research evidence on the benefits that might drive change and a reluctance of politicians to be seen to be tampering with a politically-sensitive service. There may also be concerns about the costs and complexities associated with e health implementation and the need to resolve issues about how it will affect practitioners and consumers alike.

This research paper does not attempt to discuss all the aspects of e health in depth, for the subject is extensive, both technically and in policy terms. The paper provides instead an introductory overview of some of e health’s critical aspects. In so doing, it looks briefly at certain aspects of the overseas experience of e health policy development and considers some practical application case studies. For the most part, however, the paper concentrates on the evolution of e health policy in Australia.

For Australia, e health holds great potential in many areas, such as resolving the tyranny of distance or reducing the costs associated with caring for an ageing population. This notwithstanding, policy makers have discovered that there are many obstacles to developing national e health policies and programs. Some of these have been resolved; others persist; still others are only just beginning to emerge. While the paper discusses most of these in a broad context, it also focuses on particular issues, such as concerns about how e health will affect patient privacy.

The paper concludes that e health does indeed have great potential, but harnessing that potential has, and continues to require finding and negotiating a delicate balance between many interests and issues.
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Introduction

The concept of e health can be traced to an original notion that it is possible to deliver medical care to people who are located some distance from health practitioners. This concept, as one source points out, is far older than the technology which now underpins it. For centuries, people travelled distances to consult with healers on behalf of those who were too ill to make such journeys themselves, and to bring back advice on treatment. Similarly, military forces throughout the centuries developed messaging systems to relay medical information between battle fields and medical bases. In more recent times, postal and telegram services have been used to transmit medical information, as have telephones and fax machines.

The development of computer technology and its convergence with improvements in telecommunications has provided the means through which the delivery of health services by distance has evolved radically in recent times. In addition, technology has provided new ways to store and disseminate health information. Some claim that the developments which have resulted, and which can collectively be labelled e health, represent ‘the single-most important revolution in healthcare since the advent of modern medicine, vaccines, or even public health measures like sanitation and clean water’.

This paper does not set out to discuss all the aspects of e health in depth, for as the definition in the following section reveals, the subject is extensive and covers the delivery of health services using technologies, and the workings of those technologies. The paper provides a definition of e health and discusses in brief its components and characteristics. It looks at the early development of e health policy in Australia and discusses in more depth the development of personally controlled e health records within the context of a shared e health record system. While the paper primarily concentrates on the Australian experience of e health, it also discusses e health as an international phenomenon and considers some case studies of e health strategies adopted overseas.

1. Electronic health is written in a number of ways, for example eHealth, ehealth, e-health and e-Health. I have chosen to refer to it in this paper as e health. Note: for the sake of reference accuracy, however, I have retained the original choice of depiction of the term in all quotations and references to publications.
The conclusion is that e health has the potential to revolutionise the delivery of health services in Australia in a number of ways, not least of which can be by helping to overcome the tyranny of distance for people living in the bush and by assisting older Australians to remain independent for longer. Importantly also, e health has the potential to reduce errors in the treatment of patients.

There are, however, barriers to the successful implementation of e health strategies which have proven difficult to overcome. It has been difficult to win the ‘hearts and minds’ of patients because of concerns about the protection of personal privacy for example. Similarly, the full support of practitioners has proven difficult to obtain as the result of perceptions that there is a lack of clear e health direction and excessive bureaucratic influence over the development of e health policy. These types of issues cannot be ignored; they must be overcome to the satisfaction of all before e health will be able to fulfil any promises to deliver greater health efficiencies.

Definition

An investigation of the term e health by Hans Oh and his colleagues in 2005 revealed that it has numerous definitions. These range from short, sharp views to more complicated assessments. The definitions often integrate the obvious themes of health and technology with the goals of overcoming the barriers of distance and location, enhancing care, achieving better quality and portability of health care services and decreasing health costs.

Gunther Eysenbach, writing in the Journal of Internet Medical Research, presents one of the more inclusive definitions of e health:

… 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 [sic] 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.

Definitions from the European Commission (EC) and the World Health Organization (WHO) are more succinct than that proposed by Eysenbach, but well worth noting. The EC definition labels e health as ‘the use of modern information and communication technologies to meet needs of citizens, patients, healthcare professionals, healthcare providers, as well as policy makers’. WHO describes e health as:

... the cost-effective and secure use of information and communications technologies in support of health and health-related fields, including health-care services, health surveillance, health literature, and health education, knowledge and research.9

As these definitions imply, there are a number of components of e health. Some have a higher profile and their benefits are more obvious than others, but it should be stressed that each component is fundamental to the e health revolution. Health informatics for example, is a lesser known element, but it is a behind-the-scenes driver of e health advances. Health informatics involves the collection, analysis and movement of health information and data. It is health informatics which has brought about the automation of many labour-intensive health procedures, thereby saving dollars. It is health informatics which develops and employs technology to transmit medical information, thereby reducing mistaken interpretations and related adverse patient outcomes. Additionally, it is health informatics that is used to observe disease trends and population health outcomes.

Telemedicine is a better known e health component, but one reliant on health informatics for its success, as the scenario in Box 1 below illustrates. Telemedicine:

... systematically applies information technologies to public health practice. Public health informatics employs a wide variety of tools and techniques to reach its goal of preventive health, a practice that telemedicine similarly attains. Telemedicine, like informatics, applies advancements in health technologies to the health care setting. Using such innovations and technologies improves clinical quality, particularly in rural areas.10

Box 1: telemedicine example

Scenario: regional hospital consultation regarding seriously ill baby boy

Local nurse Tess Vawser is using broadband technology to get an urgent online consultation from a specialist in Melbourne who otherwise would be hours away by car.

‘The white cell count has come through as 20 000. Now that is quite high’, she says over the video link-up, with the baby visible to a specialist on his screen.

‘Two hours ago, he had this convulsion witnessed by his dad. Dad’s brought him in. He is, actually was a bit more alert, he is a bit miserable and he is a little bit listless at the moment’.

Based on the symptoms seen and heard down the line, the specialist decides to take no chances.

‘It could be a serious infection. It could be even meningococcal. What you’ll need to do is transfer him down to the children’s hospital fairly urgently’, the specialist replies.11

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Whichever way it is defined and whichever of its components are stressed in discussion, it is clear that e health is seen as the catalyst for a radical new approach to health; an approach which has the potential to change the way health is delivered and the attitudes of those who provide, and benefit from health services. Whether that potential can be realised depends, however, on a myriad of factors. These include the types of technologies adopted, the extent to which patients and practitioners trust those technologies and how successful governments are in managing system reforms.

An international phenomenon

Since the 1990s, e health has come to be seen by most developed countries as central to the provision of current and future high quality, patient-centred care. While e health technologies are not overly apparent in less developed countries, their potential has also been recognised in these states. The WHO Global Observatory for eHealth (GOe) which aims to provide ‘strategic information and guidance on effective practices, policies and standards’ for e health, reports that many less developed countries are embracing e health policy and initiatives.12

This is not to imply that a ‘digital divide’ does not still exist between developed and less developed countries where funding is a major impediment to the progress of e health projects. It has been noted elsewhere that in sub-Saharan Africa, for example, existing regional health strategy documents fail to mention e-health, telehealth, or telemedicine. This is despite the fact that pressing issues such as shortages of health care professionals, greater burden of disease, lack of basic health infrastructure and poorly coordinated disease surveillance could be addressed through e health applications.13

Nevertheless, as WHO points out, many less developed countries have a ‘keen interest’ in adopting e health strategies.14 The reasons for this in many cases mirror aspects of the Australian situation. The tyranny of distance, for instance, needs to be overcome and service provided to people outside major metropolitan centres in Brazil and Nepal just as it does in Australia.

Box 2: mHealth

Low and middle income countries have begun to show considerable interest in mobile health, or mHealth—
the provision of health related services via mobile communications. mHealth capitalises on the considerable
growth in mobile communications in these countries over the past decade to bypass the need for expensive
fixed line telecommunications infrastructure in delivering certain health services.

While developed countries currently make greater use of mHealth, there is the potential for it to make a
significant difference in less developed states.15 Millions of people in less developed countries (and in remote
areas of developed countries) use mobile devices regularly and it is estimated that by 2012 half of all
individuals in these areas will have mobile phones.16

Projects initiated in mHealth throughout the developing world have demonstrated benefits including increased
access to healthcare and health-related information for hard-to-reach populations and expanded access to
medical education and training for health workers. Projects in India and China are among many: in China a
smart phone project self management tool is being developed to help elderly diabetics. In India a project is
underway to enable HIV/AIDS patients to use mobile phones to access tests and medical history reports as well
as nutritional planning, reminders to take medication. The project also provides access to a help line.17

Steady progress: Europe

At present, however, developed countries appear to have made the most progress in implementing
e health systems. In Europe, e health has been a major component of the European Commission’s
eEurope action plan, which was first elaborated upon in 2002.18 This plan set out to ensure the
European Union (EU) fully benefited from the Information Society by creating a digitally literate
Europe.19 In 2004, the Commission also set in place an e health map to develop targeted policy
initiatives aimed at fostering widespread adoption of e health technologies across the EU.

By 2007, countries across the EU had begun the process of implementing national e health
infrastructure to connect all actors in the health sector. Collaboration on developing health records
or basic patient summaries as a first step towards more comprehensive health records appeared to

http://www.who.int/goe/publications/goe_mhealth_web.pdf
16. Vital Wave Consulting, mHealth for development: the opportunity of mobile technology for healthcare in the
developing world, United Nations Foundation and Vodafone Technologoy Partnership, viewed 22 September 2011,
files.org/unf_website/assets/publications/technology/mhealth/mHealth_for_Development_full.pdf
17. Ibid.
18. The European Commission is the executive body of the European Union (EU). It is responsible for proposing
legislation, implementing decisions, upholding EU treaties and the day-to-day running of the Union.
19. The e Europe plan has since been superseded. The most recent iteration is the Digital Agenda plan put in place in
2010. A Digital Agenda for Europe: communication from the Commission to the European Parliament, the Council, the
European Economic and Social Committee and the Committee of the Regions, 26 August 2010, viewed 11 April 2011,
be of interest to many states, although only one country had a fully implemented record—the Czech Republic (see the box below for an explanation).  

**Box 3: Czech Republic e health records system**

The Czech Republic nationwide electronic health record, IZIP, began operation in 2005. The system is used by all healthcare stakeholders, including patients.

Patient electronic health records carry all relevant information about patient contact with healthcare services and include medical practitioner consultation history, dental treatments, laboratory and imaging tests, hospitalisation reports and vaccination history.

Medical practitioners have access to patient electronic records at point of care. Patients have the right to access and consult their own records, but only healthcare professionals can change records. Patients are able to authorise healthcare professionals to view their data. Data security is guaranteed by a password and PIN system for all healthcare professionals. Medical professionals can view only the information they have been authorised to access by patients.

Since 2008, patients are able to view the amount their health insurance fund paid for their treatment.

IZIP is co-funded by the largest health insurer in the Czech Republic and covers about two thirds of the Czech population. In 2009, ten per cent of the population and over one third of all healthcare organisations were connected.

While e health is still a work in progress throughout most of Europe, a study of EU e health activities by Stroetmann et al, published in January 2011 shows that virtually all EU states have begun, or are due to begin the implementation of national systems which will make basic patient data available to all healthcare professionals.

At the same time, the Stroetmann study revealed that national electronic e health records systems are usually not well defined ‘often (implicitly) referring only to a patient summary or basic electronic patient record’ and that only six of the 34 EU members have reached an implementation stage. In contrast, a number of regional electronic health record systems exist, or are in advanced stages of realisation. These include the DIRAYA system in Andalusia in Spain. This system supports integrated healthcare in a region with a population of more than eight million.


23. Ibid.

24. Ibid.
The EU report found that a small number of countries have implemented fully operational national e prescribing systems, but those that exist are restricted to primary care. It appears also that while electronic patient identifiers are considered central in assuring patient safety, their development has been somewhat neglected.\(^25\) While a number of countries have issued cards to be used in an e health context, these are insurance cards rather than cards which carry medical information. Nine countries, however, have a ‘smartcard’ system in place to identify healthcare professionals.\(^26\)

From March to May 2011 consultation took place to develop an updated version of the e health plan for Europe for the period 2012 to 2020.

**A shining example: Denmark**

According to at least one assessment, among countries in the EU, Denmark has the highest public satisfaction with the health care system.\(^27\) Denmark is also seen as a shining example of e health advances. E health implementation dates to 1996 when a series of pilots intended to develop electronic patient records identified the need for common standards and terminology to underpin these records. Since 1996, there have been four Danish e health strategies. The specific goal of each of these strategies has been different, but according to a review of the Danish system, the core element has remained the same—providing value to patients and professionals in the healthcare sector.\(^28\) Importantly, each strategy has built incrementally on the achievements of its predecessor.

Under the Danish health system the Ministry of Health is responsible for overall policy and the coordination of e health. At the same time, two important organisations have been established to provide national e health infrastructure. The first, Sundhed.dk is a centralised health care data network to which 98 per cent of primary care medical practitioners, all hospital physicians and all pharmacists have access.

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25. Ibid.
26. The British Medical Journal notes that the term ‘smart’ is used to distinguish these cards from ‘dumb’ cards, such as credit cards. The data stored in electronic memory on smart cards are secured against access unless an enabling code (typically, a PIN held by the card owner) is used in an authorised reader system. Smart cards may be configured to reveal only some data depending on the classification of a user (for example, different data may be revealed to a psychiatrist, a paramedic, a general practitioner or an obstetrician). R Neame, ‘Smart cards—the key to trustworthy health information systems’, British Medical Journal, vol. 314, no. 7080, February 1997, viewed 24 June 2011, http://www.bmj.com/cgi/content/full/314/7080/573. See also Box 5 later in this paper.
This national e health portal, launched in 2005 provides a single access point to healthcare services for citizens and health professionals. Using a digital signature, Danes can log on to a personal web space to book appointments with medical practitioners, order medications and renew prescriptions, review medication records and health data and communicate with healthcare authorities. E mail communication between patients and primary care medical practitioners is reportedly widespread.29 Health professionals can also log on to the portal which provides a framework for communication about specific patients. In addition, healthcare professionals can access excerpts of records from hospitals. Through the use of security certificates, they can also access other information, such as laboratory results and data from electronic patient records.

MedCom, the second Danish national e health organisation, develops, tests, distributes and ensures the quality assurance of electronic communication and information in the healthcare sector. Through MedCom, over five million clinical messages are transferred monthly. One of the most significant MedCom innovations has been the ‘one-letter solution’. This means that one electronic form is used for all types of letters to and from primary care physicians across over 5000 health institutions and 50 different technology vendor systems (see more information on e health in primary care in the diagram below).30

MedCom is currently working on a national telemedicine program. The goal of the strategy has been to manage the problem of health workforce shortages through the development of video conferencing, home monitoring and image transfer techniques.31

In 1966, every Danish citizen was assigned a unique national person identification number. This is not only used in health, but in a number of areas. When the identifier was first introduced there were concerns about security and privacy, but over time these have abated. A number of laws are in place in the Danish system to protect patients’ rights and patients are able to prevent the gathering or communication of their health information for use in their treatment. Patients must provide consent for the transmission of their health data for purposes other than treatment.

It has been argued that Denmark had several inherent advantages which have contributed to its e health success.

It is a small country (population: 5 million) with an IT-savvy citizenry. Trust in the federal government is high. Most helpfully, the country’s healthcare is run by the public sector. When the country’s health service established a National Patient Registry in 1977—a system that required doctors to file patient visit details to the government health service in order to be reimbursed for their work—the country unknowingly laid the

30. Ibid.
groundwork for electronic health records by putting in place centralized record keeping. 32

Box 4: Danish Primary care practices: advanced information technology capacity

<table>
<thead>
<tr>
<th>Ninety-eight per cent of primary care practices (PCPs) use full clinical functionality of Electronic Medical Records</th>
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<tbody>
<tr>
<td>Danish PCPs have the capacity electronically to:</td>
</tr>
<tr>
<td>– manage medication lists</td>
</tr>
<tr>
<td>– generate problem lists</td>
</tr>
<tr>
<td>– enter clinical progress notes</td>
</tr>
<tr>
<td>– perform clinical messaging</td>
</tr>
<tr>
<td>– issue automatic preventive reminders</td>
</tr>
<tr>
<td>– access external decision support programs</td>
</tr>
<tr>
<td>– generate electronic prescriptions and send them to pharmacies</td>
</tr>
<tr>
<td>All out-of-hours services use the same computer system as PCPs, a requisite for getting reimbursed.</td>
</tr>
<tr>
<td>PCPs and specialists are paid a small fee for e mail communications with their patients.</td>
</tr>
<tr>
<td>Danish PCPs use over 60 standardised messages to electronically transmit and receive clinical data in the Danish health care sector.</td>
</tr>
<tr>
<td>A unique patient identification number is ascribed to each Danish citizen and used across several jurisdictions, including health and taxation.</td>
</tr>
</tbody>
</table>

Source: Protti and Johansen 33

It could be added that a number of other factors appear to have contributed to the success of e health in Denmark. These include that the Danish Government placed a high priority on engaging medical practitioners in determining the content of e health records and setting standards for data. The Government also provided, and paid for technical support for primary care practitioners to encourage widespread adoption of electronic records. 34 As will be noted later in this paper, Australia has chosen at this time not to emulate the Danish example in these areas, an omission that may have consequences for the successful adoption of its e health strategy.

Verging on disaster? The United Kingdom

E health progress in the United Kingdom illustrates some of the many difficulties that can be encountered in realising e health initiatives.

The gradual implementation of a Personal Demographic Service (PDS), which comprises demographic information, such as name, address, date of birth and National Health Service (NHS)

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32. This is the view of Kenneth Ahrensberg from the body responsible for the development of electronic health records quoted in E Harrell, ‘In Denmark’s electronic health records program, a lesson for the U.S.’ Time, 16 April 2009, viewed 15 August 2011, http://www.time.com/time/health/article/0,8599,1891209,00.html
33. Ibid.
34. Protti and Johansen, Widespread adoption of information technology, op. cit.
number, commenced across Britain in July 2004. The PDS does not hold any clinical health information or sensitive data, such as ethnicity or religion, but it has been long considered the first step towards instigating electronic health care records for every patient registered with the NHS and replacing NHS regional databases.

Authorised healthcare professionals are able access the PDS through a health smartcard. Registration and authentication processes identify actions taken by the healthcare professionals, and there are limits on information available as well as privacy controls to check who has accessed or amended patient records. The level of access to patient records is determined by the role of each health professional. Therefore, a consultant is able to view more information than a medical receptionist. Patients are able to apply to see who has accessed their information and for what purpose. There is provision for disciplinary action to be taken for unauthorised access to patient information and this can include criminal charges under the (United Kingdom) Data Protection Act 1984 or civil action for breaches of confidentiality. Patients have been told that in the future they will be able to check PDS details through a secure NHS web service.

In addition, an implicit consent Summary Care Record (SCR) system is being put in place in England. The implicit model was chosen because it was thought that it would be more likely to benefit more vulnerable patients. An SCR contains key information—details of allergies, medicines being taken and whether a holder has had adverse reactions to medication. It can provide an electronic summary of health data to authorised healthcare over a secure Internet connection. This information has been initially drawn from general practitioner-held electronic records.

These best-laid implementation plans for e health innovations have, however, hit a number of snags. In mid 2010 for example, uploading of records to the SCR was suspended after medical practitioners expressed concern that the process was not giving general practitioners time to assist their patients make an informed choice about whether to consent to the creation of a record, or to ‘opt out’. As a result, a public information campaign was instigated to inform patients, and the upload of records recommenced. In mid May 2011, over 6.2 million SCR records had been created and just over one per cent of patients provided with information about the system had chosen to opt out.

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35. For more information see the United Kingdom, Department of Health web page on the Personal Demographic Service, viewed 17 May 2011, http://www.connectingforhealth.nhs.uk/systemsandservices/demographics/pds
36. This means it is assumed that patients will consent to the creation of a record. Patients who do not want a record must convey their refusal to the health authority—that is, they must opt out.
39. The figure was 1.16 per cent of patients given information through the public information program. NHS Key statistics page, viewed 17 May 2011, http://www.connectingforhealth.nhs.uk/systemsandservices/scr/staff/aboutscr/benefits/scrkey
In addition, HealthSpace, an Internet-accessible personal organiser which allows people to enter health data (such as blood pressure) and to plan health appointments, has not proven popular. From 2007 to 2010, while more than 2.4 million people across the United Kingdom were invited to open a HealthSpace record, in October 2010 only 173 000 had done so.\textsuperscript{40}

One academic assessment of the SCR and HealthSpace found that, as could be expected, personal experience influenced people’s thinking. Those with serious and complex health problems thought positively about the SCR, while those who had experienced health system negatives, such as an incorrect medical diagnosis, viewed it negatively.\textsuperscript{41} Many people described HealthSpace, as ‘pointless’, or ‘irrelevant’, although a small but important minority saw a potential benefit in keeping track of their own or a relative’s chronic illness.\textsuperscript{42} A recent report has suggested there was limited evidence to support the claims that better, safer more efficient and equitable care and greater patient satisfaction, as well as reductions in onward referrals would result from SCRs and HealthSpace.\textsuperscript{43}

In addition, a report by the British National Audit Office in May 2011 considered that monies spent in Britain on e health and associated reform did not represent value for money.\textsuperscript{44} The Audit Office argued that changes over time in the way programs have been delivered and reductions in the number of systems to be delivered have meant that the desired outcome of creating an electronic health record for every NHS patient will not be achieved. These changes were due to a number of factors, including the ethical issues relating to the SCR, but they have also involved contractual defaults and non-completion of software development. The Audit Office considered there was a compelling case for an already-announced review ‘to determine what should happen now to safeguard against further loss of public value’.\textsuperscript{45}

It appears that significant e health progress in Britain may therefore have stalled.


\textsuperscript{42} Ibid.

\textsuperscript{43} T Greenhalgh, K Stramer, T Bratan, E Byrne, J Russell, S Hinder and H Potts, \textit{The devil’s in the detail: final report of the independent evaluation of the Summary Care Record and HealthSpace programmes}, May 2010, viewed 11 April 2011, https://www.ucl.ac.uk/news/scriefullreport.pdf


\textsuperscript{45} Ibid.
Learning from, or revisiting mistakes? The United States

Although the development of health informatics, (as noted earlier in this paper, one crucial component of e health), began in the United States in the 1960s, the country has lagged behind many others in advancing its e health system. In contrast with Europe for example, there was no national e health plan in place in the United States until 2009. At that time, the country appeared to take a giant leap forward in promoting e health with the (United States) Information Technology for Economic and Clinical Health Act (the HITECH Act) introduced as part of an economic stimulus package passed by the United States Congress. The HITECH Act aims to induce medical practitioners and hospitals to adopt electronic record-keeping and ordering systems by investing (US)$20 billion in health technology infrastructure and Medicare and Medicaid incentive payments.46

Under special e health programs, medical practitioners are eligible for between (US)$44 000 and (US)$63 750, and hospitals for several million dollars, if they are able to demonstrate that they are ‘meaningfully’ using health information technology.47 Incentives commenced in 2011 but they will be phased out over time. From 2015, financial penalties will be introduced for those practitioners who have not converted to an electronic health record system.48

The American incentives appear to have been developed in response to significant concerns about the costs medical practitioners faced in implementing e health. As a 2006 survey revealed, 80 per cent of primary care medical practitioners surveyed identified lack of government financial support for information technology applications as a major barrier preventing them from adopting e health initiatives.49 Government investment in the HITECH incentive scheme is likely to produce savings over a 15-year period in the hospitals system estimated to be as much as (US)$371 billion, and savings from the adoption of electronic records by medical practitioners to be as much as (US)$142

46. Medicaid is the health means tested program under which health services are provided to people and families with low incomes and resources. The program is jointly funded by the United States’ federal and state governments, but it is managed by the states. Medicare provides health insurance cover to people who are aged over 65 years old, people under 65 years who are permanently physically disabled and to others who meet other certain other criteria. Medicare is administered by the federal government.

47. These amounts are available over five ($44 000) and six years ($63 750). Hospital payments are based on a number of factors, but begin with a $2 million base payment. ‘Meaningful use’ according to the legislation generally requires the use of a certified electronic health record technology that enables electronic prescribing, electronic exchange of health information and the ability to submit data on clinical quality and other measures. ‘Electronic health records at a glance’, Fact sheet 13 July 2010, Centers [sic] for Medicare and Medicaid Services website, viewed 11 April 2011, http://www.cms.gov/apps/media/press/factsheet.asp?Counter=3788&intNumPerPage=10&checkDate=&checkKey=&srchType=1&numDays=3500&srchOpt=0&srchData=&keywordType=All&chkNewsType=6&intPage=&showAll=&pYear=&year=&desc=&cboOrder=date


It is expected that these will result from improvements such as reducing the length of hospital stay, time spent on administration by health professionals, the amount of drug usage in hospitals and drug and radiology usage in outpatient settings.\textsuperscript{51}

It can be argued that privacy concerns have been central to delays in the uptake of e health in the United States. This may be because comprehensive privacy laws that exist elsewhere are not a feature of United States’ society. Indeed, as one commentator notes, there is a confusing and sometimes conflicting array of federal and state laws relating to data collection. There is also a large number of private companies which collect, analyse and sell consumer information.\textsuperscript{52}

While the Medicare and Medicaid incentives are firmly in place, disquiet about the security of electronic health information resurfaced for some Americans with the release of top secret documents through Wikileaks. Some medical practitioners have labelled electronic records as ‘Wikileaks on steroids’, and many privacy organisations have concurred. Both groups are worried that once information is in any kind of electronic format then ‘it is very easy to take it, to access it, to share it, to download it’.\textsuperscript{53}

Despite this unease, there have been standards around the disclosure and use of patient information in place since 1996 under the federal \textit{Standards for Privacy of Individually Identifiable Health Information} (the ‘Privacy Rule’).\textsuperscript{54} Under these standards, covered entities—health institutions, provider and health care plans—are required to ensure information is ‘properly protected while allowing the flow of health information needed to provide and promote high quality health care and to protect the public’s health and well being’.\textsuperscript{55}

Moreover, concerns about privacy are not shared by all other health practitioners, some of whom who are enthusiastic about the positive effect the HITECH Act has already had in elevating patient consciousness about e health and accelerating adoption of e health technologies.\textsuperscript{56}

It remains to be seen if the programs now in place to accelerate the transition to an e health environment in America will deliver as promised. One analysis concedes the differences between the American and British health systems, but concludes nonetheless, that both projects bear ‘uncanny’

\textsuperscript{51} Ibid.
\textsuperscript{52} Anderson, ‘Social, ethical and legal barriers to e-health’ op. cit.
\textsuperscript{54} (United States) \textit{Health Insurance Portability and Accountability Act of 1996}, viewed 27 June 2011, \url{http://aspe.hhs.gov/admsimp/pl104191.htm}
\textsuperscript{55} ‘Summary of the HIPAA Privacy Rule’, United States Department of Health and Human Services website, viewed 27 June 2011, \url{http://www.hhs.gov/ocr/privacy/hipaa/understanding/summary/index.html}
\textsuperscript{56} J Halama, ‘HITECH Act moves healthcare IT industry forward’, Medcity website, 13 June 2011, viewed 27 June 2011, \url{http://www.medcitynews.com/2011/06/hitech-act-moves-healthcare-it-industry-forward/}
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resemblances and that the American programs are repeating British mistakes.\textsuperscript{57} First, both programs are large and ambitious, trying to accomplish ‘too much, too fast’, unlike the Danish system which has steadily built on achievements over a number of years. Second, both systems are relying too much on commercial proprietary companies which may make it virtually impossible, in the American case particularly, to make their products compatible. This situation is again unlike the Danish example where a coordinating body, the Ministry of Health, is responsible for overall policy and the coordination of e health through national organisations.

However, despite these reservations, given that health spending in the United States reached (US)$2.6 trillion in 2010, with expectations it could increase to (US)$3.4 trillion by 2015, it is not surprising e health has been embraced by the American federal government for its potential cost containment benefits.\textsuperscript{58} It remains to be seen if medical practitioners and patients will be equally enthusiastic in the long run.

The Australian context

As the international examples above reveal, creating and introducing successful e health policies is a complex process which has, and will continue to challenge health services and lead providers and consumers into unknown territory. One thing appears clear, however, introducing ‘e’ into the health paradigm requires significant adjustments within systems and the transformation of the attitudes of all participants.

The conclusion can be made that in terms of adjustments within systems, it appears the most fundamental of these is the development of workable policies. But equally, as the examples above illustrate, even solid policies are not enough. Policy needs to be backed by funding which is appropriately targeted, by well-thought-out and delivered infrastructure development plans and by efficient and relevant administrative support measures. In conjunction with these fundamentals, there needs to be enabling strategies put in place which engage practitioners and consumers; strategies about which all stakeholders are confident. All aspects of health care records need to be seen also as useful, relevant and critically, as secure.

The following sections consider how the Australian Government has approached such e health challenges.

\textsuperscript{57} S Soumerai and T Avery, ‘Don’t repeat the UK’s electronic health records failure’, Huffpost Health, 1 December 2010, viewed 8 July 2011, \url{http://www.huffingtonpost.com/stephen-soumerai/dont-repeat-the-uk-s-elect_b_790470.html}

\textsuperscript{58} US e health market analysis, media release, PRNewswire, 5 July 2011, viewed 23 August 2011, \url{http://www.prnewswire.com/news-releases/us-e-health-market-analysis-124996559.html}
Australia: e health foundations

Defining potential

The experience of isolation for the regional and rural population has long been of concern to state, territory and federal governments in Australia, and policies and projects to lessen that isolation have consistently been initiated in areas as diverse as education, health and broadcasting. The emergence of e health in the 1990s promised to deliver a better way of overcoming the ‘tyranny of distance’ for health consumers and professionals.

Apart from potentially alleviating some of the problems of rural Australians in accessing medical services, e health appeared to have a further capability to ease overall pressures within the health system. Not least of these was that it may ultimately be able to address the escalating health costs which ironically had accompanied various improvements in medical technologies.59 E health promised to provide services to keep an ageing population out of institutions; it promised to address some of the health inequity experienced by specific groups, such as Indigenous Australians, and it appeared that it would afford more flexibility in the delivery of services. It also promised to reduce unnecessary duplication of services, waiting time for patients and medical errors.60

Consequently, the concept was, and continues to be embraced enthusiastically by governments of all persuasions and at all levels.

When the Howard Coalition Government came to power in 1996, while e health was in its infancy, the previous federal Labor Government, as well as the various state and territory governments had already committed funding to a variety of e health pilot projects.61 A number of rural health projects were underway, funded in part under an Australian Health Ministers’ Conference national health information management and technology strategy. This strategy boasted the stated aim of enhancing health care delivery ‘through forms of technology such as facsimiles, videos and medical


61. Note: it is beyond the scope of this paper to attempt to discuss e health projects in the states and territories except in passing and in the context of their support for the implementation of a national e health strategy.
images. Projects initiated under the strategy included the establishment of a teleradiology network linking rural New South Wales towns with St Vincent’s Hospital in Sydney and the setting up of telepsychiatry networks in South Australia and Victoria.

One problem with these early services was that they emphasised the distance aspect of the emerging new health field without taking into account its other aspects. As a result, the first difficulty that needed to be overcome in developing e health was one of semantics. E health consultant, John Mitchell, observed in fact that there was initially a tendency for people to see telemedicine, or telehealth as it was beginning to be called, as outside the mainstream of healthcare—an ‘add on’ or experiment. To overcome this perception Mitchell advocated use of the more inclusive term e health. He explained:

... e-health is the use in the health sector of digital data—transmitted, stored and retrieved electronically—for clinical, educational and administrative purposes, both at the local site and at a distance. E-health is now the term to use when describing the rise of digital technologies, electronic transmission and the convergence of technologies. This term is all inclusive and captures the use of Internet technologies and the rise of the information economy.

Telemedicine is the term used to describe the use of telecommunication technologies for the provision of medical services to distant locations. E-health is a more general term that describes the use of both telecommunication and information technologies, for the delivery of health services both at a distance and locally. Hence e-health is the overall, umbrella field that encompasses telemedicine.

As noted above, there were obvious and more significant challenges for Australia than what to call the delivery of health services through information technology and advanced telecommunications. A 1997 report by the House of Representatives Standing Committee on Family and Community Affairs (SCFCA) listed substantial barriers, many of which have still to be resolved.

There was little encouragement, for example, for the medical profession to adopt many of the new health technologies, as under the provisions of the Health Insurance Act 1973 Medicare benefits could only be claimed for face to face consultations. E health could also mean that responsibility

63. Ibid.
65. Ibid.
66. SCFCA, Health on line, op. cit.
67. Some moves have been made to address this issue. In November 2010, the Government announced funding of $352 million to support online specialist consultations for Australians in rural, remote and outer metropolitan locations.
for patient care became problematic as more providers were involved and health information was increasingly shared across a broader range of institutions in a variety of geographic locations. Further, e health presented difficulties under an existing system of state and territory restricted practitioner registration, given that it could be practised across jurisdictions.\(^{68}\)

It was apparent from the beginning of discussion about e health that resolving dilemmas relating to privacy would be fundamental to its adoption. The SCFCA perhaps viewed these too simplistically in concluding that they would be settled by the introduction of an electronic health card.\(^{69}\) Such a card would allow people to own and hold their own medical records; it could be supported also by the allocation of a unique patient identifier to assist in tracking data through the health system. It would thereby theoretically deliver the bonus of providing better co-ordinated care while reducing the possibility of data being incorrectly attributed to patients.\(^{70}\)

Indeed, the SCFCA was convinced there was no credible evidence:

> ... the confidentiality, privacy and security of individuals is likely to be compromised by the introduction of electronic medical records supported by a major data base. On the contrary, it was widely acknowledged that the paper-based method of managing and exchanging health information and data posed potentially greater risks of being breached by illegitimate access.

It is therefore recommended that an information model based on health consumers’ custodianship of their medical history, identified by the sub-sets of the Medicare number and supported by a high security national backup facility, should be established and controlled by the Health Insurance Commission.\(^{71}\)

The SCFCA was astute, however, in noting that despite the conduct of various federal, state and territory e health projects, there appeared to be ‘a general reluctance’ to share information about the outcomes of these projects. So too, while industry was moving ahead with the development of technology, there had been little consultation with health professions and evaluation of pilots. All in all, the project process had been fragmented, with no information shared amongst project teams

\(^{68}\) SCFCA, *Health on line*, op. cit. Note: there is now a system of national registration for ten health professions, the National Registration and Accreditation Scheme (NRAS), which has rendered this claim effectively redundant. More details of the NRAS, viewed 15 July 2011, are at: [http://www.ahwo.gov.au/natreg.asp](http://www.ahwo.gov.au/natreg.asp)

\(^{69}\) SCFCA, *Health on line*, op. cit.

\(^{70}\) Ibid.

\(^{71}\) Ibid.
and opportunities for development lost. The answer, according to the SCFCA, was to develop a national strategic plan.

**Beginnings: Health Online**

In 1999 the first steps towards implementation of a national e health policy were taken with the establishment of a National Health Information Management Advisory Council (NHIMAC). NHIMAC was given a number of interrelated tasks intended to address barriers to e health. In response, and in collaboration with the Commonwealth, state and territory governments and relevant health stakeholders, NHIMAC conceived a ‘grand plan’ for e health—Health Online. Launched in November 1999, the main focus of the plan was a series of wide-ranging national action strategies.

These involved:

- data protection and other legal/security issues, standards, infrastructure issues, change management and training, research and development
- information and services tailored to meet consumer expectations for more information, more choice and a greater say in their own health and well being
- support for clinical care by sharing information with the aim of providing coordinated care, decision-support services and better access to current practice information; efficiency gains through the use of electronic data transfer in areas such as hospital supply chain activities, Medicare claims and electronic prescribing; better clinical and administrative data for research, policy and planning purposes to inform governments about health needs and about how the various initiatives are performing so that health resources can be applied to maximum effect, and
- export of Australian health services.

By 2001, various NHIMAC sub-committees had investigated and reported on a number of these key areas (see the box below for a summary of the activities of these committees).

**Box 5: National Health Information Management Advisory Council (NHIMAC) committees**

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73. Phrase used in K Harvey, ‘Australian e-health policy: once was rational?’ *Health Issues*, no. 67, June 2001, viewed 25 March 2011, [http://parlinfo/parlInfo/download/library/jrnart/ZHF46/upload_binary/zhf469.pdf;fileType=application%2Fpdf#search=%22australian%20e-health%20policy%20once%20was%20rational%22](http://parlinfo/parlInfo/download/library/jrnart/ZHF46/upload_binary/zhf469.pdf;fileType=application%2Fpdf#search=%22australian%20e-health%20policy%20once%20was%20rational%22)


75. Ibid.
NHIMAC’s National Electronic Health Records Taskforce was given perhaps the most delicate task of all—evaluating the benefits and difficulties that may be associated with adopting national electronic health records and proposing an action plan for their introduction. In July 2000 the Taskforce proposed the HealthConnect project. The project received federal funding of $128.3m over four years to ‘develop a secure national health information network’.

Putting plans into practice

HealthConnect

It was intended the first stage of HealthConnect, the Better Medication Management System (BMMS), would commence in July 2001. Under the BMMS Medicare numbers were to be used to create a personal electronic medical record which linked prescriptions for medications written by


78. National Health Information Standards Advisory Committee (NHISAC), Setting the standards: a national health information standards plan for Australia, report prepared for National Health Information Management Advisory Council (NHIMAC), 2001, viewed 23 March 2011, http://www.health.gov.au/internet/hconnect/publishing.nsf/content/7746b10691fa666cca257128007b7eaf/$file/stand.pdf Note: an Australian Health Information Council (AHIC) was later also set up by the Australian Health Ministers in 2003 to provide advice about the more effective and efficient use of information management and information communications technology (IM&ICT) in the health sector.


different doctors and dispensed by different pharmacies. The system was intended to minimise the incidence of medication misadventure, to be useful in emergency situations and to minimise the practice of doctor-shopping.\textsuperscript{81} There were widespread concerns within the medical community about the BMMS.\textsuperscript{82} In particular, it was felt that the scheme was being developed in haste and without the inclusion of necessary privacy protections.\textsuperscript{83} Consequently, field testing was conducted at sites in Tasmania and Victoria. Evaluation of the testing appeared to vindicate criticisms and to emphasise that technical and policy issues to encourage provider and consumer participation needed to be re-considered before e health initiatives could be realistically implemented.\textsuperscript{84}

HealthConnect involved a further series of live trials to determine how a future health information network could function. These commenced in Tasmania and the Northern Territory in 2002, with sites in other states following in 2003 and 2005.\textsuperscript{85} In early 2005, a series of reports evaluating the trials were released, together with the BMMS evaluation. Some of the more important conclusions from the trials were that lack of infrastructure and connectivity limited their success. It was thought that the e health system therefore would need to identify persons and their health information at each point of care. Importantly, it was thought that the most popular consent model for consumers and providers was that providers assume consent unless notified otherwise.\textsuperscript{86} Findings from the trials were used to inform the HealthConnect Implementation Strategy released in July 2005.\textsuperscript{87}

**The Medicare smartcard**

In keeping with the earlier recommendations of the SCFCA, a Medicare ‘smartcard’ was intended as an integral component of the HealthConnect strategy (see the box below for information on smart cards). The smartcard was to contain information such as organ donor status and PBS expenditure data, in addition to providing access to standard Medicare services—all accompanied by a photo of the holder.\textsuperscript{88} The Minister for Health and Ageing, Tony Abbott, was enthusiastic about the card, declaring that it would deliver significant health savings and substantially better health care for

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81. Medical misadventure could be described as a situation where a patient has been prescribed, on different occasions, drugs which in combination would interact adversely.
82. BMMS later changed its name to MediConnect.
85. These occurred in North Queensland in 2003 and in New South Wales and South Brisbane in 2005.
Australians. Opposition health spokesperson, Julia Gillard, was equally keen and urged the Government to ‘roll out’ the card.

Box 6: smart card technology

Smart cards

Smart cards are used in many applications worldwide, including:

- Secure identity applications, such as employee identification badges for physical access to buildings and secure computer or network access, electronic passports, drivers licenses and online authentication devices
- Payment applications, such as contact and contactless credit or debit cards and transit payment cards
- Telecommunications applications, such as pay telephone payment cards and
- Healthcare applications, such as patient health identification cards, medical practitioners’ identification cards and medical record cards.

The following diagram shows how smart card technology works:

Source: Gemalto

An ‘opt in’ trial of smartcards was undertaken in Tasmania from January 2005, but results of the trial were disappointing; few people were interested in participating; only about one per cent of those

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89. Medicare Australia, Medicare smartcard brochure, May 2005 and Abbott, Medicare smartcard launched, op. cit.
eligible. The trial was abandoned, and in May 2006 the Government announced instead that it intended to introduce a so called access card to replace a number of welfare cards. The access card was immediately compared to the Australia Card which the Hawke Government had unsuccessfully attempted to introduce in 1987. Privacy advocacy group Electronic Frontiers, saw the card as a threat and argued:

The so-called Access Card/system is even more dangerous to individuals’ security and privacy than was the Australia Card due, in part, to the planned use of a multi-purpose smart card electronically linked to a centralised national identity database. EFA has grave concerns about privacy and security in relation to such proposals and considers the roll out of smart cards by government has an extremely high potential to result in the equivalent of an Australia Card, whether or not that is the government’s intention at the outset. This potential arises from a combination of factors including the ease with which smart cards can be used for two-way communication with a centralised database and that smart card technology is designed to facilitate function creep.

The Opposition continued to voice its support for a specific health card, particularly after Medicare statistics were released showing that over 70 000 people had faked illness to gain government-subsidised drugs.

The Tasmanian smartcard trial prompted the first real questioning in Australia of a fundamental aspect of e health—the protection of patient privacy. The Government’s access card proposal intensified concern. People began to ask if the collection of information to be included on electronic cards would remain voluntary and to what extent they would be able to exercise meaningful control over the use and disclosure of that information (all of which is implied in the cartoon shown later in this section).

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One of the strongest concerns raised about smartcards generally has been in relation to what is termed ‘function creep’, and the Medicare smart card was not exempt. Function creep is said to occur ‘when customer or patient data is stored for one purpose, such as medical records, but someone figures out another use for it, or wants to share the data with another party’. That is, when the original intention for storing information is expanded to gain extra information about the subjects or to use the information for an entirely different purpose.

Further concerns about function creep and other issues relating to privacy associated with the use of smart cards were also outlined in a Senate Legal and Constitutional Affairs’ Committee report on the Commonwealth Privacy Act 1988. Advocates of smart cards noted their sophistication and claimed this could be used positively to protect citizens’ privacy. Detractors, on the other hand, envisaged scenarios of information tampering and the possibility of government surveillance of citizens.

The function creep issue, far from resolved, resurfaced in relation to the current Government’s personally controlled electronic health records proposals and will be discussed in a later section of this paper.

Comment on the security of smart cards

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97. S Mitchell, ‘Privacy warning on Medicare smartcard’, The Australian, 22 November 2005, p. 2, viewed 14 June 2011, [http://parlinfo/parlInfo/download/media/pressclip/2W0I6/upload_binary/2w0i64.pdf;fileType=application%2Fpdf#search=%22privacy%20warning%20on%20medicare%20smartcard%22](http://parlinfo/parlInfo/download/media/pressclip/2W0I6/upload_binary/2w0i64.pdf;fileType=application%2Fpdf#search=%22privacy%20warning%20on%20medicare%20smartcard%22)


99. Ibid.
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Source: Health Issues

National coordination plans

In 2004, a Boston Consulting Group (BCG) report to government advised that a further problem in implementing a comprehensive e health program was that there were too many small, loosely coordinated e health initiatives underway across the states and territories. Because these were neither interoperable nor scalable, according to BCG, what was needed was a central collaborative body.101

Partly in response to this report, later in the same year the National E-Health Transition Authority (NEHTA) was formed. The task of the new body, funded jointly by the state, territory and federal governments, sounded familiar—to advance the e health agenda through development of e health standards, clinical terminologies and patient and provider identifiers. To this end, the Authority has received various federal government funding allocations in the period from 2005 to 2011–12 totalling $366.2 million.102

In 2007, the BCG evaluated the agency’s early progress in achieving its objectives and concluded that it had developed foundation elements which could feed into a more comprehensive e health strategy. It had also:

... brought significant focus and raised the profile of eHealth in Australia, whilst building substantial individual skills as well as a highly functioning and highly task focused organisation.103

In BCG’s view, the existence of a national body had therefore helped to allay some of the frustration health stakeholders felt because there was no single approach to developing e health components. In addition, as two critical e health standards had been agreed to and endorsed under NEHTA’s guidance, the consulting group considered there was more certainty about programs for software vendors.104

102. Australian Health Minister’s Conference, 28 January 2005—$18.2 million (over three years) Council of Australian Governments, 10 February 2006—$130.2 million (over four years) and Council of Australian Governments, 29 November 2008—$218 million (over three years), Senate Community Affairs Committee, Answers to Questions on Notice, Health and Ageing Portfolio, Supplementary Budget Estimates 2009–2010, 21 October 2009, Question: E09-244.
104. Ibid. The standards were SNOMED CT for clinical terminologies and HL7 V2x for messaging.
BCG praised NEHTA for achieving this progress with considerably less funding than comparable countries as the result of its adopting global standards and ‘leveraging the outputs of countries further down the development path’.\textsuperscript{105} The existence of NEHTA had also improved state–federal collaboration in the e health area.

On the other hand, BCG was critical of NEHTA’s initially overly ambitious targets and noted that many stakeholders were dissatisfied with the national body, which they believed was locked into a so-called ‘cycle of criticism, defensiveness and isolation’.\textsuperscript{106} In BCG’s view:

Where engagement did occur, it appears often to have been one way, with little acknowledgement of stakeholder requirements or suggestions, and little patience with their lack of pre-existing understanding. Two thirds of stakeholders said that NEHTA did not acknowledge or respond to their feedback when they had engaged.\textsuperscript{107}

Similarly:

Two thirds of external stakeholders complained that NEHTA was not transparent enough. NEHTA has also delayed seeking important feedback from users until relatively late in the process, potentially missing out on practical advice on how to make solutions work in local contexts, or overengineering aspects of them beyond what was required.\textsuperscript{108}

Criticisms of this nature have continued to surface. There have been suggestions that NEHTA should have been replaced by a more inclusive and powerful body. Such as body, it has been claimed may be better able to support e health initiatives, target investment funding, help identify solutions and coordination opportunities and encourage adoption of, and compliance with e health strategies.\textsuperscript{109} This issue will be discussed further in a later section of this paper.

Despite its original enthusiasm for setting the e health transition in place, there was some speculation that by late 2006 the Howard Government’s interest in e health was dissipating. Initiatives were said to have been ‘killed off’. More importantly for some, the Government appeared to have let the responsibility for development of the national e health agenda rest principally with a bureaucracy, that is, with NEHTA.\textsuperscript{110} One commentator argued that what was being implemented

\textsuperscript{105} BCG, NEHTA review, op. cit.
\textsuperscript{106} Ibid.
\textsuperscript{107} Ibid.
\textsuperscript{108} Ibid.
\textsuperscript{110} D. Moore, ‘Health connect is dead. So now what?’ \textit{New Matilda}, 1 February 2006. \url{http://parlinfoweb.parl.net/parlinfo/Repository1/Library/Irnart/VNNI60.pdf}
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instead was ‘trivial and un-standardised endeavours, far removed from the original HealthConnect concept of a life-long shared medical record’.

This criticism seemed particularly harsh, given that e health was always going to involve uncertainties, appeasement of a multitude of stakeholders, significant blocks of funding and trial and error processes. Indeed, it could be argued from an opposing perspective that while it had not made leaps and bounds towards an e health future, when it left office in late 2007 the Howard Government had laid foundations from which future e health development could proceed.

Building on e health foundations

Reinforcing perceptions: Deloitte and the national strategy

As is frequently the case with a change of government in Australia, the Labor administration, which came to power in November 2007, was determined to strike out in new directions from its predecessor. In the case of e health, Labor quickly commissioned an investigation from the research company Deloitte to help to define these directions. But Deloitte’s findings had a familiar ring—e health was the future, and there was general support for a national approach to e health policy, but there were barriers and challenges to developing effective policy. There were also increasing levels of e health activity at the national and state and territory levels, which ranged from infrastructural initiatives to clinical information system initiatives. Perhaps one of the most important conclusions reached by Deloitte was that despite support for the concept of e health, local investments had not managed to keep pace with developments overseas. So, as a result, Australia lagged behind comparable countries in e health development by years, or even decades (see the diagram below for comparative figures).

111. Ibid.
Comparison: health information technology expenditure

Figure 3-3 Country Comparison of IT Expenditure

<table>
<thead>
<tr>
<th>Country</th>
<th>Total Spending on specific E-Health initiatives (as of 2005) in ‘000,000</th>
<th>Per Capita Spending on specific E-Health initiatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>$128.25</td>
<td>$0.44</td>
</tr>
<tr>
<td>Australia</td>
<td>$100.45</td>
<td>$5.06</td>
</tr>
<tr>
<td>Canada</td>
<td>$1,108.08</td>
<td>$32.68</td>
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<tr>
<td>Germany</td>
<td>$1,846.80</td>
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<tr>
<td>Norway</td>
<td>$53.87</td>
<td>$11.73</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>$11,337.30</td>
<td>$197.80</td>
</tr>
</tbody>
</table>

Source: Deloitte

Just three months after the Deloitte research was released, the Government introduced its National E-Health Strategy. While it was framed in new terms, fundamentally the strategy echoed the previous government’s approach, calling for a national strategic framework and plan for national coordination and collaboration to be put in place. The Government promoted its strategy, however, as the right approach to delivering core e health infrastructure without duplication of costs and efforts and with a focus on areas that could deliver the greatest benefits to health consumers. It wanted active engagement of healthcare stakeholders in the design and delivery of incremental and pragmatic e health solutions and the building of long term e health capabilities within the context of varying capabilities across the health sector.

The Strategy set out directions for e health in increments of three, six and ten years and involved four work streams—foundations, solutions, change and adoption and governance.

- The foundations work stream was to implement nationally the basic infrastructure to enable the electronic sharing of information across the health sector. It included developing consumer and care provider identifiers, establishment of standards, rules and protocols for information exchange and protection and implementation of underlying physical computing and networking infrastructure.

115. Deloitte, National e-health strategy, op. cit.
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- The solutions work stream was to improve the capability of systems which dealt, for example, with event and discharge summaries or test results to support the flow of this type of information between care providers. It was also to deal with tasks such as the implementation of individual electronic health records.
- The other work streams were to concentrate on what the strategy called ‘winning the hearts and minds’ of health care participants by convincing them of the benefits which would result from e health and imposing governance standards that emphasised transparency, accountability and stakeholder involvement.\(^{116}\)

The National Strategy work streams are shown diagrammatically below:

Source: National E health Strategy\(^{117}\)

An important recommendation made by Deloitte was that an independent national e health body was established to undertake the oversight of strategy, management, execution of work programs and standards development and compliance functions. Given the success of such a body in Denmark it is interesting to note that despite the Government’s enthusiasm for the overall Deloitte plan, this recommendation was not adopted. It is possible that rolling NEHTA into a new body with greater power to coordinate and lead the e health transition may have avoided some of the criticism that has continued to accompany NEHTA’s administration. At the same time, any restructure, especially one which intended to give more power to a bureaucracy, would most likely have in itself attracted complaints that e health funding was being misdirected or that the progress of e health projects was being impeded.

\(^{116}\) Ibid.
\(^{117}\) Ibid.
National Health and Hospitals Reform Commission

Danuta Mendelson, Professor of Law at Deakin University, remarked in a later assessment of aspects of e health policy that the Deloitte report and the Government’s new strategy ‘painted a picture of electronic health care utopia, in contrast to the miserable present state of not-sufficiently IT-driven medical practice’. But Mendelson was not convinced that Deloitte made a sufficiently compelling case to the Government to prompt the spending of billions of dollars to implement the strategy. In contrast, the June 2009 report of the National Health and Hospitals Reform Commission (NHHRC/the Commission) endorsed the directions for e health proposed in the National E–Health Strategy. The NHHRC, given the task of developing a long-term health reform plan for Australia, saw great benefits in e health for the population overall. It also made a number of its own e health recommendations, although it acknowledged most of these had been advanced in some form or another elsewhere.

The Commission’s analysis echoed long-standing themes. Despite some e health successes at state, territory and federal levels, lack of connectivity across jurisdictions and settings in which health care was delivered in Australia meant information sharing within the national health system was at best limited and fragmented, and at worst, non-existent. Health care professionals were forced to practice with incomplete or incorrect patient information and up to 18 per cent of medical errors resulted from the lack of availability of adequate patient information.

The Commission supported the introduction of personal electronic health records, recommending that they were in place by 2012. This was an ambitious target requiring considerable commitment by government at all levels, and some commentators labelled it almost impossible to achieve. One reason for this scepticism was most likely that concerns about the security of information on these records had not gone away. Nonetheless, the NHHRC’s view of e health’s possibilities mirrored that


120. Ibid.

121. Ibid.

122. Ibid.


124. Ibid.
of the House of Representatives Standing Committee on Family and Community Affairs in 1997. That is, that an efficient, secure national electronic personal health record system presented an important systematic opportunity ‘to improve the safety and quality of health care, reduce waste and inefficiency, and improve continuity and health outcomes for patients’. 125

The Commission advocated a ‘middle out’ approach to e health to give government national responsibility to create a common set of technical goals and underpinning standards to accelerate and adequately resource the National E-Health Strategy. As one analyst phrased it, the approach was an attempt to develop a system which could ‘avoid the opposite extremes of an industry free-for-all and bureaucracy’s dead hand’. 126

While the NHHRC had been criticised for failing to highlight e health issues in its interim report, it was widely praised for advocating e health as a core tenet of systematic health reform in its final deliberation. The Commission’s warning that electronic infrastructure could become the twenty first century’s equivalent of the unlinked rail systems which hindered communications in nineteenth century Australia was timely also. Certain commentators described the overall report in fact as ‘a valuable opportunity to restart the [electronic health] process’. 127

National E–Health Strategy: foundation stream

Government strategies for e health currently focus on implementing the foundation stream elaborated upon in the 2008 Deloitte report. This section discusses how plans to build certain infrastructures—in particular health care identifiers and authentication services and personally controlled health records to enable effective electronic sharing of information across the Australian health sector—are progressing.

Health Care Identifiers

The Howard Government commissioned NEHTA in 2006 to begin work on the technical design for a national healthcare identifiers service which would be provided to Medicare card holders. Only weeks after its election in 2007 the Rudd Labor Government contracted the scoping, design, build and testing of this service to Medicare Australia. Labor acted on the advice of the NHHRC and recommendations from Deloitte in continuing development of the service, instigating a series of national consultations on a legislative framework to underpin the governance, privacy and agreed uses. 128 Initial consultation processes showed that many supported the health identifiers strategy, but there were also a range of objections, mostly these centred on perennial questions of how the service would affect patient privacy.

125. NHHRC, A healthier future of all Australians: final report, op. cit.
127. Ibid.
The Government quickly discovered, as had its predecessor, that privacy and the issue of function creep go hand in hand. Therefore, as the Privacy Commissioner observed, the challenge for government in introducing individual health identifiers would be to ensure that they were not usurped for use outside the health system. The Commissioner cited the Canadian Social Insurance Number which failed to retain its original purpose, eventually transforming into an identification card:

... property owners asked for it on apartment rental applications, video stores required it as security for movie rentals, universities and colleges requested it on their application forms and pizza places even used it as a customer number for their delivery system.130

Not surprisingly, the Consumers Health Forum and the Australian Privacy Foundation drew parallels with ‘earlier attempts to introduce mandatory national identity systems'; that is, with the Australia Card and the Howard Government’s access card. And they asked the same question about what real level of control people would have over their health information once health identifiers (or HIs) were introduced.131

The Government responded to some of these concerns by revising the HI Service legislation to state specifically that the use of healthcare identifiers would be limited to functions associated with the delivery of a healthcare service. Use of healthcare identifiers would be underpinned by national privacy arrangements and would entail transparent and accountable governance arrangements, and the effectiveness of the HI Service would be evaluated after two years of operation.132

The HI legislation passed both Houses of Parliament in 2010, but despite government compromises, still not everyone was happy with the outcomes.133 Professor Graham Greenleaf from the

130. Ibid.
Cyberspace Law and Policy Centre at the University of New South Wales argued in fact that as the full implications of healthcare identifiers legislation could not be assessed in isolation, any one-off legislation must be rejected until government revealed the whole package for e health.134

Not all stakeholders were as dismissive as Greenleaf, and as the Senate Community Affairs Legislation Committee inquiry into the legislation confirmed, those who disputed the considerable benefits to be gained from e health were most likely in the minority.135 Indeed, NEHTA clinical lead and former Australian Medical Association President, Dr Mukesh Haikerwal, argued:

... the good thing about the healthcare identifier is that it not only makes the system safer, more accurate and up-to-date, it also carries with it additional safeguards over and above what exists today...There is also a very strict audit trail so that any individual can know that someone has accessed their record in the system which is an additional layer of security...You will never satisfy everyone in regards to privacy, but I have far more confidence in the future of e-health and the security of its records than I do in the current system.136

Box 7: National Authentication Service for Health (NASH)

In early 2008 NEHTA began working on development of a secure messaging platform which will be integral to the development of the national e health system.

The National Authentication Service for Health (NASH) is to establish the national framework for issuing and managing trusted digital credentials to all entities in the healthcare sector and to enable interactions between patients and health providers. It is intended to deliver authentication services for the Healthcare Identifier Service and accredit local public key infrastructure (PKI) services within local healthcare communities, aid in transitioning existing e health systems so they are able to use new digital certificates and provide the foundation for initiatives, including secure messaging. This will thereby enable other services, such as electronic referrals and discharge summaries.

One view is that NASH has been ‘a long time coming for the healthcare community’; so much so that vendors and clinical communities have undertaken to develop and implement their own messaging platforms.\(^{137}\) The Melbourne East GP Network, for example, one of the Government’s first wave trial sites for e health, runs the Practice Incentives Program (PIP) for general practitioners using the NEHTA-compliant Argus secure messaging protocol.\(^{138}\)

In September 2010 the Government put the NASH service out to tender, noting that whatever the system chosen, it would need to comply with comprehensive overall smartcard standards which had been mandated by the Australian Government Information Management Office (AGIMO).\(^{139}\)

Long-standing NEHTA critic Dr David More commented:

... for almost 3 years we have been told NASH is coming and now we discover it was just a twinkle in someone’s eye and will now be designed and developed externally because NEHTA can’t quite work out how to do it ... Incompetence piled on deception adds up to me to a serious need for some management accountability to be delivered with some major resignations for having wasted public money.\(^{140}\)

IBM Australia was awarded the $23.6 million contract on 1 March 2011 to deliver the NASH service by the end of June 2012. NEHTA countered criticism of its role in the process noting that it would continue to lead the NASH development process, which would be enhanced by the involvement and additional expertise gained from IBM.\(^{141}\)

### Personally controlled electronic health records (PCEHR)

Beverly Head, writing in *Information Age* in 2009, labelled personal e health records as the ‘cornerstone of all e health initiatives’. Only once these were in place, according to Head, would it be possible to develop other e health applications.\(^{142}\) While it could be argued that all aspects of e health are equally important, it is difficult to envisage e health working without this crucial component, and it appears this view has influenced the policy directions of Coalition and Labor Governments since the 1990s.

The Howard Government’s HealthConnect laid foundations for an electronic health record, but it was unable to realise its plans, frustrated by Medicare smartcard issues and, as has been commented on earlier in this paper, its enthusiasm for e health eventually abated. The first substantial investment in e health by the current government has been the allocation in the 2010–11

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Budget of $466.7 million specifically for the purpose of creating a personally-controlled electronic health record (PCEHR).

The PCEHR is due to become available to every Australian who chooses to have one from July 2012. According to some analysis, it is possible to cite the decision to allow people this choice as a fundamental flaw in e health policy as it may take time to reach the critical mass of participants needed to make the system viable.  

The PCEHR is being implemented through a combination of ‘top down’ national initiatives and ‘bottom up’ lead implementation projects undertaken by health organisations. Investment in lead implementation sites is being made in two ‘waves’. These sites will deploy and test infrastructure in actual health settings. The first wave PCEHR, targeting general practice, is already in place while the second, focussing on a broader range of settings including pharmacies, hospitals, aged-care homes and Indigenous health care providers is in the pre implementation phase.

Implementation plans for the PCEHR have moved quickly. The Government released a draft plan in April 2011—the Draft Concept of Operations Relating to the Introduction of a Personally Controlled Electronic Health Records System (Con Ops). This document suggested how the PCEHR system would be likely to look, what information it might contain, and how it might function and connect with existing clinical systems.

Consumers, medical providers and IT experts expressed dissatisfaction with the Con Ops plan. It was claimed the plan was ‘impractical, unsafe and waste of money’. From a consumers’ perspective, some comments on the plan claimed it had been largely developed ‘away from the public gaze and in secret’. However, the Government for some time denied similar accusations; noting in a Senate Estimates response in February 2011 that consumer groups had been consulted in the development of the National E-Health Strategy and the design and privacy framework for the Healthcare Identifiers Service. In addition, consumers were represented on NEHTA reference groups and at over...

143. Further discussion of this point occurs later in this paper.
144. First wave sites are operated by the Hunter Urban Division of General Practice, GP Partners Ltd (Brisbane) and Melbourne East General Practice Ltd. Nine organisations were chosen in March 2011 to develop implementation plans for the running of second-wave sites.
39 stakeholder meetings, working groups, roundtable discussions and forums held since the announcement of the PCEHR as well as at a national conference to discuss e health.148

The medical profession criticised the intention to allow patients to decide who will access their records. The AMA claimed this will mean that medical practitioners will be unlikely to trust the information contained in the records.149 Further, as patients will be able to mask information, the promised improvements to health outcomes from an electronic record will not eventuate; indeed the AMA considers that records with hidden information will be more dangerous than no records at all.150

On the other hand, consumer groups wanted the Con Ops to give patients more control. The Consumers Health Forum was adamant that personal control implied more than simple access to health records and called for more detail to be provided on interactive features, such as consumer-entered data.151 The Australian Privacy Foundation was disturbed by ‘the breadth and depth of information about individuals the PCEHR system plans to store or index without a clear governance framework upon which to base informed [emphasis in original] consent processes’.152

Feedback on Con Ops closed on 7 June 2011. At that time the Government announced it expected to release an updated version of the plan as a result of this process. In the meantime, it released a further paper which proposed a legislative framework to support the Con Ops design.153 This paper considered five areas which legislation needed to address—participation, access, privacy, security and governance. It set out proposals in these areas and asked for stakeholder views and suggestions on matters ranging from the role of individuals in setting access control on, and authorising access to their PCEHR, to the types of breaches of access requirements that should attract penalties.154

Submissions to the legislation issues paper closed on 3 August 2011.

150. AMA statement on e health as reported in ‘Patient-controlled records may be more dangerous than no records’, Australian Doctor, 10 June 2011, p. 4.
154. Ibid.
The e health revolution—easier said than done

The figure below from the document illustrates the Con Ops proposals:

Source: Con Ops

Health information technology consultant, Dr David More, labelled the legislative proposal paper as ‘silly’, given there was no revised concept of operations to consider in a legislative context. He added ‘[g]reat haste and no consultation seems to be most of the game here’. However, less than a month after More’s comments, on 12 September 2011, a revised Con Ops paper was released. The updated Con Ops noted that considerable comment on proposals had been received. This had been reviewed independently by Deloitte and the revised edition incorporated a number of changes, the result of feedback and ongoing consultation between the Departments of Health and Human Services and NEHTA.

Many of the Con Ops changes appear to be more cosmetic than substantial, but nonetheless, certain stakeholders have expressed support in general for the revisions. The Royal Australian College of

156. D More, ‘Go grab and start reading and commenting! This will be very important indeed’, Australian Health Information Technology (AHIT) blog site, 7 July 2011, viewed 16 August 2011, http://aushealthit.blogspot.com/2011/07/go-grab-and-start-reading-and.html?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+AustralianHealthInformationTechnology+%28Australian+Health+Information+Technology%29
157. Con Ops, op. cit.
General practitioners (RACGP), for example, is pleased that the Government has taken on board its recommendations that emergency access will be provided to a full PCEHRs where required, and that a full audit trail of access will accompany this access. Other RACGP suggestions were also included in the new Con Ops, including clarification relating to the legal responsibility and liability for providers regarding the review of all patient entered information.  

Not all response has been positive. Australian Medical Association (AMA) President, Dr Steve Hambleton, believes the Government’s failure to heed the advice of the medical profession will ‘de-medicalise’ electronic health information. In Hambleton’s view, the Government ‘has caved in to minority consumer groups’ by refusing to reconsider patient control of records. There appears to be a stalemate on this issue which potentially could damage the e health process. This may not be irrevocable damage, as a compromise will have to be brokered at some stage, but it certainly will delay implementation.  

It can be argued with regards to David More’s assessment of the papers released on the PCEHR to date, that there does appear to be an element of hastiness in the issue of a number of papers. On the other hand, there clearly is a complex array of questions that need to be addressed and to consider these in isolation risks criticism that vital aspects of the system and its implementation will be overlooked. However, as the legislative issues paper suggests that legislation will be introduced in the Spring 2011 sittings of federal parliament there is the question of to what extent the Government intends to attempt to reconcile the views expressed by stakeholders in preparing actual legislation.

The diagram below shows an example of what the Con Ops proposes will be a key feature of the PCEHR—the ability to provide user’s with a consolidated overview of an individual’s allergies and adverse reactions, medicines, medical history, immunisations, directives and recent healthcare events from different information sources.


PCEHR: consolidated overview

![PCEHR interface image]

Source: Con Ops

Where to from here?

While criticism of the broad concept of e health is difficult to find, there are many criticisms about the ways in which it has been implemented, as this paper has shown. Each of the international examples discussed earlier in the paper reveal that there are problems at every step in the e health process and that some countries have overcome these more successfully than others.

In Australia’s case, it could be argued from one perspective that despite e health being on the policy agenda for close to two decades, the barriers initially identified are still firmly in place. In 1997 the House of Representatives Standing Committee on Family and Community Affairs for example, raised the issue of protection of patient privacy and concluded it would not be affected by the introduction of electronic records. Consumer and privacy groups disagreed, and some continue to disagree with the Senate Committee’s conclusions. On the other hand, it can be argued that a number of barriers have been overcome and that work is being undertaken to dismantle others, such as the lack of coordination of e health projects at federal, state and territory levels.

160. Con Ops, op. cit.
As this next section discusses, there are some who remain steadfastly critical of government approaches to e health and who are convinced that it will not succeed unless radically new approaches are adopted—that e health is going nowhere. Others are optimistic that an e health future is fast approaching, but there is much to do to ensure it is as effective as is possible—that Australia is on the way, but with plenty to do.

Going nowhere

Dr David More’s appraisal of e health policy presents the former view. More has been a strident critic of Australian e health directions for many years. More is supportive of using information and communications technology to improve health outcomes but believes that the plans devised and directions taken by governments to implement e health plans have been at best misguided. While More has not put forward a comprehensive alternative strategy for e health, in a submission to the NHHR in 2009 he noted his support for the e health future developed and detailed by Deloitte for the National E Health Strategy. More was disparaging about the Howard Government’s plans for HealthConnect and argues that no lessons have been learnt from what he calls that ‘debacle’. He is convinced that current government policy will only deliver ‘a range of incoherent pilots which will take the rest of the decade to be properly delivered so as to provide any value to either providers or consumers’. More has labelled the Government as either ‘too stubborn or ignorant to gather good advice’. He sees no possibility for the PCEHR being delivered on time, and he has consistently labelled NEHTA as incompetent.

With regards to the difficulties Britain appears now to be experiencing with e health implementation, he warns also that similar outcomes may be in store for Australia if government policy is not radically re-evaluated.

161. It should be noted that More’s criticism of e health directions is supported by a group of equally strident supporters who regularly contribute to his blog, Australian Health Information Technology.


More has listed what he sees as some problems for the PCEHR; for example—medico-legal accountability, information integrity and currency, governance, privacy, security and the lack of evidence to support the particular approach proposed by the current government. He is convinced that a further problem is that it is intended the system will be used by both health professionals and consumers. In More’s view:

A system designed for use by clinical professionals is an utterly different beast to the system that might be designed to help a consumer keep track of their [sic] basic health information and the health story. As a consumer a set of laboratory results will most likely be a confusing jumble of numbers whereas to a clinician they trigger a lot of knowledge and interpretive experience

... 

The bottom line is that creating a system to be used by consumers and clinicians is just a fundamental nonsense. Any system targeting both groups will satisfy neither, inevitably. Anyone with even a basic understanding of system design and implementation will agree with me on this. More believes that e health policy is being run like a ‘chook raffle’. He lays a great deal of the blame for this on NEHTA. He sees the principal e health body as an ineffectual, ‘utterly out of control, overreaching and utterly absurd organisation’ that is not doing the job it is supposed to be doing in managing the delivery of e health programs. In short, Dr More sees government policy failing on e health, not only because of policy flaws, but also because these are ‘underlined by an insidious and incestuous AHMAC/DOHA/NEHTA nexus of the same predominantly bureaucratic incompetent incumbents’.


168. Ibid.

169. D More, ‘Here is the reason that NEHTA is an utterly dysfunctional organisation. They are off on a total frolic!’ AHIT blog site, 24 August 2011, viewed 29 August 2011, http://aushealthit.blogspot.com/2011/08/here-is-reason-that-nehta-is-utterly.html

On the way, but plenty to do

The ‘opt in’ question

More’s overall negative view is not shared by most observers. At the same time, comments on the progress of the Australian e health agenda from consumers, industry and practitioners, who in general are supportive of the e health concept, are not wholly positive. For example, Ian Birks, Chief Executive Officer of the Australian Information Industry Association, is one of a number who criticise the choice to make the PCEHR opt in. In Birks’ view, this will not deliver consumer engagement, an acknowledged key component of success for e health.171 The AMA agrees an opt in system is not the best option for the PCEHR. It considers a ‘simpler’ opt out system would be more effective:

Consumers with serious concerns about privacy, or an objection to their medical and health information being shared could actively make the choice not to participate in an opt-out system. At the same time, those patients most in need of an electronic health record with complex or chronic conditions—usually the elderly—would reap the benefits of improved sharing of information between treating medical practitioner without having to actively participate to the extent that the current proposals will require them to do.172

Accenture, the organisation awarded the contract to build the PECHR by the Government, argues:173

... an opt-in model may prove more cumbersome and costly [than an opt out alternative]. It is likely to drive up costs if clinicians must conduct patient education and enrollment [sic] at the point of care. There is also inherent risk that enrollment [sic] will not reach critical mass. If it does not, most patients will miss the benefits of the e-health system, and public health organizations will fail to acquire the data needed to analyze and improve population health management.174

AMA concerns

While the AMA has raised a number of issues with regards to e health, it should be stressed that in general it has been supportive of the underlying idea. Nonetheless, it is worried about the extent to which patients may be able to change medical information on their records. It argues that only medical practitioners should be permitted to contribute medical information to an electronic record

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to ensure that the information on that record is always from ‘a trusted source’. The Australian College of Health Informatics (ACHI) supports the AMA’s view, making its own point that it is unlikely medical practitioners will trust records that are patient controlled.

This is certainly a crucial issue, as it prompts questions about who is responsible for the accuracy, veracity and currency of information in records. Furthermore, it suggests a variety of medico legal possibilities and probabilities, including the question of with whom ownership of medical records will reside. The medical profession is concerned about a medico legal minefield, and as it appears that the legal ramifications associated with the introduction of the PCEHR have not been sufficiently explored, it may indeed have cause for concern. It has been observed elsewhere that the existence of electronic health record systems means there is more documentation of clinical decisions and activity and consequently, more discoverable evidence which could influence malpractice cases.

The existence of e health technology may also change legal expectations of what is expected of medical practitioners. While it can be argued that it is not the task of governments to deal with these matters, it can equally be put that unless anxieties of this sort are resolved, the support of crucial stakeholders will be tentative at best.

At the same time, as the Danish experience shows, it is important for the success of e health that individuals feel involved in the transition and ongoing processes. In addition, the idea of individuals being the focus of the health care system and their own health care is fundamental in the discussion of health reform which has been promoted by the current government. Providing individuals with control over access to their PCEHR may be confronting for health professionals, but it is likely to foster greater patient confidence and acceptance of the system. It is essential therefore that this issue is resolved satisfactorily as it has the potential to undermine further e health progress.

It has been suggested that if clinicians’ workloads are significantly increased without accompanying directly tangible benefits as a result of the introduction of the PCEHR, the system ‘will go the same way as has the UK EHR’. In other words, the argument is that some incentives need to be paid to medical practitioners to gain their full support for the PCEHR. Not surprisingly, the medical


179. Ibid.

180. ‘Audit slams British EHR program for being largely unsuccessful’, iHealthBeat, cited in ACHI, Response to request for comment on the draft PCEHR Concept of Operations, op. cit.
profession supports this claim; the Royal Australian College of General Practitioners arguing for government investment in change management within practices, training and education of practice staff and implementation of technical systems. One estimate is that the cost of providing incentives for the PCEHR alone would be up to $600 million a year—which raises the issue of whether the cost of the PCEHR has been adequately assessed and taken into account in policy development.

Health Minister, Nicola Roxon, has emphatically rejected introducing incentives, arguing that it is not the Government’s job ‘to fund each and every bit of a general practice or a health practice of any type which is going to constantly update itself and want to keep up with modern technology’. This approach is unlikely to win endorsement from the medical profession, with NEHTA’s clinical lead, general practitioner Mukesh Haikerwal, speaking out in support of the introduction of an incentives initiative.

**Funding**

E health funding in general has been seen as insufficient. However, from one perspective this could be seen as unjustifiably so, given the current Government has committed $43 billion to build the National Broadband Network (NBN) which will provide the infrastructure to assist in making many e health promises realities. In August 2011 a House of Representatives Committee report proclaimed:

> The availability of fast and ubiquitous broadband will fundamentally change the delivery of health services in Australia. It will enable more efficient service delivery, resulting in cost and time savings for citizens and health care providers. It will also enable better access to services for those who are isolated by distance or incapacity, resulting in improved health outcomes and enhanced quality of life.

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186. House of Representatives Standing Committee on Infrastructure and Communications, *Inquiry into the role and potential of the National Broadband Network*, House of Representatives, Canberra, August 2011, viewed 29 August 2011,
In contrast, the Opposition questions whether spending on the NBN will deliver what it promises in a number of areas, including e health. Citing evidence to an inquiry into the role and potential of the NBN, which argued that the NBN is ‘not a solution to e-Health in itself’, dissenting Coalition Committee Members argued that claims for its benefits in relation to e health are ‘overblown’.

In addition, it can be argued that specific aspects of e health which will be crucial to its acceptance and success have not received sufficient, or appropriately targeted funding. University of Sydney surgery professor, Mohamed Khadra, has described the present Government’s $467 million for the PCEHR for example as ‘a drop in the ocean’.

The states and territories have begun to petition for additional e health funding. At present their requests are concentrated on the integration of the PCEHR into existing infrastructure environments, but it has been intimated that more demands will be made to accommodate costs for further investment to improve the capability of information systems. In his submission to the Con Ops process, Victorian Health Minister, David Davis noted that there was an original estimation that e health would cost the states and territories over $4 billion, but that this was later considered unreliable. NEHTA has since provided funding for a new jurisdictional assessment of costs, but it seems unlikely that this will be less than the original.

**Overcoming e health silos**

A related issue is that of the tendency at present for the development of e health to occur in silos, with each component emerging without regard to interaction with its fellows. As the President of the AMA, Dr Steve Hambleton, observed in conjunction with a call for more e health funding in the 2011-12 federal budget, with or without additional funding, a greater, whole-of-sector approach needs to be adopted.

E-health has grown up in isolation, we’ve got to start talking about protocols we can communicate to each other nationally ... NEHTA is trying to do that, but hospitals have

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191. Note: at the time this statement was made Hambleton was the AMA’s vice president.
different software in each state and only recently have we started getting a single
unique healthcare identifier.

GP [general practitioner] software, which we’re all going to rely on ultimately to
communicate, is all different and the way GPs use the same software is different so
standards are really important otherwise we can’t get up and running.192

RACGP e health spokesperson, Dr Nathan Pinskier, warned also that a lack of protocols and
standards may undermine outcomes and it appears that silo thinking may already have delayed
critical developments in this area.193 Standards Australia was forced to discontinue work on 60
technical standards for the PCEHR in July 2011 because further funding had not been forthcoming
from the Government. Discussions are underway to remedy this situation, but it serves to illustrate
how crucial it is that e health transition is a collaborative, interactive process.194

Making the e health development process integrated and interactive has been problematic since the
1990s when the House of Representatives Standing Committee on Family and Community Affairs
commented on the reluctance of industry to consult with the health professions about technology
development and the overall fragmented approach to e health projects in Australia. There has been
progress over the past decade towards a national approach as agreements reached by the Council of
Australian Governments illustrate.

At the same time, as often occurs in Australia, individual states have continued to introduce their
own disparate e health initiatives. One example is the New South Wales FirstNet electronic medical
record system to trace patient care in the states’ hospital system; another is the South Australian
Government’s work on electronic master patient indexes, patient administration systems and secure
messaging platforms.195 The existence of these types of programs may complicate national processes
as possible overlap in programs and ways in which the systems can be integrated with national plans
will need to be addressed. Moreover, the question of whether individual systems will be compatible
with a national counterpart is always present. The South Australian Government’s submission to the
Con Ops process illustrates potential dilemmas from such a scenario. South Australia claimed it was

193. Ibid.
195. FirstNet was introduced by the New South Wales Labor Government in 2008. It has been intensely criticised by
practitioners and academics and following Labor’s defeat in 2011 the new Coalition Government commissioned
Deloitte to undertake a review of the scheme. In August 2011 a draft report of the review had been delivered.
Criticism of the scheme can be found in J Patrick, A study of a health enterprise information system, School of
Information Technologies, University of Sydney, Technical Report TR673, 2011, viewed 25 August 2011,
in a strong position to support the national PCEHR, but added the exact implications for, and participation of the state would inevitably depend on the final specifications.\textsuperscript{196}

More could be done at the federal level perhaps to discourage the states from taking on e health projects which could be problematic for the national implementation of e health while at the same time encouraging closer consultation on projects that may feed into final outcomes. State and territory petitions for funding could come with conditions that ensure projects are compatible with overall national plans.

**Workforce**

A number of e health related issues have yet to be addressed, despite their being raised in a number of instances. Shortages of health informaticians and obstacles in place which hinder their training and recruitment were identified in the 2007 Boston Consulting Group Review of NEHTA and in the Deloitte report upon which the current national e health strategy is based. More recently, the Health Informatics Society of Australia (HISA) has produced a study of the health informatics workforce which confirms these shortages. The HISA report quotes correspondence from Professor Gwynnyth Llewellyn, Dean of the Faculty of Health Sciences at the University of Sydney, to the Health Minister that warns of the consequences of not addressing these shortages:

... almost without exception, a critical component of the eHealth strategy has been ignored, namely, the HIM and HI [health information management and health information] workforce required to implement, operate and maintain a national eHealth system. The health system requires professionals conversant in the classification systems, data management, health languages and terminologies that are the basis of electronic health records, health statistics and casemix based funding systems. Without an adequate supply of qualified HIM and HI professionals, State and Federal Government eHealth initiatives will fail and other health information applications will come under increasing threat.\textsuperscript{197}

**Inclusion**

A further issue that has perhaps not been given sufficient consideration is that it is possible many of the people who are cited as potential beneficiaries of e health innovations are not sufficiently technically conversant to reap their benefits. Research undertaken by Dr Sandra Haukka from the


Queensland University of Technology has found that because of cost factors, more than 40 per cent of older Australians involved in her study were at risk of being excluded from the benefits of online services. This in turn could have serious negative connotations for personal and system health outcomes. The logic is simple, access to the Internet has the potential to improve self sufficiency, and this enhanced independence may help to prevent or forestall the entrance of older people into nursing homes or hospitals. These types of outcomes have the potential to alleviate some of the strain on the health system. Government programs such as the Broadband for Seniors project have made some inroads into resolving access issues, but there remains a significant percentage of older Australians who are not online.

A similar argument can most likely be applied in relation to other groups that are often identified as major beneficiaries of e health—rural and remote communities, social welfare recipients and the Indigenous population. Australian Communication and Media Authority statistics record that these groups are also low users of the Internet and cost is a factor in many remaining so.

Privacy

Of course the ‘plenty to do’ basket continues to hold the perennial questions relating to privacy. Submissions which focussed on security, privacy and related issues made up almost a quarter of those received in the Con Ops consultation process and, as been noted throughout this paper, privacy submissions always emphasise familiar issues. The important point is that these concerns have yet to be resolved to everyone’s full satisfaction. This is despite the Government’s assurances that privacy protection and appropriate security are critical aspects of the PCEHR and that a combination of technical, policy, governance and legislative safeguards will be in place to facilitate access only by the appropriate people and prevent inappropriate use of healthcare information.


200. The Government committed $15 million over three years from 2008–09 for this program. The 2011–12 Budget provided a further $10.4 million over four years. The program provides older Australians with free access to the Internet and assistance in using computer technology. Program kiosks are located in community centres, retirement villages, nursing facilities, libraries and clubs. More detail on the program can be found at the Broadband for Seniors website, viewed 19 August 2011, http://necseniors.net.au/


short, the fundamental trust in government plans, which appears to have underpinned the success of the Danish system, is lacking.

It does not help that any privacy violations which surface elsewhere continue to be reported on a regular basis—a recent British medical research foundation’s recent loss of an unencrypted laptop containing health information on 8.63 million patients and 18 million hospital visits, operations and procedures, is but one illustration. While incidents like this keep occurring, privacy will remain one of the most volatile and contentious e health issues.

The bottom line is that privacy is perhaps the most critical issue to be resolved for e health to gain the support of patient advocacy groups and patients themselves. Newspoll research in August 2011 found that 41 per cent of respondents were not confident their details will remain confidential under the PCEHR, and health IT expert Terry Hannan warns:

The fact that nearly half the population appears to harbour concerns about [PCEHR] trustworthiness foretells a possible enrolment disaster next year, and threatens to turn the system into a white elephant.

Scepticism and rejection

There is a body of work which questions whether e health is all that its proponents claim. In this vein, an article in the Medical Observer in August 2010 asks if PCEHRs in general can deliver what they promise. The article cites a recent British study which found no cases where the British summary care record (the SCR) ‘unequivocally made care safer, or in which absence of one seemed to make care unsafe’. This was because clinicians did not view the SCR as a sole source of reliable data. Instead they ‘drew eclectically on multiple sources, including the patient, electronic and paper records and their own observations and measurements’.

Added to this, a recent assessment of the impact of e health concluded:

... many of the clinical claims made about the most commonly deployed eHealth technologies cannot be substantiated by the empirical evidence. Overall, the evidence base in support of these technologies is weak and inconsistent, which highlights the need for more considered claims, particularly in relation to the patient-level benefits, associated with these technologies. Also of note is that we found virtually no evidence in support of the cost-effectiveness claims that are frequently being made by policy
makers when constructing business cases to raise funding for the large-scale eHealth deployments that are now taking place in many parts of the world.²⁰⁷

This contentious view has been refuted by Professor Patrick Ball, foundation professor of rural and remote medicine at Charles Sturt University, who makes the point that the view is based on meta-analysis. Ball believes this is only as good as the sources studied, and not all eHealth research is high quality.²⁰⁸

**Opposition turnaround**

Finally, there is the question of what will happen to the PCEHR and eHealth generally should the Coalition win government at the next election. The Howard Government’s early enthusiasm for eHealth no longer seems to feature in Opposition thinking. Indeed, this aspect of health policy appears to be low on the current Coalition’s agenda. No plans have been released to counter the Government’s approach and the Opposition Leader, Tony Abbott, has vowed to cease funding the PCEHR until federal budgets are back in surplus.²⁰⁹

Opposition primary health care spokesperson, Dr Andrew Southcott has, however, proclaimed a commitment to the principle of eHealth, while decrying past experience which has seen ‘a lot of money wasted’.²¹⁰ In this context, journalist Karen Dearne’s assessment is interesting. Dearne argues that as health minister in the Howard Government, Tony Abbott presided over much of the spending on eHealth to date and indeed was the creator of NEHTA, often accused of wasting eHealth monies.²¹¹

In response to demands from the AMA that the Opposition provide an alternative eHealth policy, Dr Southcott has stated that the Coalition is working on an eHealth plan based on consultation with stakeholders.²¹² To date, however, the Coalition has confined itself to echoing criticisms of the PCEHR and NEHTA, rather than presenting alternative eHealth options.²¹³ In an address to the

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²¹¹. Ibid.


²¹³. For example, in July 2011, in a scathing attack on the Government’s approach to eHealth, Senator Sue Boyce argued the PCEHR was not the ‘silver bullet’ the Government claimed. She also accused NEHTA of incompetency and simply
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Technology in Health Administration Conference in Sydney in 2011, Liberal Senator for Queensland, Sue Boyce, was particularly scathing about NEHTA, accusing it of repeatedly failing to deliver projects on time and constantly changing its goals, plans and deadlines to ensure that tracking its progress is almost impossible. \(^{214}\)

**Conclusion**

As has been noted throughout this paper, it is generally accepted that e health has great potential to revolutionise health care. But not only is e health revolutionary, it is complicated. Indeed, the e health transition process has been compared to putting a man on the moon. \(^{215}\) This paper has revealed that in order to achieve reasonably satisfactory—let alone revolutionary—e health progress, the backing of health professionals and patients needs to be secured. E health experiences in Australia and elsewhere in fact suggest that unless there is an alignment of expectations and agreement on directions and priorities, e health results are frustratingly difficult to achieve.

From the Australian perspective there is good and bad news. The good news is that there is general acknowledgement that the priorities of e health are laudable and that change is required to implement them. However, there is clear disagreement about the directions governments have taken in the past and about plans for future implementation. Moreover, there is a certain amount of disillusionment creeping into the e health debate. This is because long-standing issues relating to privacy, access to records, the competency of some bureaucracies charged with overseeing projects and questions about the adequacy and targeting of funding in the long term may not have been satisfactorily addressed.

For e health to work, however, such disillusionments must be addressed. A successful e health system must take into account all perspectives, concerns and issues for it to be supported and engaged with at all levels. Denmark provides an excellent example of how cooperation can deliver e health outcomes that are satisfactory to all stakeholders. In Denmark, government, the health professions and the public have all worked together, with the same agenda and the same objectives over a considerable period—but Australia is not Denmark. The federal system alone makes any health reform difficult; one as radical as e health is particularly challenging. Critically, in the Australian case, the fundamental cooperative and collaborative element that has helped to make the Danish e health experience a success is often frustrated.

At the same time, the Danish example provides a lesson which it is not too late to learn. Constant ‘sticking point’ issues for e health in Australia have been a lack of trust that proposals will deliver

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what they promise and confidence that e objectives will be realised. The lesson to be learnt is that it will take time and patience to garner trust and inspire confidence, and to do so requires genuine commitment to incremental change—easier said than done, but equally, necessary if the e health revolution is to eventuate.

Appendix A: key design features of PCEHR system

<table>
<thead>
<tr>
<th>The PCEHR system:</th>
<th>and not</th>
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<tbody>
<tr>
<td><strong>is</strong> opt in - if an individual or healthcare provider wants to participate, they need to register with the system to do so.</td>
<td><strong>and not</strong> compulsory - both individuals and healthcare providers choose whether or not to participate.</td>
</tr>
<tr>
<td><strong>is</strong> an enhancement to medical treatment - the PCEHR system will allow an individual's health information to be shared as and when it is needed to support the best possible care.</td>
<td><strong>and not</strong> a requirement for medical treatment - if a person does not wish to participate in the PCEHR system, this has no impact on their eligibility for treatment or Medicare benefits.</td>
</tr>
<tr>
<td><strong>is</strong> a source of selected clinical data and documents - in addition to a health summary in each PCEHR, which contains basic health data about an individual, clinical documents may be added to that person's PCEHR only with their agreement.</td>
<td><strong>and not</strong> a substitute for normal clinical records - an individual's healthcare providers will continue to maintain their own records of each person's health and wellbeing. Those will continue to be the primary records of a person's treatment and care.</td>
</tr>
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</table>
The e health revolution—easier said than done

| is | a source of information to assist enquiry – a person’s PCEHR is intended to be the start of the conversation between a person and their healthcare provider. It will hold basic data which can inform the kinds of questions the healthcare provider might ask. |
| and not | a replacement for normal sharing of information between an individual and their healthcare provider – as currently occurs in medical practice, existing medical records are used as the starting point for the discussion about the patient’s health, rather than as the complete and authoritative source of current information. |

| is | aligned with current privacy obligations – healthcare providers will have the same privacy responsibilities in relation to information in PCEHRs as they currently do in relation to other clinical information. |
| and not | immune to current sharing and reporting rights and obligations of providers – healthcare providers currently have rights and obligations in relation to disclosure of health information which will continue. These include the ability to access health information in life threatening situations and the obligation to report to government authorities about a range of disease and child welfare matters. |

| is | a distributed system of service providers working in concert – government and private sector organisations will work together to deliver the PCEHR system to individuals and healthcare providers. The proposed legislative framework is intended to impose appropriate controls and standards on all the delivery bodies. |
| and not | a single government store of personal information – while public sector bodies may provide some of the repositories which hold information for the PCEHR system, other private sector organisations may also participate as repositories where they meet relevant standards. |

Source: Legislation Issues paper\textsuperscript{216}

\textsuperscript{216} Legislation issues paper, op. cit.