

E-Health: electronic information storage and sharing to support improved patient care and productivity improvement in the health sector – the enabler of health reform

1. Preamble

If Australia is to address the ongoing challenges of international competitiveness and the need to maintain standards of living as our population ages, then it must find new sources of productivity and economic growth. One sector largely missing from previous microeconomic reforms but essential to underpinning future productivity growth is health. Unless decisive and timely action is taken, it will be missing from the next wave of microeconomic reform and productivity improvement.

1.1 The health sector affects Australia's productivity in two ways. First, its effectiveness influences the health status of Australians and thus the rate at which they can participate in the workforce and their relative productivity once there. Second, its own productivity affects the efficiency with which Australia uses scarce economic resources. The health sector already accounts for 9% of GDP and is expected to increase this share to between 12 and 15% over the next 20 years. Despite its dependence on imported technologies and international labour markets, it has been largely untouched by the forces of globalisation and international competition that have driven changes in other sectors. It is believed to have one of the lowest rates of productivity growth of all economic sectors in Australia.

Productivity in other sectors has been driven by the adoption of new technologies, especially information and communication technologies (ICT) and the new ways of working that these have enabled. Although the health sector has successfully developed and adopted many new clinical technologies and has established some basic patient administration systems, it has underinvested in the allowing the information generated from these systems to be shared or leveraged. This is reflected in the average investment of 2.5% of total expenditures on ICT and contrasts with an average of only 1.5% in the healthcare sector.

1.2 Health sector reform is both essential and inevitable. Australia's health outcomes have improved dramatically over the past 30 years and are some of the highest in the world. Yet without effective intervention, the rise in chronic diseases and ageing of the population will lead to a decline in those outcomes, undermining both social and economic prosperity through lower workforce participation and reduced workforce productivity.

Our capacity for effective intervention, however, is limited. The combination of fast-increasing costs, rising demand and constrained resources, particularly skilled labour, mean that the demand for health services is likely to exceed supply of services over the next 20 years. Significant reform of the way in which healthcare services are delivered and organised is essential; our current model of health care will not be sufficient and this has been made clear in the National Health and

Hospitals Reform Commission (NHHRC) report. The only question is whether the country will drive that reform in a rational and deliberative manner that accords with the society's preferences and economic requirements or whether it will just evolve in a haphazard manner. The Business Council of Australia (BCA) strongly believes that reform should be systemically and systematically pursued. The importance of health status to future economic growth is too important for this issue to evolve or to be left only to the health sector alone. Health is everybody's business.

Dramatic changes in the ways in which health services are planned, delivered and monitored are required.

2. E-health is a key enabler

2.1 Health is a knowledge and information-intensive industry. The ways and timeliness with which it generates, develops and applies knowledge and information not only reflect its prevailing business models, but also determines their viability. To improve the effectiveness and productivity of the sector implies improving the ways in which knowledge is generated and applied, information is gathered and used (and shared) among all the players – researchers, pharmaceutical and medical device companies, health service providers, financiers, patients and citizens.

The greatest effectiveness comes when these flows are secure, timely, accurate and to the point. A significant challenge is the need to manage exponentially growing bodies of knowledge that relate to the human condition and to ensure that the right information flows to the right person at the right time. The greatest efficiency comes when information is gathered once but transmitted to all who need to know it, thereby deploying scarce financial and human resources as effectively as possible. This is not just automating and speeding point-to-point communication, but also allowing multiple uses and multi-directional communications that support team-based and remote care and improved feedback loops within a secure environment.

2.2 E-health is electronic health information storage and sharing. It is both a key enabler of reform and reflective of that reform. By enabling different patterns of gathering, storing and sharing patient and population information, it enables new business and care models. It provides the opportunity to make the health services market more efficient and a national healthcare system a reality by linking together 'teams' of providers and the four major elements of research and development: clinical decision-making and treatment, administrative and financial processes, and public health.¹ It encompasses electronic patient information, service delivery tools, and electronic information sharing, such as referrals, test orders and results and care

¹ Booz & Co. (2008), *E-Health: Enabler for Australia's Health Reform*, Discussion paper prepared for NHHRC.

plans. Without it, the patient journey cannot be seamless, medical errors cannot be reduced and rational health service planning and accountability cannot be achieved.

3. Benefits and costs of investment in e-health

3.1 Benefits flow across the system so benefit/cost analyses must be systemic.

Because of the way in which the benefits of establishing a nationally integrated system of patient information flow through the systems, any benefit/cost analysis undertaken on e-health needs to take account of the system benefits and costs. Such analyses are often being done on too narrow a basis and from the perspective only of the payer. To the extent that they are unable to capture benefits, then the analysis from the perspective of Australia as a whole is distorted. The recent studies in regional Victoria of telemedicine versus traditional ambulance transport to central facilities are a case in point.

3.2 International implementation experience provides a good guide to potential benefits and costs. Although Australia has been experimenting with e-health initiatives for several years, other health systems internationally have managed to achieve greater levels of functionality and coverage. The benefit of this is that where once the benefits of e-health could only be speculated upon, that international experience now provides clear evidence of the scale of net benefits available if Australia were to implement a national e-health system.

3.3 The estimated costs of e-health investment are \$6.3b over 5 years across the system, or just over 1% of the total health expenditure in that period. The draft national strategy estimates national investment of \$1.5b over 5 years, with investment required of between \$0.5–1.0b p.a. (say, \$5.0b over 5 years). The current total expenditure on health is \$103.6b (2007/8²).

3.4 The potential benefits are \$27.8 billion over the first 8 years The Booz paper summarises results drawn from Allen Consulting and KPMG . The gross benefits of implementing the national e-health record alone is \$27.8 billion over the first 8 years of implementation. This comprises:

- \$6.8b in decision support
- \$9.0b in productivity gains
- \$6.3b in redundant testing
- \$6.3b in time saved

² AIHW (2009) Health Expenditure Australia 2007–8, Canberra.

- \$2.1b in reduction in adverse events

Allen Consulting Group in their study for NEHTA estimated that implementation of the national e-health record system could enable an increase of 4.8–6% in real output in the hospital and medical services sector. They also estimated that the investment would generate an additional \$7.5b–\$8.7b in additional GDP by 2019.

Access Economics has estimated that an investment of \$6.3b in an integrated national e-health record system will increase the net present value of GDP by \$6–13b over 10 years and create 12,000 new jobs.³

3.5 Estimated benefits will also include those that flow from improved public policy decision-making and performance of the health sector. These estimates assume productivity gains as a result of streamlined operational processes and reduction in duplication and waste. However, benefits will also flow as the greater transparency of data improves policy decision-making and consumer choices; that is, from improved operation of the health sector market and the greater capacity for competition between providers that flow from that.

3.6 The potential benefits will be reduced depending on policy choices. In the studies referred to above, it is accepted that these benefits may be reduced by certain policy choices, including the continuation of state-based rather than national systems. Public concerns about the security of data, its linkages to other government databases and who will have access to that information, however, may practically limit the functionality that can be achieved, at least initially.

3.7 The benefits of investing in e-health extend well beyond the financial. Although this paper repeats the financial benefits estimated to accrue from e-health investment, it is clear that the benefits extend well beyond the financial. The new system capability allows greater leverage of existing skill bases to ameliorate the effects of emerging skill shortages and mal-distribution; it reduces the opportunities for adverse events; it enables new models of team-based care and remote care, and it enables better planning and monitoring of performance of the system. The 'do nothing' option provides no viable solution to any of the challenges outlined earlier.

4. What's blocking progress in Australia

So if the current systems of health service delivery are already struggling to meet demand and the clinical and financial benefits are clearly demonstrated from actual

³ Access Economics (2009) *The Economic Benefits of Intelligent Technologies*, report for IBM and available at www.-03.ibm.com/press/au/en/presskits.wss

international experience, why are the decisions in Australia so tentative? How can the momentum for this fundamental reform be hastened?

4.1 Viable business models for investment in e-health by many private providers do not exist. They do not exist because of the failure of governments to demonstrate their commitment to the national e-health strategy by developing an implementation plan, and in particular an investment plan for those core parts of national infrastructure which only they can do. The combination of spillover effects, where benefits flow to those who have not provided the initial investment, and the failure of governments to provide infrastructure to support a nationally integrated system is slowing investment in new systems by health service providers and software system providers alike.

4.2 State governments need to invest in public hospitals in ways that meet interoperability standards. The existing investment in e-health initiatives has given varying levels of coverage across the various elements of the health sector. For example, some systems such as Medicare and PBS are already national in coverage; 90% of GPs are computerised and potentially linked or linkable to national systems and other sectors, and most diagnostic services are electronically linked. However, there are key gaps in coverage: specialists, public hospitals and many allied health professionals. In some cases there has been significant investment made, such as in public hospitals, but within locally determined rules meaning that there is already an emerging 'rail gauge' problem across jurisdictions. Both those who have invested and those that have not point to inconsistent market signals, benefits that flow to those that have not been direct investors, and wasted investments.

4.3 As Australia prioritises its national infrastructure investment for the 21st century, investment in a nationally integrated e-health system should be incontrovertible.

5. E-health strategy

A national e-health strategy has been accepted in principle by COAG. The NHHRC final report also endorsed the strategy and pointed to the urgency of implementation planning to support the new models of care they believe necessary for the next generation of health care. NEHTA has also recently released a draft implementation strategy to give effect to much of that overarching strategy. The BCA endorses these documents.

5.1 The strategy, characterised as a 'guided market' model, seeks to minimise the risks associated with a purely government-built or commissioned 'big bang' system by recommending instead that government provide core elements of national infrastructure and help shape the market by setting national standards for functionality and inter-operability, certifying various software solutions and providers and timing of take-up by providing incentives and penalties to providers to invest.

The draft strategy identifies three phases of work over 10 years:

- connect and communicate – establishing the foundations for e-health and providing basic connections to allow information sharing to occur between providers and across the sector
- collaborate – moving from basic communication to collaboration, joint care planning and multi-disciplinary care through more extended information sharing
- consolidate – e-health is part of business-as-usual for healthcare provision but maintained and enhanced to support ongoing innovation in healthcare models.

The strategy assumes leveraging existing and planned investments, using proven technologies and building acceptance and confidence from users as implementation progresses.

6. Basic building blocks needed from government

To repeat, Australia will only build momentum behind e-health as an enabler to health sector reform if governments:

- Agree and commit to a national e-health strategy/action plan and appoint a lead agency with an appropriately structured board
- Establish national standards and a certification process for proposed software solutions
- Invest in key elements of infrastructure (such as identifiers for users and providers, repository and indexing systems and secure messaging), the benefits of which are too dispersed to be captured by any one investor, thereby addressing a market failure and driving new ways of working and accessing information rather than automating current ways of working
- Seed fund key, scalable e-health projects in areas where there are high-priority needs to test the technology, business cases and measure the benefits. This will build momentum and provide information from which government can develop suitable market-shaping incentives and penalties to encourage take-up by providers
- Build a national network structure that will provide the foundation for further innovation and reform, such as new models of team-based care and remote care.
- Legislate for national privacy legislation and the removal of other legislative blockages on transfer of information
- Ensure a ready supply of appropriately trained health IT professionals
- Engage in a comprehensive education campaign with ALL stakeholders, including the public, to explain why there is a need for reform of the way health information is managed and that it is critical to building a better and sustainable health system. Sell the need for change!

7. Capacity and willingness of private sector to participate

One of the questions raised by government is whether the information technology and communication sector in Australia has the capacity and interest in participating in the development of the e-health system. The short answer is yes, as long as the government commitments and investments outlined above are made. Without them, the sector is reluctant to invest because of uncertainty about whether, for example, a technology path will become the accepted industry standard. Neither the sector nor their potential clients are willing to invest until directions and national standards are clear.

Furthermore, the BCA strongly supports the recommendation in the draft e-health strategy of implementing known technology solutions rather than seeking to develop specific solutions or new products. The need to ensure confidence in the system by patients and service providers alike is crucial and using proven technologies is an essential part of building that confidence. We are also aware from within our own membership that considerable expertise in health system development is available from those who have worked on the international developments, referred to above.

Our members' experience also strongly suggests that future developments need to be guided by future users' needs and preferences, within the framework of the national standards. Design by those who are more concerned about administrative or bureaucratic requirements at the expense of those involved in clinical service provision will not achieve the new ways of working that the sector needs. Although there is always a tension between those who wish to merely automate their current operating processes and those who would drive new ways of working, the process of implementation and governance must manage that tension.

8. Risks

8.1 Public confidence is key. Any rational decision-making process associated with a large investment seeks to identify and mitigate the risks inherent in the project. For e-health, the failure to sell the need for health sector reform and the e-health system as an integral part of the preferred solution is the key risk. Lack of public confidence in the security and potential uses of the data will render any investment obsolete. However, experience internationally and within Australian pilot sites provides clear guidance on how to build such confidence and mitigate the risk. All participants have a role to play in ensuring security of access and appropriate usage, but governments will have a dominant role in this through the establishment of the privacy legislation, national standards and protocols and ensuring compliance.

8.2 Failure of providers to invest. Other risks are associated with failure to take up the systems and the opportunities afforded them, but again, government can help mitigate these risks by ensuring first, that the design is appropriate clinically, the technology is proven and the incentives (or penalties) to take up the new systems are in place.

8.3 Investment precedes national standards and security. If the investment is not made in building the national infrastructure as outlined above, then investment in ICT in the health sector will continue to deliver sub-optimal returns and the structural reforms that the future demands will not be delivered. Early determination and adoption of national standards is critical to mitigate this risk.

8.4 System design merely replicates current ways of working. The major risk associated with any large IT project is that despite its promise of productivity improvement through redesign of ways of working, all that happens is that current operational processes are automated. While this might be a necessary first step (see 8.5 below), a key risk associated with e-health is that it will merely provide for an electronic system of point-point communication instead of the multilateral possibilities that will allow better use of scarce resources. While user preferences must be incorporated in the system design, there must be sufficient leadership from those who understand the new models of care required and the potential offered by new platforms and system-wide connection. The agreement and support from professional bodies and clinical leaders will be essential to manage this tension and risk.

8.5 Project scope ‘creep’ often undermines the benefits of large IT projects. Although there is a need to create an innovative tension that pushes new ways of working, the basic elements of e-health need to be the subject of discrete projects and managed accordingly. The risk of large IT projects in expanding their scope can be mitigated by strong project management discipline.

8.6 ‘Do-nothing’ option. The other risk element that is relevant is the risk associated with not proceeding. These are the lack of clinical and financial sustainability of the current system, outlined above.

9. Conclusion

E-health is essential as part of making the healthcare sector more productive. As the nation prioritises its infrastructure investments to underpin economic growth, e-health must be a high priority. However, it is not an end in itself; it is an enabler of structural reforms in the health sector that are vital to improving Australia’s productivity.

The most effective strategy to implement it is mix of public and private investments within a strongly coordinated framework established on the basis of interoperability, national functionalities and new models of care.

The private sector has both the capacity and interest to contribute to this major infrastructure project but needs both action and investment by government to remove blockages and key elements of national infrastructure in which no-one else will invest.

Overall e-health needs key national leadership and a commitment to long-term improvement in the structure and performance of an important Australian industry.