

How e-Health can Transform Health Care: Breaking the Barriers

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Reasons for Action

Costs and productivity losses are large and growing

The prevalence of chronic disease, particularly diabetes, is huge and increasing. It is a major cost to the community and has a significant effect on workforce participation and productivity.

Over 750,000 Australians have been diagnosed with diabetes and the number is growing at 9% per annum [Diabetes Australia Victoria]. An equal number of people are undiagnosed and a further 1.5 million are pre-diabetic. The direct cost of Type 2 diabetes in Australia is estimated to be over \$3 billion dollars a year. Indirect costs are estimated to double this cost.

Source: Colagiuri S, R. Colagiuri, B. Conway, D. Grainger, P. Davey, "DiabCost Australia: Assessing the burden of Type 2 Diabetes in Australia", Diabetes Australia, Canberra, December, 2003.

The prevalence and cost of other chronic diseases is of comparable magnitude. For example, in 2001 cardiovascular diseases cost the Australian health care system \$5.5 billion (10.9% of total allocated health expenditure), respiratory diseases \$3.7 billion (7.5%) and mental disorders another \$3.7 billion.

Source: Australian Institute of Health and Welfare, "Health system expenditure on disease and injury in Australia, 2000–01", Second edition, AIHW cat. no. HWE 28, Canberra, 2005.

Poor management of diabetes leads to heart attack, stroke, leg and foot amputations, blindness, and kidney failure. Approximately four million people worldwide die from diabetes every year, and it is predicted that this will increase by up to 80% in the next decade.

Source: World Health Organisation, "Diabetes: The Cost of Diabetes", Fact Sheet N°236, Revised September 2002.

Chronic disease significantly impacts labour market participation and productivity. In the US, the participation rate for Type 2 diabetes sufferers aged over 55 years is 70% for males and 48% for females, compared to 84% and 60% respectively for non-sufferers. In addition, working diabetic males [aged over 50] earn on average 69% [of that of] non-diabetics.

Source: Human Capital Reform: Report by the COAG National Reform Initiative Working Group, Feb, 2006.

Conventional approaches are not working

Meeting the complex needs of patients with chronic illness or impairment is the single greatest challenge facing organised medical practice. If we are to improve care for most patients with chronic illness, the evidence strongly suggests that we reshape our ambulatory care systems.

American College of Physicians, ACP Online, 2005

- Over 50% of doctors do not follow best practice guidelines
 - Less than 14% of chronic disease patients on care plans, less than 1% tracked for adherence
 - 15-30% of people don't take prescribed medications
 - 50% unnecessary acute episodes/hospitalisation from lack of knowledge of patient condition
 - 50% variation in practice outcomes across regions
 - 50% of patients with heart disease do not use medications that reduce recurrence by 30%
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New approaches can work

Evidence indicates that new approaches to chronic disease management, supported by systems for better monitoring, sharing, and utilising health information, could significantly reduce the health burden and improve health outcomes.

- Disease Management programs (USA)
 - Review 16,000 titles, 102 studies – improved patient satisfaction (71%), patient adherence (47%) and disease control (45%)
 - American Healthways – 23% cost savings for the entire population, 64% cost savings for chronic heart failure
 - Ohio State Teachers – 5,800 enrollees, \$8.6m savings first year
 - Home Monitoring
 - 40-60% reduction in hospital admissions
 - 40-60% reduction in length of stay
 - Medication compliance increased from 35% to 95%
 - Adverse Drug Events in ambulatory setting (Australia)
 - \$493 million cost of avoidable events – 50% saving through better knowledge sharing among providers
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Keys to Transformation

Move to the Knowledge Enterprise

INDUSTRIAL ENTERPRISE	KNOWLEDGE ENTERPRISE
Physical components	Networked information
Big players (economies of scale)	SMEs (economies of innovation)
Control, conformance	Autonomy, heterogeneity
Standardized, uniform	Customized, personal
Planned and stable	Adaptable
Closed, interoperable information systems	Open & distributed information systems
Diminishing returns, low margins	Increasing returns, high margins

Build Connectivity

- Information economy (1970 to 1995)
 - Invest in **crunching power**: Competitive advantage accrues to those who invest to process more data and information more quickly.
 - Moore's Law: The performance/price of computing doubles every eighteen months.
 - Knowledge economy (1995 onwards)
 - Invest in **connecting power**: Competitive advantage accrues to those who invest to connect to more people and share knowledge faster and farther.
 - Metcalf's Law: The value of a computer is proportional to the square of the number of connections it makes.
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Accept Autonomy and Heterogeneity

- “The dream behind the Web is of a common information space in which we communicate by sharing information. Its universality is essential: the fact that a hypertext link *can point to anything, be it personal, local or global, be it draft or highly polished.*”
(Tim Berners-Lee)
 - Designed from the beginning to have no central authority and to operate “while in tatters”.
 - Cost the taxpayer little or nothing, as each node was independent and had to manage its own financing and its own technical requirements
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Next Steps

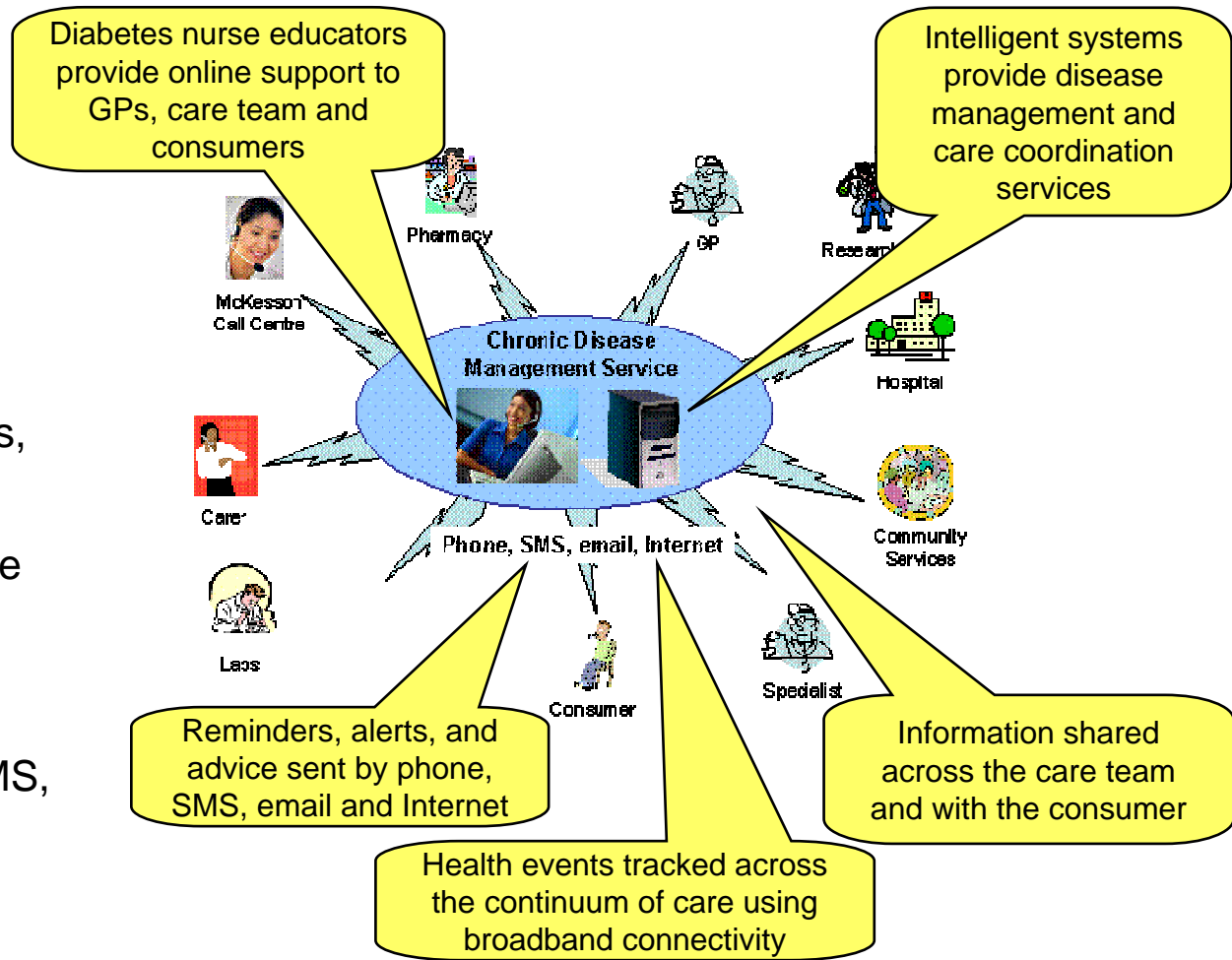
Incremental development of a services network

- **Electronic Messaging among Providers**
 - Referrals and discharge summaries
 - Extend to orders, hospital admissions, results and follow up actions
 - Across the entire spectrum of care
 - **Tracking Health Events**
 - Prescriptions, medications and health assessments
 - Electronic access to MBS and PBS data
 - Remote (home) monitors
 - **High Added Value Applications**
 - Referrals management
 - Medications (prescribing) management
 - Continuous patient monitoring
 - Chronic Disease Management
 - Issuing of reminders and alerts (to care providers and consumers)
 - Continuous feedback on process and outcomes (to care providers and consumers)
 - Self education
 - Population-based audit
 - Automated billing
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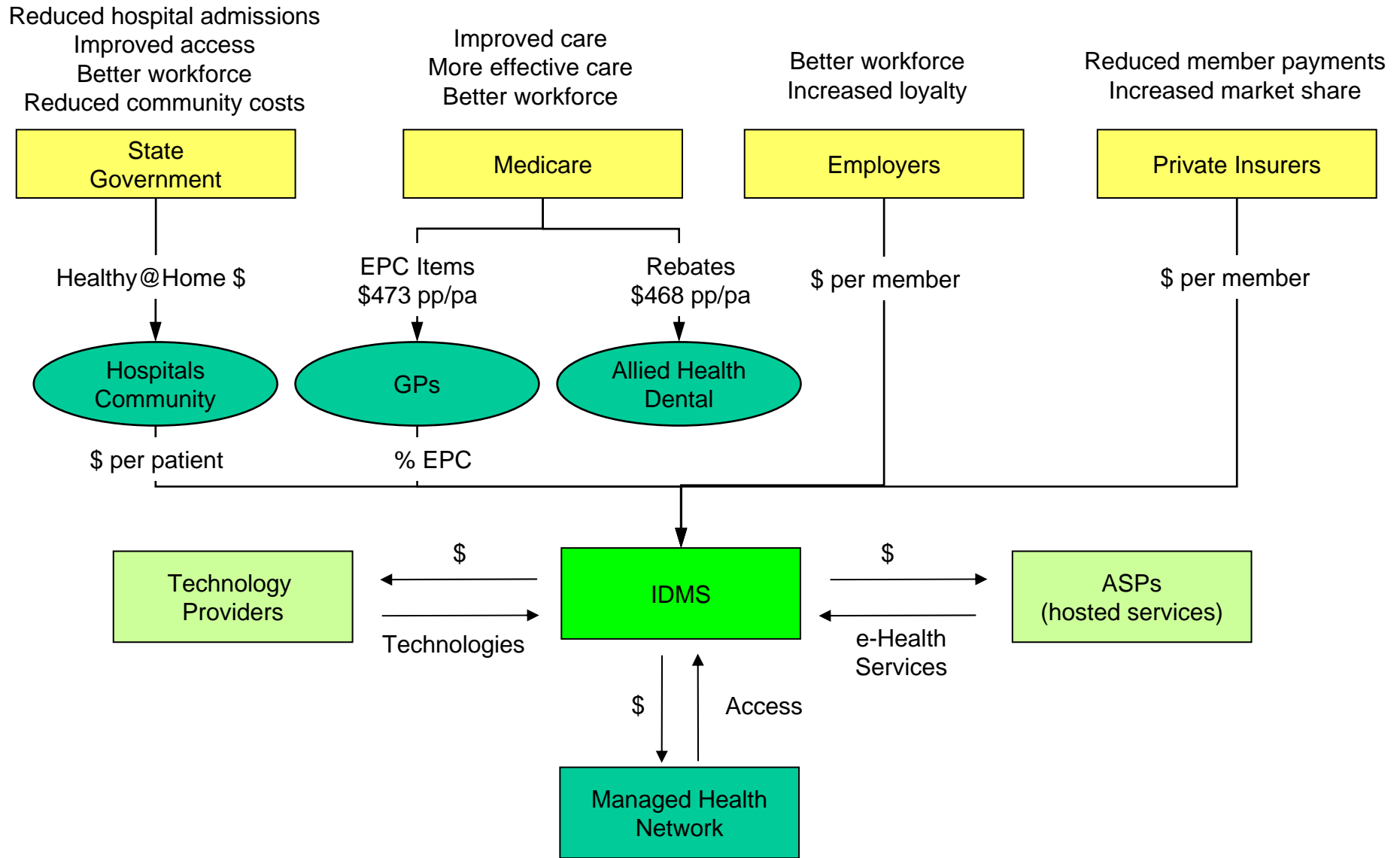
IDMS: Intelligent Disease Management Services

A scalable broadband-based disease management service to assist health care providers and consumers continuously monitor and manage chronic disease

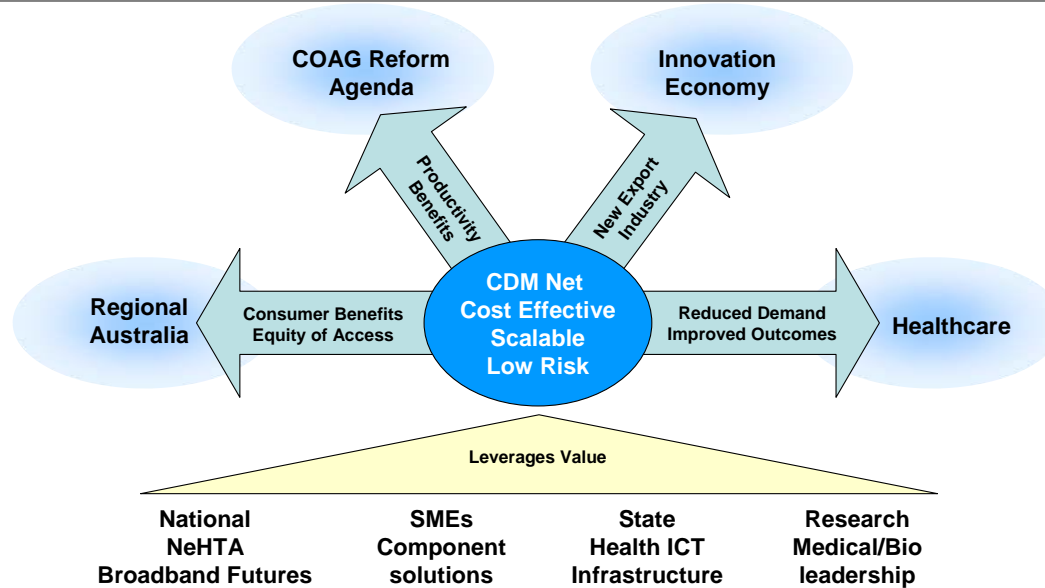
- Supports GPs in the creation of personalised care plans
- Continuously tracks adherence to care plans
- Remotely monitors key wellness parameters
- Supports adherence to care plans with reminders, alerts, notifications and advice
- Shares knowledge of care plans and other health information with the care team and consumer
- Via all communication channels: phone, fax, SMS, email, Internet



Business Model



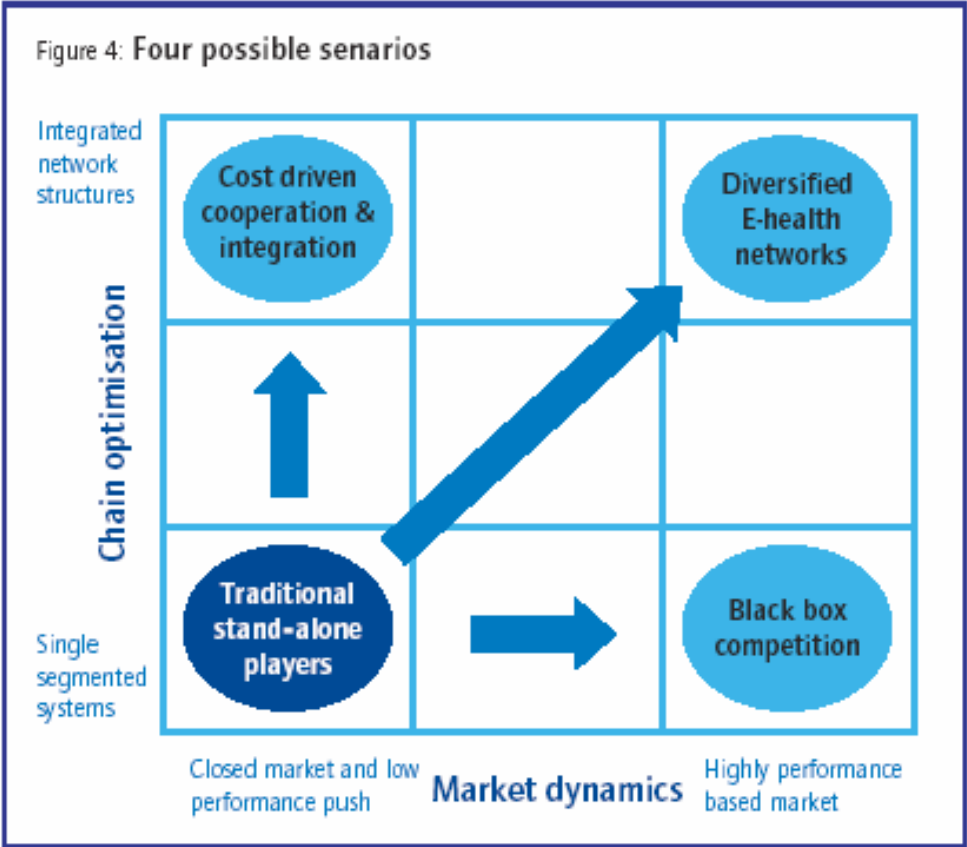
Benefits



Annual Benefits	Demonstration (300 persons)	Eastern Goldfields	WA
Hospital productivity savings (reduced admissions, length of stay)	\$230,000	\$1.9 million	\$33 million
Increased provider payments (EPC Items)	\$282,000	\$2.3 million	\$40 million
Reduced community costs (travel, carers, special requirements)	\$303,000	\$2.5 million	\$44 million
Increased workforce capital (higher participation, productivity)	\$803,000	\$6.7 million	\$115 million

Assumes 50% uptake, 30% hospital and community cost reduction, 3% workforce impact

The Future: which path will we take?



Drivers and Incentives

- Misalignment of beneficiary and payer
 - Hospital and GP
 - EHR, no business case
 - No infrastructure, Early entrants lose out (McKinsey)
 - Incentives for evidence based practice
 - EPC items
 - Outsourcing of clinical services
 - individual value propositions will then drive health care providers and businesses into
 - electronic data entry
 - agreed data models,
 - care management
 - decision support applications
 - Consumers, together with provider feedback, will drive evidence-based care and practice change.
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