Parliament of the Commonwealth of Australia

House of Representatives
Standing Committee on Family and Community Affairs

HEALTH ON LINE

REPORT INTO HEALTH INFORMATION MANAGEMENT AND TELEMEDICINE

October 1997

Australian Government Publishing Service

Canberra

“Only four years ago I was opposed to this sort of computer technology and cautious of the privacy and clinical implications of its introduction and application. Now, I am its strongest advocate. Our ability to care for these children and document what we have done has improved beyond all expectations.”

Doctor Jonathan Gillis
Head, Paediatric Intensive Care Unit
New Children's Hospital
(Royal Alexandra Hospital for Children)
Westmead, New South Wales

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TERMS OF REFERENCE

HEALTH INFORMATION MANAGEMENT AND TELEMEDICINE

To inquire into and report to the Parliament on the potential of developments in information management and information technology in the health sector to improve health care delivery and to increase Australia's international competitiveness with particular reference to the:

- current status of pilot projects already commenced and an evaluation of their potential for further development;

- costs and benefits of providing advanced telecommunications and computer technology to general practitioners and other health care professionals throughout Australia, particularly in rural and remote areas;

- ethical, privacy and legal issues which may arise with wide application of this technology and transfer of confidential patient information;

- development of standards for the coding and dissemination of medical information;

- feasibility of Australia becoming a regional or international leader in the development and marketing of this new technology; and

- implications of the wider development and implementation of medical practice through telemedicine for public and private health outlays, including the Medicare Benefits Schedule.

GLOSSARY AND ABBREVIATIONS

ACCI	Australian Computing and Communications Institute
ACT	Australian Capital Territory Government
AHMAC	Australian Health Ministers' Advisory Council
AMA	Australian Medical Association
AMC	Australian Medical Council
ANDRG	Australian National Diagnosis Related Groups
ANF	Australian Nursing Federation
CHF	Consumers' Health Forum of Australia
DICOM-3	Digital Imaging and Communications in Medicine
DPIE	The Department of Primary Industry and Energy
FMRU	The Family Medicine Research Unit
GPs	General Practitioners
HCN	Health Communication Network
HFC	Hybrid Fibre-coaxial Cable
HIC	Health Insurance Commission
HL7	Health Level Seven
ICD	International Classification of Diseases
ICD-9-CM	International Classification of Diseases - 9th revision - Clinical Modification.
ICPC	International Classification of Primary Care
ICPMR	Institute of Clinical Pathology and Medical Research
IM	Information Management
IMIA	International Medical Informatics Association
IMSG	Information Management Steering Group
IP	Internet Protocol
IPPs	Information Privacy Principles
ISDN	Integrated Services Digital Network
IT	Information Technology
IT/14	Standards Australia Health Informatics Committee
Kbps	Kilobits per second
Mbps	Megabits per second
MBS	Medicare Benefits Schedule
MRI	Magnetic Resonance Imaging
MSIA	Medical Software Industry Association,
NCC	National Coding Centre
NCEPH	National Centre for Epidemiology and Population Health
OECD	Organisation for Economic Co-operation and Development
PBS	Pharmaceutical Benefits Scheme
PHHS	Pintubi Homelands Health Service
PIN	Personal Identification Number
PIT	Pathology Information Transfer

POTS	Plain Old Telephone System
RANZCP	Royal Australian and New Zealand College of Psychiatrists
RCNA	Royal College of Nursing Australia
RCPA	Royal College of Pathologists of Australasia
RPBS	Remuneration Pharmaceutical Benefits Scheme
RTIF	Commonwealth Government Regional Telecommunications Infrastructure Fund
SGE	Secure Gateway Environment
SNOMED	Systematised Nomenclature of Medicine
TARDIS	Telemedical Applications for Remote Distributed Interactive Systems
USO	Universal Service Obligation

Executive Summary

1. As the title of the Committee's inquiry indicates, Health Information Management and Telemedicine are interrelated components of health care delivery, using electronic equipment requiring high level telecommunications infrastructure. This report begins by making a distinction between these two terms. 'Health Information Management' refers to the collection, storage and exchange of health data and information, by means of electronic technology. 'Telemedicine' is the practice of medicine and delivery of health care between two distant locations by the use of interactive videoconferencing facilities.

2. In recent times, a variety of terms and definitions have been used both within Australia and in other parts of the world to describe these processes. The effect has been that discussions have suffered from lack of clarity. In order to standardise terms and definitions for use both within Australia and in Australia's international dealings, the Committee has recommended the use of the term 'Health Informatics', to describe the collection and electronic management of health data and information and the more inclusive term 'Telehealth', to encompass both the practice of medicine and the delivery of health-related services by interactive videoconferencing facilities.

3. Communication technologies have progressively improved the efficiency of delivering services. The introduction of advanced technologies have resulted in changes to the operations of major institutions. However, the activities involved in the delivery of health care have not kept pace with this development, despite health sciences being at the cutting edge of the present so-called information age.

4. A major factor inhibiting such development is the absence of adequate telecommunications services to rural and remote communities. In comparison to the facilities enjoyed by people living in urban areas and major provincial centres, rural and remote areas of Australia continue to be disadvantaged.

5. The Committee has recommended that rural and remote communities apply to the Regional Telecommunications Infrastructure Fund to upgrade the level of their facilities. It is anticipated that the current telecommunications charges are likely to decrease in a deregulated industry, and communities are encouraged to negotiate their requirements with the most competitive carrier.

6. It is widely acknowledged that Telehealth and Health Informatics will improve the delivery of health services. Despite the lack of data, it is generally perceived that the full deployment and use of technologies in health will be cost neutral. However, a thorough evaluation of the benefits and costs of these processes has not been conducted either in Australia or in other countries trialing

and using these methods. The Committee has therefore recommended the development of a model designed to evaluate the costs and benefits of deploying Telehealth and Health Informatics within the Australian health system to allow a more accurate assessment to be made.

TELEHEALTH

7. Telehealth is valuable in solving many challenges created by underserviced rural communities. Telehealth consultations can reduce unnecessary travel for both the patient and the doctor and enable a GP in a rural practice or in a remote Aboriginal community to consult with a specialist in a major teaching hospital anywhere in Australia, or in any other country in the world. A bush nurse in a remote clinic can be assisted in the care of a patient through Telehealth consultations with a doctor, who may be located in the nearest town or a capital city.

8. Examples are given of projects which have assisted rural and remote communities. The Renal Dialysis trial undertaken by the Queen Elizabeth Hospital in Adelaide with a number of remote sites, including Port Augusta 300 km distant is now an operational Telehealth network. Similarly, the intensive care TARDIS project based at the Royal Brisbane Hospital links with two other distant Queensland hospitals at Nambour and Maryborough.

9. Telehealth trials have been conducted between the Queen Elizabeth Hospital and the Tanami Network, a seven site video-conferencing facility owned and operated by the Aboriginal communities in the Tanami region of the Northern Territory. The visit by the Committee to the Tanami region reinforced the view that the health care services of isolated Aboriginal communities would benefit through improved telecommunications services. The Committee has recommended that the submission by the Tanami Network to the Regional Telecommunications Infrastructure Fund for the establishment of an Outback Digital Network should be approved if it meets the Board's criteria.

10. The Committee supports the full introduction of Telehealth but rejects the continuation of pilot trials. Many projects did not go beyond the trial stage once funds ran out leading to a great deal of wasted resources, particularly as the information and knowledge gained from them was never disseminated.

11. Lack of remuneration for GPs was identified as a major barrier to the use of Telehealth because the Medicare Benefits Schedule applies only to face to face consultations. Under the current provisions of the Health Insurance Act, there is a requirement for the personal attendance of the medical practitioner for a consultation to be considered a professional service. In order to encourage the medical profession to computerise, it is necessary to remove barriers which act

as disincentives. The Committee has therefore recommended the recognition of Telehealth consultations as an item in the Medicare Benefits Schedule.

12. Telehealth could diffuse responsibility for patient care, as more providers become involved and information is increasingly shared across a broader range of institutions in a variety of geographic locations. Currently in Australia, Telehealth is being used within the public system and these issues have not arisen. Medico-legal questions are preoccupying legal experts around the world and must be addressed. The Committee has recommended that the Commonwealth Attorney-General, together with his State and Territory counterparts, canvass this issue as a matter of priority and proceed to the establishment of appropriate legal regimes.

13. A related issue is the question of the medical registration of health care professionals. The Australian Medical Association has urged a review of the present system and State governments are unanimous in calling for the development of a simple multi-State registration mechanism or mutual recognition in order to allow Telehealth to be practised across jurisdictions. The Committee has recommended that the Australian Medical Council negotiate with registration bodies in the various States and Territories to introduce a national framework of mutual recognition.

14. In addition, the Committee has recommended that a selection be made of major teaching hospitals who are prepared to become a Centre of Excellence. If a selected hospital agrees to become a Centre of Excellence and deliver Telehealth services to an allocated regional area, including remote locations, the Commonwealth and the State should enter into a joint agreement to fund that service.

15. As well as delivering Telehealth services locally, these Centres of Excellence can promote Australian expertise within the Asia-Pacific Region and beyond and deliver education programs to medical students studying in their country of residence. Foreign aid, including humanitarian aid, could also be delivered through these Centres by use of Telehealth consultations with doctors working in remote locations in Asia and the Pacific.

HEALTH INFORMATICS

16. A number of States have already begun to establish their unique Health Informatics systems, such as data warehouses, in order to provide aggregated patient information in the form of an electronic record. There is also a growing trend in the use of electronic communications between health providers, particularly in hospital settings and by pathologists and radiologists.

17. An electronic medical record tracks a health consumer throughout the individual's lifetime to include all care providers at all sites of care. This creates an environment which appears to have no boundaries and in modern terminology can be called "virtual". When used in conjunction with an information repository, the electronic medical record supports clinical decision making and results in improved patient outcomes, because a significant number of adverse health events are the result of failures in the timely exchange of health information.

18. The Australian Medical Association and the Royal Australian College of General Practitioners support the introduction of Health Informatics because of its potential to help improve health outcomes. Both these organisations have put forward the view that poor communication of health information is the primary reason for duplication, and consequential waste, of health resources.

19. The rise of the consumer movement and the extent to which consumers are being allowed to affect health policy and practice has led to the traditional compact between the health provider and the patient changing completely. Greater access to health information and data, particularly via the Internet by health consumers, could also mean acknowledging that many patients will know more about their condition than their doctor. It will certainly mean that most practitioners will feel the need to have ready access to the latest health information available.

20. The issue of ownership of medical records and that of patients' right of access are closely linked. There is no clear answer to the question of ownership, nor is there a legislative right of access to medical records which extends to the private health sector. The general privacy principle that an individual has a right to access information about herself or himself conflicts with current Australian common law in relation to medical records.

21. The Committee has resolved this issue by recommending the introduction of a electronic health card. The electronic health card is favoured as part of an overall electronic exchange, enabling the consolidation of the highly fragmented system of health care delivery. The electronic health card has the potential to provide the opportunity for people to own and hold their own medical record, to understand and determine its contents, and to use it across an integrated network of health services.

22. The allocation of a unique patient identifier, in conjunction with the electronic health card, is supported. A unique patient identifier allows the tracking of data through the health system in order to provide better coordinated health care and assists in ensuring its accuracy, thereby reducing the possibility of data being incorrectly attributed.

23. The Committee recognises that this recommendation may be of concern to sections of the medical and broader community who must be intimately involved in its development. The Committee also notes that equally sensitive material - banking, taxation returns are currently exchanged electronically. However, the benefits to both individuals and society of electronic transfers in health are likely to outweigh potential risks.

24. The Committee found no convincing grounds that 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.

25. 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. By maintaining control of the national backup facility under a Commonwealth Government agency, it ensures that the provisions of the *Privacy Act 1988* will apply.

26. In addition, the introduction of the Canadian PharmaNet system, which is a computer network designed to serve all community pharmacies, is supported. The system records details of every prescription dispensed at community pharmacies with a central data system which monitors drug usage. The monitoring of prescription drug usage will assist in the minimisation of drug interactions. The PharmaNet central storage base will be incorporated within the national backup facility.

27. The Committee recognises that the Internet is the currently chosen primary means of electronic communications. Whatever the future technology is likely to be, it is essential that seamless whole-of the nation solutions will be maintained for both domestic and international use.

28. The Committee supports the Internet as the primary means of electronic communication of health information. The Internet is preferred because of its flexibility and accessibility, particularly to rural and remote health care professionals. The Internet can operate over ordinary copper telephone narrowband, as well as the most sophisticated optical fibre broadband technology. It has been recommended, therefore, that an Internet security system, which has received the accreditation of the Defence Signals Directorate, be developed to support the electronic health card with a national backup system.

29. The cooperation of the medical profession, particularly General Practitioners, who are the least computerised, is essential to the success of developing a streamlined health care system. The Committee has made a number of recommendations designed to encourage General Practitioners to computerise their practice. These include the provision of financial support for the purchase of technology and for use in clinical settings to be a deductible business expense for taxation purposes.

30. In addition, the majority of the Committee has recommended that non-bulk-billing doctors should be able to access the MedClaims system for the Medicare rebate proportion of the medical bill, with the patient paying the balance. The Medicare rebate portion of a patient's account should be paid directly to those medical practitioners who lodge their claims electronically with the Health Insurance Commission. Opposition members oppose this measure, they support the overnight payments processing for doctors who bulk bill and lodge their claims electronically and the retention of the current system of reimbursement for all other doctors.

31. The potential of Health Informatics will be greatly reduced if communication and user interface standards, data formats and terminology are not standardised and uniformly applied. Developments in global standardisation will enable technological applications from a variety of producers to interchange information as though they were fully integrated.

32. Standards are essential to the establishment of clinical computing systems and these must be based on national and international standards. One such Standard which has been accepted by consensus by stakeholders is the Australian version of the HL7 (Health Level Seven Standard), which is an application protocol for electronic data exchange in healthcare environments. The Committee has recommended the adoption of the Australian version of HL7 throughout the Australian health system in order to ensure that electronic messaging formats within and between public and private hospitals are compatible.

33. The maintenance of uniformity and consistency of data labelling and health information stored in electronic form is reliant on the coding and classifying of that data. Codes can aid the selection of records of groups of patients and the linkage of events over time within a patient record. The use of a computer and encoded information to ascertain a patient's history is easier than a search through volumes of records, whether in paper form or on computer.

34. It is important that a standardised system of coding and classifying of health data is adopted within Australia to ensure the adequate planning for the future of health information interchange within Australia. If Australia is to

become an international player, it is more appropriate that it adopts internationally based codes and classifications on which it can build and subsequently market. The United Kingdom, for example, is marketing its Read Clinical Codes. These have already been purchased by the Australian Defence Force and also by New Zealand.

35. A great deal of work has been done in Australia on clinical codes and classifications based on systems adopted from overseas. To date, these codes and classifications have not been accepted as national standards. Without agreement about which code and classification should be deployed within the Australian health system, the already fragmented health care system will continue. Added to this, inaction on the choice of a code and classification system is preventing the Australian medical software industries from developing appropriate interfaces.

36. The development and maintenance of codes and classifications in Australia is costly, as is the purchase of a licence from one being developed in another country. The Committee has recommended that the National Office for the Information Economy undertake a feasibility study in order to determine which option should be followed by Australia.

INTERNATIONAL TREATY

37. Questions of Privacy and Confidentiality have an international dimension as they relate to the international trade in personal data, particularly sensitive data. The Council of Europe has in place a Convention for the Protection of individuals with regard to Automatic Processing of Personal Data. The European Union Directive, which was adopted in 1995, deals with personal data generally but sets stricter safeguards for sensitive data, which includes health data.

38. The European Union has issued an ultimatum to all countries, including Australia, prohibiting trade in sensitive data, if they do not have in place strong privacy laws. The Committee has expressed its concern about the implications of international trade in health data and does not support any trade in data which is not de-identified.

39. In addition, the Committee is critical of any country, region or trading bloc which imposes its own rules and expects compliance from others in the international arena. It is timely for Australia to take the lead in stimulating international interest in the negotiation of an international treaty to protect the privacy of transborder flows of personal data and to offer legal protection to health care professionals practising Telehealth across international borders.

NATIONAL APPROACH

40. The Australian health system is highly fragmented. As a result, a great deal of work already being undertaken in the areas of Telehealth and Health Informatics have not been widely shared due to a lack of a coordinated national approach. If the potential of Telehealth and Health Informatics is to be realised, a national approach is essential.

41. The Committee has concluded that the National Office for the Information Economy is the appropriate body to coordinate and monitor trends in this area. The Office should establish a National Working Group on Telehealth and Health Informatics which includes representation from all State and Territory governments, the public and private health sectors, health professional associations, consumer groups, academics and the telecommunications and technology industry to implement or monitor the recommendations made in this Report.

42. Australia has been using telecommunications technologies to deliver health care for over a century. Telehealth and Health Informatics are current terms for long established practices in Australia which are as much a part of Australian pioneering history as they are of outback folklore.

43. Having traditionally been a world leader in these processes, the Committee believes that Australia should maintain this momentum into the 21st Century. To this end, the Committee has sought to address the barriers, which were raised during the course of the Inquiry, to ensure the successful deployment of Telehealth and Health Informatics within the Australian health system.

44. Many of the solutions proposed go beyond the health portfolio and require a government body which is able to coordinate inter-sectoral interests. The Committee believes that the National Office for the Information Economy is the appropriate body to facilitate and monitor the recommendations made in this Report. This Office has identified the need to draw on private sector knowledge while ensuring Government leadership at the national political level. This combination should ensure that Australian solutions and methods are developed locally and exported internationally.

RECOMMENDATIONS

CHAPTER 1

Introduction

1. The Committee recommends the use of 'Telehealth' defined as 'health care at a distance' as a standard term within Australia and in international discussions and negotiations and considers that the term Telemedicine does not encompass the broad spectrum of health care delivered by way of interactive videoconferencing technologies. **(para 1.26)**

2. The Committee further recommends the term 'Health Informatics', which has wide national and international acceptance, should be used to describe the collection and management of health data and information by means of electronic technology. **(para 1.27)**

CHAPTER 2

Access to Telecommunications Infrastructure

Based on the need to improve health care access by isolated Aboriginal communities and their health care professionals, the Committee supports the extension of suitable telecommunications capacity into remote communities.

3. The Committee therefore recommends that the Regional Telecommunications Infrastructure Fund Board approve the submission of the Tanami Network, if it complies with the necessary requirements, to establish an Outback Digital Network. **(para 2.48)**

4. The Committee recommends that, for all funding proposals submitted to the Regional Telecommunications Infrastructure Fund:

- the views of relevant health care professionals in the community should be sought;

- funding should cover a minimum requirement of 128 Kbps (Kilobits per second) of ISDN (Integrated Services Digital Network) so as to ensure adequate standards for Telehealth consultations and transmission of radiology and pathology images; and

- the Board of the Fund should not approve any proposal until it is satisfied that the level of funding sought will support the required infrastructure for Telehealth **(para 2.63)**

CHAPTER 3

Pilot Trials

5. The Committee recommends that the Department of Health and Family Services should immediately:

(a) resource a major independent project in consultation with the National Office for the Information Economy with the specific aim of developing a model designed to evaluate thoroughly the costs and benefits of deploying Telehealth and Health Informatics throughout the health system;

(b) consolidate and disseminate results of all trials conducted to date;

(c) ensure that any future pilot projects should satisfy a strategic plan which includes a thorough costs and benefits analysis and the wide dissemination of all outcomes; and

(d) that a defined aim of each pilot should be that upon successful completion, it becomes incorporated as a fully operational program. **(para 3.123)**

CHAPTER 4

Health Informatics

The deployment of Health Informatics within the Australian health system, supported by a patient-held health electronic card, will provide a more effective means of information exchange. It will also address unreliability and fragmentation of health information and data management.

6. To this end, the Committee recommends that the National Office for the Information Economy in consultation with the Department of Health and Family Services, the Australian Medical Association, the National Centre for

Epidemiology and Population Health and the Health Insurance Commission develop and deploy within the Australian health system:

(a) patient-held health electronic cards supported by the Consumer Storage System with National Backup Facility developed by the National Centre for Epidemiology and Population Health; and

(b) that the National Backup Facility to be managed and controlled by the Health Insurance Commission, thereby ensuring that the provisions of the Privacy Act 1988 apply. **(para 4.27)**

7. The Committee, has recommended in its Report into *Concession Card Availability and Eligibility for Concessions* that subject to a favourable cost benefits analysis there be a full scale implementation of PharmaNet within the Australian health system. The Committee further recommends that technologies proposed for PharmaNet should be compatible with the Consumer Storage System with National Backup Facility proposed in paragraph 4.27 **(para 4.37)**

CHAPTER 5

Privacy, Confidentiality and Security

8. For the purposes of clarity and commonality of interpretation, the Committee recommends the following descriptions of the concepts of privacy, confidentiality and security:

Information Privacy: the ability of an individual to control the use and dissemination of information that relates to themselves.

Confidentiality: a tool for protecting privacy. Sensitive information is accorded a confidential status that mandates specific controls, including strict limitations on access and disclosure. These controls must be adhered to by those handling the information.

Security: all the safeguards in a computer-based information system. Security protects both the system and the information

contained within it from unauthorized access and misuse, and accidental damage. **(para 5.7)**

9. The Committee recommends that a national Privacy Policy should be developed and that the Attorney-General's Department, in conjunction with the Department of Health and Family Services, the Health Insurance Commission, the Australian Health Ethics Committee of the National Health and Medical Research Council, the Privacy Commissioner and the National Office for the Information Economy:

(a) develop a national Privacy Policy based on the Australian Standard AS4400 - *1995 Personal privacy protection in health care information systems* to facilitate the introduction of the patient-held electronic health card supported with the National Backup Facility;

(b) amend relevant legislation in order to provide for the introduction of the sub-sets of the Medicare number as a unique lifetime patient identifier for each person in Australia;

(c) ensure that an extensive and balanced education campaign is launched to inform the public of the benefits to their health care, by emphasising that:

- adverse health events are compounded by a fragmented method of managing health information and data;
- privacy is protected because each individual carries his or her own health record and determines who can have access;
- access is protected by a personal PIN number;
- that a national backup repository under the jurisdiction of the Health Insurance Commission, protected by the *Privacy Act 1988*, can provide replacement cards in the event of loss or damage; and
- the health consumer has the ability to ascertain all access to their health records. **(para 5.72)**

10. The Committee recommends that the National Office for the Information Economy proceed to develop an Internet security system, as accredited by the Defence Signals Directorate, which would facilitate the use of the patient-held electronic health card, supported by the National Backup System. **(para 5.92)**

CHAPTER 6

Impact on the Medical Profession

11. Given the essential role of General Practitioners in collecting health information and data, the Committee believes that they should be given incentives to encourage them to computerise their practices and to undertake appropriate computer training. The Committee therefore recommends that the Department of Health and Family Services refocus its General Practice Strategy to take account of these requirements and provide assistance for:

(a) training of General Practitioners in the use of Health Informatics packages to facilitate their access to health data, use of patient-held health electronic records and maintaining a consistent record of consultations;

(b) the purchase of approved data codes and classifications systems which are essential to record health information and data on an electronic patient record and to promote adequately their understanding and usage;

(c) training General Practitioners in Telehealth consultations, particularly those being posted to rural and remote areas; and

(d) partial funding for the establishment of a 'Help Desk' unit to provide computer advice for all General Practitioners **(para 6.25)**

The Committee supports doctor access to the MedClaims system for the Medicare rebate component of a medical bill. Such a move would:

- improve consumer convenience;

- provide further incentives for the essential computerisation of medical practice, and general practice in particular; and

- reduce administrative costs to the Health Insurance Commission.

12. The Committee recommends, therefore, the:

(a) overnight electronic processing of payments to doctors who lodge claims with the Health Insurance Commission electronically. Any outstanding balance for patient-billed services may be paid at the time of the consultation; and

(b) continuation of the current system of reimbursement for those doctors who have not computerised and who continue to lodge paper claims. In particular, there should be no change to the current paper-based bulk billing arrangements or entitlements. **(para 6.32)**

13. In order to provide remuneration for health care professionals who practise Telehealth, the Committee recommends that the Department of Health and Family Services, in consultation with the Health Insurance Commission and the Australian Medical Association, consider the question of remuneration of Telehealth services with a view to the inclusion in the Medicare Benefits Schedule of item numbers to cover such services. **(para 6.40)**

14. In determining the appropriate levels of remuneration, the Committee recommends that Telehealth consultations be distinguished from telephone consultations and defined as a consultation performed at a distance by means of interactive video-conferencing facilities. **(para 6.41)**

15. In order to provide further incentives for General Practitioners to encourage them to computerise their practice, the Committee recommends the reduction of sales tax on computer hardware and software purchased by General Practitioners specifically for on-line clinical and epidemiological purposes. This equipment should attract accelerated depreciation. The Committee asks the Department of Health and Family Services to negotiate these provisions with the Australian Taxation Office. **(para 6.44)**

16. The Committee recommends that the Commonwealth Attorney-General, together with State and Territory Attorneys-General, as a matter of priority, canvass medico-legal issues as they apply to Telehealth and Health Informatics, and proceed to the establishment of appropriate regimes. **(para 6.60)**

17. In order to eliminate existing artificial barriers to the practice of Telehealth across Australia, the Committee recommends that urgent talks be undertaken by the Australian Medical Council with the registration bodies in the States and Territories for the purpose of introducing a national framework of mutual recognition. The mutual registration model of Certified Practising Accountants should form a basis for discussions. **(para 6.68)**

CHAPTER 7

Impact on Health Consumers

18. The Committee recommends that the Department of Health and Family Services design and promote a national education campaign which stresses the necessity to verify the accuracy of health related information, obtained on the Internet, with a reliable source including their medical practitioner. **(para 7.40)**

CHAPTER 8

Protocols, Standards, Codes and Classifications

The Committee believes that uniform enforceable and accepted standards are essential to the effectiveness of Health Informatics. The Committee recognises the inter-sectoral consensus reached on the adoption of Australian Standard AS4700.1 - 1997: *Implementation of Health Level Seven (HL7) Version 2.2: Part 1: Admission, discharge and transfer* as a national messaging Standard for communication within Australian public and private hospitals.

19. The Committee therefore recommends the following options be explored in order to ensure that Health Level Seven is widely adopted within the health system as a uniform national standard:

(a) the introduction of Federal legislation to ensure the implementation within the Australian health system of Health Level Seven and its subsequent versions as a uniform Australian Standard. This is the preferred option.

(b) Alternatively, the simultaneous introduction of legislation by each State and Territory government, given their support for the Standard. **(para 8.45)**

20. The Committee considers it essential to maintain uniformity and consistency of data labelling of health information stored on Health Informatics systems. Hesitancy in the choice of a code and classification system is delaying

the Australian software industry's ability to develop and produce appropriate interfaces for domestic use. The Committee recommends, therefore, that the National Office for the Information Economy should examine the following options:

(a) the purchase from the United Kingdom of a national license for the Read Clinical Codes;

(b) the purchase of the United States SNOMED (Systematised Nomenclature of Medicine);

(c) the continuation by Australia of its adaptation of the ICD (International Classification of Diseases) clinical code classification and the ICPC (International Classification of Primary Care) General Practice classification, mapped to produce one umbrella system; or

(d) whether Australia should be involved in developing a framework which uses English, in hypertext markup, such as that being developed by the European Standards Organisation. **(para 8.86)**

21. The Committee further recommends that a completed report be presented to Parliament within three months of the tabling of this Report. **(para 8.87)**

CHAPTER 9

Australia's Export Potential

22. The Committee believes there is real potential for Australia to build on its reputation of excellence in education, particularly in health, in the Asia/Pacific Region. The similar time zone Australia shares with its neighbours provides an advantage over countries in Europe and North America. The Committee therefore recommends that the National Office for the Information Economy develop a program in consultation with the universities and teaching hospitals to stimulate the export of health education to countries in the Asia/Pacific Region. **(para 9.27)**

23. The Committee strongly recommends that the Australian Government should take the lead in stimulating international interest in the negotiation of an international treaty to protect the privacy of transborder flows of personal data and to offer legal protection to health care professionals practising Telehealth across international borders. **(para 9.48)**

24. The Committee believes that there is potential for the delivery of Australian aid, including humanitarian aid, via Telehealth. This is especially important for its neighbours in South-East Asia and countries in the Pacific. The Committee recommends that the Australian Government:

(a) through AusAid, investigates the delivery of Australian aid, such as education and training, including follow-up training of health care professionals through distance learning methods; and

(b) pursue the delivery of humanitarian aid to developing countries in the Asia Pacific region such as teleconsultations via Telehealth. **(para 9.51)**

CHAPTER 10

Towards a National Approach

25. To facilitate the provision of Telehealth services to rural and remote areas which are underserviced by health care practitioners, the Committee recommends that a network of major teaching hospitals should be established as Centres of Excellence. The Commonwealth, States and Territories must

enter into a joint agreement to fund Telehealth services delivered to the locations under their jurisdiction. A fee for service should also be part of the Medicare funding arrangement through a specific item in the Medicare Benefits Schedule. **(para 10.22)**

26. The Committee recommends that the National Office for the Information Economy establish a National Working Group on Telehealth and Health Informatics. The Working group should remain standing for the three year life span of the Office and include representation from all State and Territory governments, the public and private health sectors, health professional associations, consumer groups, academics, and the telecommunications and technology industry to develop, implement and monitor the recommendations made in this Report. **(para 10.33)**

There is much telemedicine activity around the world. Why is it being used?: There are basically two reasons: (a) because there is no alternative or (b) because it is in some sense "better" than traditional medicine.[1]

1 Introduction

The Inquiry Process

1.1 On 18 June 1996, the Minister for Health and Family Services, the Hon Dr Michael Wooldridge wrote to the then Chairman, Mr Peter Slipper, MP referring the Inquiry into Health Information Management and Telemedicine to the Committee. In his referral letter, the Minister said that the Inquiry "would greatly assist the Government and the wider community to obtain a better understanding of this important emerging policy area".

1.2 The Inquiry's terms of reference required the Committee to examine whether developments in information management and information technology in the health sector would improve health care delivery and increase Australia's international competitiveness. The complete terms of reference are at page ix.

1.3 The Inquiry was advertised in the major metropolitan newspapers on the weekend of 29-30 June 1996. Letters seeking submissions were sent also to Commonwealth Departments and agencies, State Premiers, Territory Chief Ministers and a range of peak organisations, professional bodies and individuals representing various interest groups, likely to have an interest in the Inquiry. The Inquiry generated approximately 300 requests for the terms of reference. A total of 130 Submissions, together with a large volume of supplementary information were received. A list of Submissions is at Appendix 1.

1.4 The Committee took evidence at 11 public hearings. These were conducted in Adelaide, Brisbane, Melbourne, Perth, Sydney and Canberra. In addition, the Committee visited Telemedicine projects and sites where Telemedicine is being used. These included the:

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[1] Wootton, Richard, 'Telemedicine: a cautious welcome:' Information in Practice, *British Medical Journal*, Vol. 313, 30 November 1996, p. 1376.

- Renal Dialysis Telemedicine Project at The Queen Elizabeth Hospital in Adelaide;
- Melbourne Metropolitan and Country Hospital Network;
- TARDIS (Telemedical Applications for Remote Distributed Interactive Systems) an intensive care Telemedicine project at the Royal Brisbane Hospital; and
- New Children's Hospital at Westmead, New South Wales.

1.5 In addition, the Committee visited the Pintubi Homelands Health Service run by the Kintore Aboriginal community in the Tanami region of the Northern Territory to discuss the telemedicine trials undertaken between the Tanami Network and the Queen Elizabeth Hospital in Adelaide. Kintore is approximately 530 kilometres west of Alice Springs.

1.6 The Committee received private briefings from the Health Insurance Commission on the use of communications technology to support their extensive data bases. In order to familiarise itself with smart cards and their possible use in the area of health, the Committee invited a representative of Westpac Bank, which is developing commercial applications for smart cards, to provide a briefing on this technology.

Scope of Inquiry

1.7 The scope of the Inquiry, as determined by the terms of reference, required the Committee to:

- investigate the potential of interactive communications, including videoconferencing technologies, to improve the delivery of health care services, particularly to rural and remote areas;
- determine the costs and benefits of deploying these technologies within the Australian health system;
- examine ethical, privacy, confidentiality security and medico-legal issues;
- explore the development of standards for electronic message transmission, and the coding and classification of medical data;
- canvass the implications to the Medicare Benefits Schedule of the wide deployment of technologies; and
- assess Australia's international competitiveness in this evolving industry.

1.8 This is the first Inquiry by a Parliamentary Committee into the use of Telemedicine and health information technologies in the Australian health system. The Report surveys available information from a range of sources and makes recommendations designed to assist the Government in responding constructively to the potential of delivering improved health care by modern technologies and the obstacles which need to be addressed for that potential to be realised.

Preliminary Observations

1.9 Commonwealth, State and Territory Governments have committed resources to trial the viability of communications technologies in various areas of health. These activities have been fragmented, resulting in virtually no information being shared amongst the various project teams. While these initial pilot trials have provided some insights into the potential for communications technologies to improve the delivery of health care services, opportunities to take account of this potential have been lost due to a lack of disseminated information. A coordinated national approach involving both levels of Government and well as the medical profession, consumer groups and the technology and telecommunications industry is therefore essential.

1.10 There was an overwhelming view that without a national strategic approach involving the relevant stakeholders, the opportunity for improving health care through the use of communications technology would be lost. It was stated that this Inquiry was timely as governments worldwide were beginning to assess the potential offered by advanced technologies to deliver improved and more efficient health care. Many witnesses stressed, however, that this area was still in its infancy and countries were in various stages of developing their expertise.

1.11 Some writers have observed that "The United States and Europe have been leading the way..." [2] in Telemedicine, however it is defined. As revealed by the Telemedicine report submitted earlier this year to the United States Congress, solutions to similar challenges as those being investigated by the Committee have yet to emerge. Indeed, in its conclusions, the report noted: "Much has been written about the barriers to telemedicine and the policies and

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[2] cited in Yellowlees, Peter M and Kennedy, Craig, 'Telemedicine: here to stay', *Medical Journal of Australia*, Vol 166, No 5, 3 March 1997, p. 262.

programs needed to overcome those barriers. Yet, these writings are generally more likely to agree on the nature of the problems than on the solutions".[3]

Computer Technology in Health

1.12 The world has been living with computer technology for about 100 years.[4] The first computer, a mechanical device with the objective of solving mathematical problems, was reputedly created by one Charles Babbage in the 19th Century. The first electronic computer was created during the 1940s and remains at the Smithsonian Institute "as a reminder of the scale of change in this century".[5]

1.13 By the end of the 1950s, powerful computers had evolved sufficiently for their potential in medical decision making to be recognised. Although cost and access made their wide implementation prohibitive, their potential to harness power to assist and enhance health care had been recognised.

1.14 In the late 1960s, minicomputers had emerged. These had the capacity to support a small number of local users and heralded a future of 'personal' computing. Although cost remained a barrier to their adoption, proponents of minicomputers, in advertisements from the 1960s and 1970s, described their desirability for improving medical practice including patient management. The rapid rate of development in computer technology, particularly in the past decade from minicomputers to microcomputers, allows for easy acceptance of the frequently made comment by technological experts that "the actual tools we use on computers today are still in their infancy in many ways."[6]

1.15 The so-called information age has sharpened the appetite of information consumers and those generating information have obliged. The South Australian Health Commission observed that there is something like 5,000 clinical publications a day coming out across the world, which is not only beyond a person's capability to read, but information could get lost, as was the case with scurvy which took something like 264 years to be identified.[7]

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3 US Department of Commerce *Telemedicine Report to Congress*, January 31, 1997, http://www.ntia.doc.gov/reports/telemed/conclude.htm, p. 1.

4 Cesnik Branko, 'History of Health Informatics', in Hovenga, Evelyn, Kidd, Michael, Cesnik, Branko, *Health Informatics: An Overview*, Churchill Livingstone, South Melbourne, Australia, pp. 7-12.

5 ibid, p. 8.

6 ibid, p. 10.

7 Transcript of Evidence, p. 289.

1.16 Those with a bias for health information systems or 'Health Informatics' are convinced about the potential of advanced technology to improve health care by facilitating access to health information and data, thereby assisting evidence-based clinical practice.[8] They criticise current methods where "most evidence needed to make more informed decisions remains embedded in fragmented, irretrievable, and often illegible paper-based patient records".[9] This, they argue, ensures that "we lack the evidence to make more informed decisions in health care today across the spectrum from the bedside up to the formulation of national health care policy".[10]

1.17 Advances in computer and communications technologies and the methods to support them appear impressive, and the arguments that the deployment of these technologies within the health system will improve health care delivery is persuasive. The conclusions and recommendations in this Report balance these arguments across the range of issues which the Committee has been asked to investigate.

Definitions

1.18 The title of this Inquiry is *Health Information Management and Telemedicine*. As the Inquiry progressed, the Committee discovered that more than one term and definition exist to describe these terms. For example, the term 'Telemedicine' was used interchangeably with 'Telehealth', while 'Health Information Management' appears to be widely referred to as 'Health Informatics'. Health Informatics is defined as:

> *an evolving scientific discipline that deals with the collection, storage, retrieval, communication and optimal use of health related data, information and knowledge.*[11]

1.19 Commonwealth Government agencies differ in their use of terminology and definitions. The Commonwealth Department of Health and Family Services provided the following definitions in their Submission:

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8 See Hovenga, Evelyn, et al, op cit.

9 Dick, R., 'A Bold Vision: the computer-based patient record institute', ibid, p. 14.

10 ibid.

11 Graham, I, 'Informatics enhancing health', ibid, p. 3.

> *'Telemedicine'...refers to the more specific application of technology to assist the transfer of information electronically so that diagnosis and/or clinical management can occur remotely or can be supported by electronic relay of information.*[12]
>
> *'Information Management' (IM) can be used to describe the storage and flow of information in any form, verbal, paper or electronic, including how these processes are managed.*
>
> *'Information Technology' (IT) refers to the technologies used in the service of information management. The term IT is limited to mean new information technologies that permit electronic as opposed to paper-based management of information. We will use IT to mean these technologies which include computers and telecommunications systems (faxes, modems, satellites).*[13]

1.20 The Department of Communications and the Arts follows a trend which uses an all encompassing term, 'Telehealth' to describe the broad use of technologies in health:

> *based on a growing trend, certainly in the international literature, to define Telehealth as the broad spectrum of information services and IT applications for health services generally.*[14]

1.21 On the other hand, the Health Insurance Commission uses the term 'Telemedicine' to describe the same processes and defines Telemedicine as the:

> *use of communications technology for the delivery of clinical and other medical services and information in a manner which allows the patient and carer to be in different locations.*[15]

1.22 Similarly, the *Journal of Telemedicine and Telecare* refers to Telemedicine by suggesting that:

> *in its broadest and most satisfactory sense, telemedicine would include all uses of a telecommunications network for health care, both for direct patient care and for all the background information and communication exchange that goes on behind the direct care*

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12 Sub No. 103, Subs Vol 1, p. 191.

13 ibid.

14 Transcript of Evidence, p. 23.

15 Sub No. 91, Subs Vol 1, p. 175.

> *of patients and contributes to it. This is encapsulated in the phrase 'care at a distance*[16]

1.23 The lack of consistency in terminology and definitions is understandable given the early evolution of these processes. From the explanations provided by a number of witnesses to the Inquiry, preference for a particular term and definition appears to be based on philosophical grounds. The Deputy Director-General of Health Services, Queensland Health explained:

> *telemedicine seemed to have a narrow focus. If we are serious about addressing the total needs of the health system, I think telehealth is the most appropriate. I am not saying this has got wide recognition, but I think it was an attempt to broaden the agenda because of the needs of all health professionals.*[17]

1.24 A representative of the South Australian Health Commission agrees and observed that 'Telehealth' was a term used in Australia about 10 years ago. Terms and their definitions had been the subject of wide debate and discussed by the National Telemedicine Committee. This Committee subsequently agreed to change its name to the National Telehealth Committee.[18] The representative also noted that the international literature still refers to 'Telemedicine', but suggested that it will not be long before those using 'Telemedicine' will begin to realise that it has more applications than simply medicine.[19]

1.25 A number of other terms were used in evidence such as Teleradiology, Telepathology and Telepsychiatry. These are discipline specific and are self explanatory.

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16 M. Alexander, 'Telemedicine in Australia', *Journal of Telemedicine and Telecare*, Vol 1, The Royal Society of Medicine Press, 1995, p. 187

17 Transcript of Evidence, p. 134.

18 Transcript of Evidence, p.270. The National Telehealth Committee has been endorsed by the Australian Health Ministers' Advisory Council (AHMAC) to address and report on issues raised in the "Australian Telehealth Services Issues Paper". The Committee has Commonwealth, State and Territory representation.

19 Transcript of Evidence, p. 271.

Recommendation

1.26 The Committee recommends the use of 'Telehealth' defined as 'health care at a distance' as a standard term within Australia and in international discussions and negotiations and considers that the term Telemedicine does not encompass the broad spectrum of health care delivered by way of interactive videoconferencing technologies.

1.27 The Committee further recommends the term 'Health Informatics', which has wide national and international acceptance, should be used to describe the collection and management of health data and information by means of electronic technology.

... She was nearing her confinement and had thought that she would die,
And the terror grew upon her when she could get no reply
There's a telephone to Kiah, Green Cape, and the Gabo Light,
But down here in Mallacoota, one hears rings at dead of night;
'Tis an angel responding to the kindest deeds and best,
Ringing Eden, ringing Gabo - ringing Mallacoota West.

Henry Lawson[1]

2 Access to Telecommunications Infrastructure

Introduction

2.1 In Australia, Telehealth has been practised via telecommunications technologies for almost one hundred years. Yet, despite major advances in the provision of telecommunications infrastructure, particularly since the 1980s,[2] the Committee was told that people living in rural and remote areas of Australia are still suffering from the so-called tyranny of distance and access to telecommunications services is inadequate and costs excessive.[3]

2.2 Australia's telecommunications history is dotted with events about the pivotal role played by technologies to deliver health care to people in the outback. Unlike some British and American writers of the 1930s, who pondered the 'blissful quietude' before the telephone, Australian writer Henry Lawson, influenced by the harsh realities of isolation which distance imposed, wrote in praise of the telephone, which he saw as a life-line to those living in the outback.[4]

2.3 In remote areas where the telephone did not reach, the telegraph provided the link to health care. It was "not uncommon for a doctor in a city to give instructions for an operation or medical treatment over the telegraph wires".[5] In 1917, Postmaster F W Tuckett in Halls Creek, Western Australia, followed instructions telegraphed in Morse code by surgeon Dr J J Holland from the GPO in Perth and performed an operation on a stockman who had sustained

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1 'A song of the Telephone, 1910', cited in Moyal, Ann, *Clear Across Australia: A history of telecommunications*, Thomas Nelson Australia, 1984, p.147.

2 Despite a tight budget imposed by Treasury, Telstra's antecedent, Telecom pushed out networks on major country axes. The long coaxial cable project which stretched from Ceduna, South Australia to Cobar in New South Wales and from Dubbo to Brisbane, was started late in 1976 and completed in 1980 "across, 2,500 kilometres of the toughest, roughest country in Australia", ibid, p. 372.

3 See for example South Australian Health Commission, Transcript of Evidence, p. 277.

4 Moyal, Ann op cit, p. 147.

5 ibid.

serious internal injuries after falling from his horse, 300 miles from the nearest doctor or nurse.[6]

2.4 It appears that this "epic event" and the recognition that people living in remote settlements have a continuing need for health services gave rise to the birth of the Royal Flying Doctor Service at Cloncurry in north-west Queensland in 1929.[7] The aim was to throw a "mantle of safety over the outback".[8] In the words of its founder 'to make the dumb inland speak'[9].

2.5 This was achieved by means of the pedal wireless which settlers in isolated locations used to communicate their needs and receive information and help from base and outpost stations.[10] "Diagnosis was made instantly over the network, treatment prescribed, and the Flying Doctor rapidly airborne in cases of serious care."[11] Telehealth may be the current term for what has been both a part of Australian pioneering history and outback folklore.

Rural and Remote Access

Plain Old Telephone System (POTS)

2.6 Telehealth and Health Informatics rely on suitable telecommunications infrastructure. At a basic level the Plain Old Telephone System (POTS), which runs over copper wire, or narrowband, can provide a limited form of support for Telehealth and Health Informatics services. For example, POTS has the capacity to exchange information via the Internet or e-mail. However, even in larger centres POTS can be unreliable.[12]

2.7 One Victorian country General Practitioner, Dr Stephen Webb of Manangatang Hospital, located approximately 420 kms from Melbourne, has trialed POTS for the purposes of Telehealth. Dr Webb who describes himself as a "solo General Practitioner"[13] believes in the benefits of Telehealth as a

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6 ibid, pp. 147-148. See also Health Department of Western Australia, 'Telehealth: A new era'.

7 ibid, p. 148.

8 ibid, p.148.

9 ibid.

10 ibid.

11 ibid.

12 Proposal to G7 for Emergency Telemedicine Development, *Tele-Help for Australian Remote Areas*, May 1996, p. 19.

13 Sub No 1, Subs Vol 4, p. 789.

means of providing medical consultations at a distance and of improving equity of access to health services for rural people.[14]

2.8 The system trialed by Dr Webb consisted of a software/hardware package and a POTS/modem link between his surgery and a Bush Nursing Centre in Murrayville, approximately 150 kms from Manangatang.[15] Dr Webb's system produces an eight centimetre square image which refreshes at the rate of about one frame every two seconds, with a delay of about 30 to 90 seconds, depending on the quality of the line and the bandrate.[16] Dr Webb believes that this trial was the first such service in the world, but referred to a General Practitioner in south Wales in the United Kingdom and a few in North America who use a similar facility.[17]

2.9 The Committee notes that Dr Webb conducted POTS Telehealth trials because he was unable to access Integrated Services Digital Network (ISDN) which allows interactive videoconferencing to take place at an increased transmission speed. Telstra subsequently informed the Committee that for Manangatang, "...ISDN capacity is currently in place and available."[18] Even if Dr Webb were able to access ISDN, telecommunications costs would be a disincentive.

2.10 Dr Webb is commended for his attempts to lessen the isolation of people living in remote regions. Dr Webb's trials contrast the lack of telecommunications services for people living in rural and remote areas with the ready availability of this technology in urban areas and major provincial centres. The Committee believes that isolated rural General Practitioners such as Dr Webb should be assisted with access to appropriate telecommunications facilities in delivering health care to isolated and more remote communities.

Integrated Services Digital Network (ISDN)

2.11 ISDN technology has the capacity to provide faster online access and to send voice, data, video and image along existing telephone lines, in rural and most remote areas. The Committee believes that ISDN, or equivalent

14 Sub No 1, Subs Vol 4, p. 791.

15 Sub 1 Sub Vol 4, p. 789.

16 Transcript of Evidence, p. 877.

17 Transcript of Evidence, p. 871.

18 Further information, file T5.1.1, p. 3.

infrastructure, is essential to provide equity of access to health services delivered to rural and remote communities.

2.12 To effectively access ISDN, a consumer must be within 5 kilometres of an exchange. Currently, 3.7% of residents, mainly located in regional and rural Australia, are beyond this range and cannot access current ISDN services, or the new ETSI standard (European Telecommunications Standard Institute) which will be integrated into the new digital exchanges. In addition, a further 3% of residents, located in remote areas, cannot access these services because they are connected to the network via digital radio concentrator systems.

2.13 For both these user groups, access to increased bandwidth is necessary via other technologies and platforms, such as satellite and enhanced microwave systems. The Committee understands that a range of technologies is being developed which offers the potential for greater bandwidth either over existing copper infrastructure or over satellite platforms. Whether these prove useful for Telehealth purposes will depend on price and functionality.

2.14 Consistent concerns were raised about the inadequacy of the current telecommunications infrastructure and, in particular, the lack of access to ISDN by rural and remote practitioners. A range of witnesses observed that the inadequacy of telecommunications infrastructure was preventing the extension of Telehealth into areas of greatest need.

2.15 Queensland Health referred to places such as Doomadgee and Mornington Island where "you really do not have any infrastructure support." [19] One witness stated that there is a problem with ISDN access, "a technical issue in getting to very remote sites,"[20] but did not believe that satellite technology is an option at the present time because it "is extremely expensive".[21]

2.16 In Western Australia, the Health Department made observations about the major problems with ISDN because "it is just breaking down all the time."[22] It was also stressed that the main problem facing Western Australia:

> *...is that our telecommunications are so poor and so unavailable that we cannot do anything with the existing structure and infrastructure.*[23]

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19 Transcript of Evidence, p. 137.

20 Professor Peter Yellowlees, Transcript of Evidence, p. 150.

21 ibid.

22 Dr Jann Marshall, Transcript of Evidence, p. 1014.

23 ibid, p. 1014.

Broadband

2.17 According to Telstra, ISDN "is a vital stepping stone for our move from narrowband to broadband technology".[24] Broadband services are commonly defined as the capacity to transmit complex high speed digital signals. According to the Department of Communications and the Arts, broadband refers to the:

> *...capacity to deliver high quality, real-time video images, or real-time, high-definition still images at speeds of approximately 2 megabits per second (mbps) and greater...*[25]

2.18 In order to gain an appreciation of the high quality of telecommunication services delivered via broadband it is necessary to compare their capacity with ISDN transmitted via narrowband or copper wire. For example, data can be transmitted up to 50 times faster over broadband cable Internet service than over a standard 64Kbps (Kilobits per second) ISDN.

2.19 While there is the potential to deliver broadband over the current copper wire infrastructure and over wireless systems (satellite and wireless digital modems), the primary infrastructure for broadband delivery in Australia is by way of cable systems, whether optical fibre or Hybrid Fibre-coaxial Cable (HFC). Both Telstra and Optus are rolling out HFC networks into major urban centres "at a rapid rate".[26]

2.20 The Committee questioned Optus and Telstra about their parallel roll-out of broadband cables. The representative from Optus provided the following reply:

> *...let me say we are not rolling out parallel networks - certainly there are some areas where we have both rolled out a broadband network but the two networks are essentially different. The Optus network has a two-way telephony capability whereas the Telstra network does not, and that is an issue that has been long debated in a number of forums. At the moment there are some discussions taking place at the chief executive level of the two organisations with a view to either some sharing arrangements or rationalising*

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24 Answers to questions on notice, Brisbane, 29 April 1997, p. 3.

25 Sub No. 94, Vol 1, p. 178.

26 ibid.

> *the use of these networks. At this stage I do not think it is quite true to say that we have parallel networks deployed, though there is some duplication.*[27]

2.21 In responding to the same question, a Telstra representative stated that he "really cannot comment on the broadband roll-out".[28]

2.22 Given the far reaching changes that are likely to take place in the deregulated industry, it is difficult for the Committee to make any practical observations about the issue of parallel roll-out of broadband cables at this stage. However, the Committee wishes to register its concern about parallel roll-out of broadband cables by both Telstra and Optus given the lack of access to ISDN in remote areas in Australia.

Satellites

2.23 In addition to optical fibre or HFC, Telstra made the following predictions about satellites:

> *Satellites have been evolving, like all other technologies, from analog to digital. This is advantageous because it enables sophisticated encoding schemes to be used and data compression. This opens up additional applications for voice, data, video imaging and video conferencing.*[29]

2.24 Telstra observed that with the deployment of low earth satellite infrastructure, by about 2005, the practice of Telehealth will be possible. The bandwidth capacity for these services will be up to about to 34 megabits.[30] However, for the present time, according to Telstra, satellite air time costs are "not insignificant".[31]

The Internet

2.25 Internet Protocol (IP) networks are becoming an increasingly predominant vehicle for networked data communications.[32] Currently, IP networks are delivered at either narrowband levels (up to 28.8 Kbps dial-up

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27 Transcript of Evidence, p. 1087.

28 Transcript of Evidence, p. 1250.

29 ibid.

30 Transcript of Evidence, p. 167.

31 Transcript of Evidence, p.1255.

32 Department of Communications and the Arts, Sub No. 94, Vol. 1, p. 178.

modem via telephony infrastructure) or wideband (up to 128 Kbps dial-up or semi-permanent ISDN lines). According to the Department of Communications and the Arts, the emergence of new IP protocols together with the upgrading of IP infrastructure mean that, in the near future, access to IP services will be possible at much greater bandwidth.[33]

2.26 Telstra and Optus are planning IP services "as part of their suites of cable services".[34] A number of other international carriers are also entering the market. For example, a joint venture between British Telecom and MCI Communications Corporation seeks to provide national high speed IP services "in the near future".[35] According to the Department of Communications and the Arts:

> *Competition among Internet Access Providers has been instrumental in driving down prices in urban areas: competition is also now starting to have an effect in some regional areas.*[36]

2.27 The Committee sees potential for the use of the Internet, with appropriate security safeguards, as a means of delivering Telehealth services across Australia and as the prime vehicle for Health Informatics. The Committee understands that security safeguards are being developed by a number of telecommunications agencies.[37]

Universal Service Obligation

2.28 Under section 149 (1) (a) of the *Telecommunications Act 1997*, Universal Service Obligation (USO) is the obligation "to ensure that standard telephone services are reasonably accessible to all people in Australia on an equitable basis, wherever they reside or carry on business".[38]

2.29 Telstra advised that the aim of the USO provision:

> *is to ensure all people in Australia, wherever they reside or carry on business, have reasonable access, on an equitable basis to standard telephone services, pay-phones, and prescribed carriage services...The legislation provides for a prescribed carriage*

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33 ibid.

34 ibid.

35 ibid, p. 179.

36 ibid.

37 The question of Internet security is explored further in chapter 5.

38 *Telecommunications Act 1997*, No 47, 1997, p. 135.

> *service as a means of including a higher level of service, such as a high speed data service, in the USO.*[39]

2.30 In 1996, the Commonwealth Government commissioned a Review of the Standard Telephone Service. The Review Group included representatives of consumer organisations, rural interest groups and telecommunications carriers. The Review Group examined the Universal Service Obligation and concluded that a digital data capability should be available throughout Australia by the year 2000. A digital data capability was defined broadly by the Review as an ISDN comparable service capable of 64Kbps transmission speed.[40]

2.31 Telstra is not obliged to provide ISDN facilities under the USO. Telstra advised the Committee that it:

> *has made a commitment to the government with respect to ISDN availability. That is now in legislation. A figure of 93.4 per cent of customer services - that is, the 9 million plus lines that we have out there - will be able to have access to ISDN within 90 days of request by 1 July 1997. By July 1998 that will have increased to 96 per cent and by December 1998 that will have increased to 96.3 per cent.*[41]

2.32 Telstra further observed that 3.7% of customers who are situated more than five kilometres from a local exchange[42]:

> *most certainly will not be able to have ISDN services by the terrestrial systems that we are rolling out right now; that is the fixed wire systems. What we are doing right now is looking at the delivery of 64 kilobits digital services, either via satellite or via radio links. That work is under way right at this moment. That is another commitment that we have made to the government.*[43]

2.33 Whereas 64 Kpbs is the minimum capacity for transferring digital data, interactive videoconferencing will not be possible because the audio component requires additional bandwidth. A minimum requirement for Telehealth purposes is 64 x 2 Kbps. Each multiple doubles the price of an ISDN connection, making telecommunications prices for long distance subscribers expensive.

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39 Transcript of Evidence, p. 1224.

40 ibid.

41 Telstra, Transcript of Evidence, p. 1252.

42 Ibid

43 Transcript of Evidence, p. 1253.

Cost of Telecommunications

2.34 Although progressive improvement in the level and quality of telecommunications infrastructure for rural and remote populations is anticipated, regional Australia will continue to be disadvantaged by the high level of telecommunications costs as the table below demonstrates.

ISDN	Connection	Rental	Long Distance Videoconference Call Peak Hour	Local Videoconference Call Peak Hour
OnRamp Duo*	$295	$60/mth or $720 per annum	Broken Hill - Sydney $53.08 per hour	Parramatta to Glebe $3.82 per hour
Microlink Service #	$396	$70/mth or $840 per annum		

* OnRamp Duo is a 2 line digital service offering 2 x 64 Kbps service

A Microlink service was the precursor to the recently released OnRamp Duo[44]

2.35 Until the expected reduction in costs become evident, communities should seek funding for their telecommunications services from the recently established Commonwealth Government Regional Telecommunications Infrastructure Fund (RTIF). The Committee notes that the aim of the RTIF is to "reduce the gaps in quality and cost of telecommunications services between metropolitan and rural and regional Australia".[45]

Regional Telecommunications Infrastructure Fund

2.36 Over the next five years, the Commonwealth Government's $250 million RTIF is designed to respond to the unmet telecommunications needs of regional and rural communities.[46] A Board, comprising members with regional telecommunications expertise and experience has been established and will work closely with officials from all tiers of government to coordinate and implement initiatives. Funds have been allocated to States on the basis of the share of that State's population which is found outside the State's capital city, estimated as follows:[47]

44 Telstra, Transcript of evidence, p. 1227 and Questions on notice, p. 3.

45 Department of Communications and the Arts, Fact Sheet Number 3, 10 April 1997, p. 1.

46 ibid.

47 ibid.

New South Wales - $37.4 million

Victoria - - - $28.5 million

Queensland- - $53.1 million

Western Australia - $26.5 million

Tasmania - - - $58 million

A separate $20 million has been reserved for the two Territories:

Northern Territory - $16 million

Australian Capital Territory $4 million[48]

2.37 According to the Department of Communications and the Arts, regional and rural populations will be encouraged to identify their particular communications needs and propose solutions. Case managers in the Department will be available to help communities assess options and develop funding proposals.[49]

2.38 A broad range of organisations are expected to participate in the program directly or indirectly. These include local government authorities, regional development organisations, training institutions, telecommunications carriers and Internet service providers. The Department observes that the purpose of the fund is to encourage collaborative approaches and partnerships between the public and private sectors to implement projects.[50]

2.39 The Committee welcomes this initiative and believes that the RTIF will help to provide equity of access to rural and remote communities. If the Telehealth needs of rural populations are to be met, however, projects submitted for approval should ensure that health care delivery is a core requirement. Health care professionals should also be consulted in developing funding proposals, in order to ensure appropriate telecommunications capacity is part of any proposal.

48 ibid.

49 ibid.

50 ibid, p.2.

Aboriginal Settlements

2.40 On 4 August 1997, the Committee visited the Pintubi Homelands Health Service at Kintore, 530 kilometres west of Alice Springs. Kintore is one of the sites of the Tanami Network. This is a seven site video-conferencing network owned and operated by the Aboriginal communities of Lajamanu, Willowra, Kintore and Yuendumu in the Tanami Region of the Northern Territory, with urban sites in Darwin, Katherine and Alice Springs. The Network has been operating since 1992, with an objective to improve service delivery to remote Aboriginal communities.

2.41 The Network has taken part in a number of Telemedicine trials with the Queen Elizabeth Hospital in Adelaide as detailed in Chapter 3. Current services provided by the Network include:

- secondary Education from Northern Territory Secondary Correspondence School;
- prison links - for remote community families;
- inter-community negotiations and cultural/social contacts;
- recruitment services for community staff;
- negotiation with Government Departments and agencies;
- case management services;
- community input to conferences eg '25 years of land rights'; and
- commercial services to courts, lawyers, education and health service providers in Alice Springs, Katherine and Darwin.[51]

2.42 The Tanami Network currently uses Picturetel 4000 suite format capable of handling 384 Kbps switched ISDN capabilities which, according to information from the Tanami Network, is the US standard for diagnostic quality vision and a standard satellite linkup.[52]

2.43 According to the Administrator at Yuendumu, there is support for the concept of Telehealth as a method of providing cost effective health care with a

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51 Overview on the establishment and function of the Tanami Network was provided by Mr Peter J Holt, Network Manager, Tanami Network Pty Ltd., Yuendumu, Northern Territory after a request by the Committee for a background brief for its visit to the Tanami region.

52 Background brief from Mr Peter J Holt, Network Manager, Tanami Network Pty Ltd., Yuendumu, Northern Territory, 12 June 1997, p. 7.

substantial decrease in costs of operating the service after deregulation of the telecommunications industry by "as much as two thirds".[53] Kintore has made the observation that because of the high cost of current telecommunications services, it is cheaper for three health workers to be flown to Alice Springs, including accommodation, meals and salaries for one week, than 20 hours of tuition via teleconferencing links.[54]

2.44 After visiting Kintore, the Committee is convinced that the community would benefit from greater access to a range of health education programs. Kintore is an extremely isolated community with limited water capacity. It has inadequate and badly designed sewerage facilities and fierce winds known locally as 'whirly whirly' which scatter refuse around the township. Any means to improve health care delivery to the community should be strongly supported.

2.45 The Kintore community is one of many such communities which are isolated and lacking in basic facilities. The Committee believes that the isolation of these communities and lack of resources for the resident doctor, health care workers, and administrators, would be alleviated by telecommunications access to large urban centres.

Application for Upgrading the Tanami Network

2.46 The Tanami Network has recently submitted a project for funding under the RTIF. The project seeks to establish an Outback Digital Network and has requested funding for $13.5 million to bring advanced communications into 75-100 remote communities in Western Australia, Northern Territory, Queensland and South Australia.[55]

2.47 The project anticipates the range of activities described earlier to be extended to other communities if the project application is approved. Included in the anticipated activities is the "use of telemedicine to allow specialist doctors to assist with clinic activities."[56]

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53 ibid.

54 Background brief by Mr Stewart Blyth, Administrator, Pintubi Homelands Health Service, Kintore Community, via Alice Springs, Northern Territory, *Summary of Telemedicine Trials.*

55 Further Information, Tanami Network Pty Ltd., 20.8.1997.

56 ibid.

Recommendation

2.48 Based on the need to improve health care access by isolated Aboriginal communities and their health care professionals, the Committee supports the extension of suitable telecommunications capacity into remote communities.

The Committee therefore recommends that the Regional Telecommunications Infrastructure Fund Board approve the submission of the Tanami Network, if it complies with the necessary requirements, to establish an Outback Digital Network.

Shared Access - Telecentres

2.49 The lack of advanced telecommunications infrastructure in rural and remote areas of Australia has encouraged a number of creative solutions. As well as making do with dial up POTS services as mentioned earlier, many States are investigating and promoting the option of attracting higher level services through joint ventures and collaboration between groups, communities and organisations.[57] The Department of Communications and the Arts has advised that this approach is being supported by the Commonwealth, through the RTIF, and through advice presented to the Government by the Information Policy Advisory Council, in its recent report on regional and rural online services development.[58]

2.50 The South Australian Health Commission is keen to see communities in rural and remote areas establish "some sort of cottage industry"[59] where Telehealth is a component. The Health Commission suggests pooling local resources to bring ISDN or equivalent links into a particular country town. By seeking to share their resources, the various professional and community groups in the town are more likely to provide an incentive to a telecommunications carrier to establish services in areas previously considered not to be cost effective.[60]

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57 Further Information, Department of Communications and the Arts, Facsimile 12.8.1997.

58 ibid.

59 Transcript of Evidence, p. 277.

60 ibid.

2.51 A similar approach is being envisaged by Multimedia Victoria, which has an interdepartmental group investigating such opportunities.[61] The representative of the Victorian Department of Human Services explained that it is necessary to look at completely different technology solutions in order to access sector specific information, as many require quite specialised software, such as Telepathology.[62]

2.52 Optus is proposing to trial 'telecentres' or 'centres for Telemedicine', or a combination of several other facilities at a fixed point using satellite technology.[63] Optus stated that "there is not one square inch of Australia that the Optus satellites do not cover".[64] Satellite technology can link back into other types of infrastructure and is therefore in a position to provide a number of solutions. Cost and affordability are an issue, "but that is largely driven by the customer base."[65]

2.53 A further concept has been developed by the Health Department of Western Australia which stated, that in order to lessen the duplication of telecommunications facilities and reduce costs, aggregation is the answer.[66] Dr Jan Marshall of the Health Department explained:

> *...it means that you start getting communities involved in it and, therefore, it becomes an ownership thing: they can start seeing that it is good for their whole community.*[67]

2.54 During meetings with a number of community groups, including indigenous people, and government, education and justice departments, a number of telecommunications issues were raised. For example, one supplier of television to rural and remote areas observed that it was not necessary to have two dishes with the same capabilities in the one town. These dishes are now being moved and the equipment shared by those without access.[68]

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61 Department of Human Services (Victoria), Transcript of Evidence, p.777

62 Transcript of Evidence, p. 778.

63 Transcript of Evidence, p. 1089.

64 Transcript of Evidence, p. 1088.

65 Optus, Transcript of Evidence, p. 1089.

66 Transcript of Evidence, p. 1017.

67 ibid.

68 Transcript of evidence, p. 1018.

2.55 Dr Marshall further suggested that:

> *The idea would be that you put the one satellite dish in these towns and the community can then decide what they wanted to use out of that...They would be just a local connection. You could now have a landline, a microwave - all sorts of different combinations - but the satellite, the connection, the point of presence, would be the shared facility managed possibly by the telecentre, if that was what the community wanted.*[69]

2.56 In the Western Australian strategic plan *Telehealth for the Year 2000*, it was explained that it is necessary for all potential and existing Telehealth activities to be coordinated into a common infrastructure requirement in order:

> *to ensure information and communication technologies are integrated to provide a network that provides an electronic environment which supports different and many types of services. Network linkages are needed between health and other disciplines such as education, justice and community services, and the private health sector. The telehealth network needs to be standards-based, open, extensible and non-proprietary* [70]

2.57 The Committee supports and encourages the establishment of telecentres and the aggregation of equipment and commends the initiative of communities who have identified workable solutions to improve their telecommunications access. The Committee views with concern the perceived inability of Telstra to identify appropriate solutions to meet the telecommunications needs of rural and remote communities across Australia.

Conclusions

2.58 The Committee heard a great deal of criticism about the lack of access to suitable telecommunications facilities for many rural and almost all remote areas of Australia. There was however, some optimism about future developments in telecommunications and the associated technologies to support Telehealth in a deregulated environment.

2.59 The Committee is unable to make any comments, at this stage, about the future effects of deregulation. While sharing a general optimism for the likelihood of improved infrastructure development and reduced costs, the

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69 ibid.

70 Dr Jann Marshall, Health Department of Western Australia, *Telehealth for the Year 2000, Western Australia: A Strategic Plan*, October 1996, pp. 20-21.

Committee is concerned that an inordinate emphasis on market forces could disadvantage communities with small populations. The Committee, therefore, strongly urges these communities to become creative about their telecommunications solutions and to negotiate a competitive price with one of the many carriers likely to enter the market.

2.60 In the United States of America, a Telemedicine report to Congress recommended lowering the price of services in rural areas requiring higher bandwidth to prices similar to those in urban areas. The report also recommended making funds available to support the upgrading of infrastructure in some areas and allowing toll-free access to the Internet.[71]

2.61 These recommendations were subsequently taken up by the United States Federal Communications Commission. Under current universal obligations in the United States, a health care provider in a rural area could obtain telecommunications services at a transmission capacity up to and including 1.544 mbps (megabits per second). This is more than 10 times 128 Kpbs of ISDN, the bandwidth equivalent of a broadband connection, at rates comparable to similar services in the nearest urban centre, with a population of more than 50,000 residents.[72]

2.62 The Committee notes this resounding endorsement by the United States Government to extend Telehealth services to their rural and remote communities. The Committee therefore reiterates that a 128 Kbps ISDN capacity for rural and remote areas should be considered a minimum requirement, and that the infrastructure should continue to be extended to bring these areas into line with to urban communities.

Recommendation

2.63 The Committee recommends that, for all funding proposals submitted to the Regional Telecommunications Infrastructure Fund:

- **the views of relevant health care professionals in the community should be sought;**

71 US Department of Commerce in conjunction with the Department of Health and Human Services, *Telemedicine Report to Congress*, 31 January 1997, Executive Summary, p. 4.

72 Press Release of the Federal Communications Commission, 7 May 1997.

- **funding should cover a minimum requirement of 128 Kbps (Kilobits per second) of ISDN (Integrated Services Digital Network) so as to ensure adequate standards for Telehealth consultations and transmission of radiology and pathology images; and**

- **the Board of the Fund should not approve any proposal until it is satisfied that the level of funding sought will support the required infrastructure for Telehealth.**

...there is something very delightful in the actual contemplation of this, the most perfect of modern inventions. We call the electric telegraph the most perfect invention of modern times ... as anything more perfect than this is scarcely conceivable, and we really begin to wonder what will be left for the next generation upon which to expend the restless enterprise of the human mind ... Let us set about electric telegraphy at once.[1]

3 Pilot Trials

Introduction

3.1 The speed of development of computing, communications and medical technologies has been referred to as an 'explosion'.[2] Proponents of Health Informatics conclude that it "provides the most significant infrastructure needed to manage health care in the future".[3] It is widely stated that Health Informatics and Telehealth systems will change completely the way health information and data is managed and how health care is delivered.

3.2 The *Telemedicine Report to Congress*, made the observation that Telemedicine "now has the potential to make a difference in the lives of many Americans".[4] The Department of Health and Family Services, in a measured response, described Telehealth "of interest not only as a potential solution to rural/remote health care access issues but for its mooted potential to help rationalise health care delivery generally".[5]

3.3 At the State level, enthusiasm for Telehealth and Health Informatics has led to most developing structures designed to optimise the management of data through information technology systems. There is also a shared vision that the strategic use of Health Informatics is essential to supporting new methods of health care delivery, including evidence based medicine.

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1 Editorial from the Melbourne Argus Newspaper in June 1853, cited in Moyal, Ann, *Clear Across Australia: A history of Telecommunications, Thomas Nelson, Australia, 1984, p.17.*

2 Hovenga, Evelyn, et. al., *Health Informatics*, Chapter 1, 1996.

3 Ibid, Chapter 3, p.19

4 US Department of Commerce in conjunction with the Department of Health and Human Services, *Telemedicine Report to Congress*, http://www.ntia.doc.gov/reports/telemed/execsum.htm, January 31, 1997, p. 1.

5 Sub No 103, Subs Vol 1, p. 222.

3.4 In order to determine the current position of Telehealth and Health Informatics in Australia, the Committee sought status reports on pilot trials conducted in the area. At the first public hearing, the Department of Health and Family Services observed that pilot projects "have been very diverse, many of them have not completed their work, and the reports of their progress are not in".[6] It also became evident that status reports may never emerge, as most projects were State based and no coordinating body existed to follow their progress.

3.5 In subsequent evidence, the Department of Health and Family Services explained:

> *In our previous submission to the committee, the Department reported on a wide range of projects which are relevant to the broad issues of information management and/or telemedicine. These projects cover a wide range of issues and have been funded under a variety of programs. In many cases, the information management component is secondary to the primary aim of the project which is often about providing specific services."*[7]

3.6 The Department supplied the Committee with a 28-page list of funded projects, amounting to over $7 million dating from November 1994 to mid-1998. The summaries explaining the extent of these projects suggested that most were not piloting Telehealth and Health Informatics, but were establishment grants for a wide variety of projects within the broad general area of information technology.

3.7 The Department subsequently arranged for the National Telehealth Committee[8] of AHMAC to provide a consolidated list of pilot projects which are being undertaken in each of the States. These appear at Appendix 3.

3.8 The National Telehealth Committee's list does not provide detailed evaluation of these trials, many of which are still in progress, although some appear to be fully operational Telehealth networks. In addition, there is little evidence of any private professional input into these trials as most are public hospital-based, generally between a major teaching hospital and selected country hospitals or clinics.

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6 Transcript of Evidence, p. 9.

7 Transcript of Evidence, p.1208.

8 The National Telehealth Committee has been endorsed by the Australian Health Ministers' Advisory Council (AHMAC) to address and report on issues raised in the "Australian Telehealth Services Issues Paper". The Committee has Commonwealth, Territory and State representation.

3.9 The project teams are enthusiastic about the potential of Telehealth and Health Informatics to improve access to health care for rural communities, even with the current basic telecommunications infrastructure. The main objective of the trials themselves appears to be to ascertain the capabilities of the available technologies to link two distant points of health care and to determine the nature of the health related activity which can be performed by using this process. Based on the projects inspected, the Committee agrees with the findings of the United States *Telemedicine Report to Congress* that what is known about Telehealth today "represents only an initial snapshot of a technology that is changing and expanding daily".[9]

Telehealth Projects

TARDIS

3.10 Telemedical Applications for Remote Distributed Interactive Systems (TARDIS) is a major Telehealth pilot project being undertaken in Queensland. The base site of the TARDIS trial is the Intensive Care Unit, Royal Brisbane Hospital. From there it links to other sites at Nambour General Hospital and Maryborough Base Hospital. Queensland Health observes that the ultimate goal of the project is to revise the health paradigm from 'the patient going to the health service' to 'the health service going to the patient'[10] and defines TARDIS as a project which:

> *accommodates the re-creation of the Royal Brisbane Hospital Intensive Care Unit's environment as accurately as possible, enabling clinicians at the other locations to effectively communicate and share both information and knowledge.*[11]

3.11 The TARDIS project was driven by the need to staff Intensive Care Units at non-metropolitan hospitals with trained/qualified specialist staff.[12] According to the project team, "this problem is not just limited to doctors but is just as critical with nursing and allied health staff." [13]

3.12 During the Committee's inspections, consultations were performed using interactive videoconferencing. One demonstration operated on 128 Kpbs ISDN and another on broadband, using basic video equipment. The broadband trial

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9 *Telemedicine Report to Congress*, op cit, p.1.

10 Sub No 114, Transcript of Evidence, p. 117.

11 ibid.

12 Sub No 15, Sub Vol 3, p. 566.

13 ibid.

demonstrated that even primitive video technology can be used effectively if broadband is available. The Committee witnessed a TARDIS trial linking the Royal Brisbane Hospital with the two separate country hospitals referred to above.

3.13 The TARDIS project team believes there is a potential to provide improvement in outcomes for both patients and clinicians. These include greater assistance provided by the tertiary hospital and reduced patient transfer to a metropolitan hospital.[14] Despite the basic nature of the technologies used in the trials, the Committee was impressed by the capabilities of this method of delivering health care and supports the TARDIS project team in developing this potential.

Renal Telemedicine Network

3.14 One major project which has moved from a trial to an operational network is based at the Queen Elizabeth Hospital Renal Unit in Adelaide. This project is a videoconferencing link at Queen Elizabeth Hospital's four renal dialysis centres at the hospital in Woodville (main centre), Wayville (10 km remote), North Adelaide (8 km remote) and Port Augusta (300 km remote).

3.15 The Renal Dialysis Project was commenced in June 1994. Its aims included: an assessment of the feasibility and cost effectiveness of Telehealth as a means of improving the quality of patient care; determining the need for the further education of dialysis staff; and monitoring dialysis processes and equipment at sites remote from the main dialysis institution. Funding for the project was provided by the South Australian Health Commission in November 1993.[15]

3.16 The Committee observed an audio visual consultation between the specialist at the Queen Elizabeth Hospital and a nurse and patient at Port Augusta, some 300 kilometres distant. Now titled the Renal Telemedicine Network and entering its third year as "a daily functioning operation"[16], an evaluation report of the project notes that the network has the opportunity to develop world's best practice.[17] According to Professor Malcolm Mackinnon,[18]

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14 ibid

15 Sub No 87, Sub Vol 3, p.772.

16 Transcript of Evidence, p. 296.

17 *Best Practice in Telemedicine: An evaluation of The Queen Elizabeth Hospital Renal Dialysis Telemedicine Project 1995-1996,* John Mitchell & Associates, October 1996, pp. 4, 53.

18 Professor Mackinnon was appointed in 1996 to the first Chair of Telemedicine at Flinders University of South Australia.

Chief Executive Officer, Health Online at the South Australian Health Commission ..."there are not many projects in Australia that have got to the stage where they would be seen as being established projects."[19]

Trials with Remote Aboriginal Communities

3.17 A series of pilot trials were undertaken between the Queen Elizabeth Hospital Renal Dialysis Unit in Adelaide and Yuendumu and Kintore communities in the Tanami region, as mentioned in the previous chapter. The trials took place in November 1996 over a two week period.

3.18 At the Kintore site, the trial included medical, nursing and Aboriginal health workers and administrators[20] and involved a broad range of medical specialties testing several kinds of medical equipment. The trials at Yuendumu comprised sessions with the Queen Elizabeth Hospital specialists in areas such as diabetes, dietetics, psychiatry, pharmacy, gastroenterology, audiology, ophthalmology, neurology and renal medicine. Access was also arranged by the telecommunications carrier to an ophthalmoscope and other diagnostic and educational tools.[21]

New Children's Hospital (Royal Alexandra Hospital for Children)

3.19 The Committee was invited by Dr John Yu,[22] Chief Executive of the New Children's Hospital at Westmead, New South Wales, to inspect established Telehealth facilities used daily at the hospital. The hospital has been involved in Telehealth trials over a number of years and has recently been funded to develop pilot Teleradiology and Telepsychiatry trials with base hospitals in Dubbo and Bourke.[23]

3.20 The hospital places a high priority on the adoption and development of Telehealth and Health Informatics. Its clinical systems allow computer-based support of clinical practice both within the hospital and for community-based paediatric clinical practitioners.[24] The hospital is also keen to develop 'Integrated Clinical Support Systems' which will allow clinicians to:

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19 Transcript of Evidence, p. 401.

20 Transcript of Evidence, p. 296.

21 Report from the Tanami Network Pty Ltd dated 13 June 1997, p. 2.

22 Dr John Yu was named 1996 Australian of the for his work in health care.

23 Sub No 85, Subs Vol 2, p.496.

24 Sub No 85, Subs Vol 2, p. 495.

> *...review cases, plan treatment, make orders and receive clinical decision support within a consistent and easy to use environment.*[25]

Telepsychiatry

3.21 According to one witness, telepsychiatry can no longer be considered to operate at the pilot trial stage.[26] Telepsychiatry is operating successfully on 128 Kbps ISDN.

3.22 The Glenside Hospital Telemedicine unit was the first of the psychiatry projects that was undertaken within South Australia.[27] The South Australian Health Commission explained that the videoconferencing links between the Glenside Hospital and Mount Gambier, Whyalla and Port Augusta hospitals deliver psychiatric consultations to patients where local psychiatric services are unavailable.[28] The practice of Telepsychiatry in South Australia has been "accredited as world leading telehealth programs in terms of sustained use."[29]

3.23 The Honorary Secretary of the Royal Australian and New Zealand College of Psychiatrists (RANZCP) observed that the management of renal disease and psychiatry have been the major specialties involved in Telehealth. The management of these areas of health have been assisted by an estimated 40 to 50 videoconferencing health sites.[30]

3.24 The RANZCP observes that the number of functions that have been developed in Telepsychiatry are: consultation; liaison and review; treatment; clinical support to people providing treatment; discharge planning; formal supervision; teaching and training; and also administration.[31] Telepsychiatry is also "clinically effective".[32]

3.25 In evidence to the Committee, the RANZCP raised its concern at the total exclusion of private psychiatrists from Telepsychiatry. The College observed

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25 Sub No 85, Subs Vol 2, p. 496.

26 Transcript of Evidence, p. 149.

27 Transcript of Evidence, p. 330.

28 Sub No 123, Transcript of Evidence, p. 246.

29 South Australian Government, Submission No. 123, Official Hansard Report, p. 246.

30 Transcript of Evidence, p. 787.

31 Transcript of Evidence, p. 788.

32 ibid.

that "private psychiatrists in fact do the bulk of psychiatric treatment in this country",[33] though:

> *private psychiatrists, by and large, have been totally excluded from telemedicine and telepsychiatry except on a pilot basis. They have been funded on the basis of particular pilots and, of course, once the funding ceases their involvement stops.*[34]

3.26 The Committee is concerned at the exclusion of private psychiatrists from Telepsychiatry and is of the view that Telepsychiatry can be considered established when it is practised in both private and public settings. The Committee encourages the RANZCP to press for greater involvement in Telepsychiatry, perhaps through the development of protocols between salaried and privately practising psychiatrists. The Committee understands that an impediment appears to be the remuneration of non face to face consultations.[35]

Teleradiology

3.27 Teleradiology is conducted by the transmission of X-ray images or brain scans via the telephone network "for patient management and diagnostic advice".[36] The Health Communication Network (HCN) advised that a basic network was established in 1991 between Wagga Wagga Base Hospital, in country New South Wales and Sydney's St Vincent Hospital. As a result of its success, the network was later expanded to enable smaller rural hospitals such as Griffith and Tumut to receive specialist advice from surgeons in Wagga Wagga either at the Base Hospital, at their rooms, or on their mobile units.[37]

3.28 South Australia has been demonstrating Teleradiology, by using basic links, between Adelaide and the major provincial centre of Whyalla since 1991.[38] According to a South Australian group, Benson Radiology, Teleradiology is used between city locations where a radiologist may not be available to prepare a report in a short space of time. The images are transmitted to a site where a radiologist is located and the report can be provided "usually within half an hour".[39] Benson Radiology also observed that

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33 Transcript of Evidence, p. 790.

34 ibid.

35 This question is pursued in Chapter 6 of the Report.

36 Sub No 84, Subs Vol 2, p. 467.

37 Sub No 84, Subs Vol 2, p. 468.

38 Sub No 123, Transcript of Evidence, p. 246.

39 Transcript of Evidence, p. 358.

they are able to receive laptop computer brain and ultrasound examinations, including after hours.[40] Teleradiology can be delivered on 128 Kbps of ISDN.

3.29 The technology associated with delivering brain scans is very highly developed. During inspections at the premises of the Australian Computing and Communications Institute (ACCI) in Melbourne and at the New Children's Hospital at Westmead, the Committee saw a demonstration of the ACCI neurology/epilepsy program via a Magnetic Resonance Imaging (MRI) scanner providing access to digitised image data. By using MRI, a scan can be undertaken at one point and be seen by a specialist for diagnosis at another. While MRI operates at geographically separate points, it is reliant on 2 mbps telecommunications technology and cannot be accessed, at present, in most rural and all remote areas because of the lack of appropriate telecommunications infrastructure.[41]

Telepathology

3.30 The Royal College of Pathologists of Australasia (RCPA) observed that within the context of its submission "Telepathology is defined as consisting of visualising pathology specimens on a video monitor rather than through a microscope. It may be used for diagnosis, teaching or continuing education."[42]

3.31 An example of this is three projects in New South Wales, where the Hunter Area Pathology Service, Westmead and South West Pathology Service and Tamworth Pathology have been given grants to evaluate aspects of Telepathology.[43]

3.32 In evidence, the RCPA observed that the:

> *...profession of pathology has actually been one of the most advanced users of Information Technology in the medical field....within a practice of pathology, all laboratories these days are very highly computerised and use that Information Technology as an integral part of the practice...there has been the development of links from the pathology practice into the users of pathology, particularly in general practice...*[44]

40 Transcript of Evidence, p. 358.

41 Sub No 39, Sub Vol. 4, p. 854.

42 Sub No 116, Transcript of Evidence, p. 474.

43 ibid, p. 476.

44 Transcript of Evidence, p. 583

3.33 Pathology Laboratories have actively adopted Telepathology and are able to exchange results with doctors under the current Pathology Information Transfer package (PIT). While the PIT has been adopted because it is a simple tool of exchanging pathology results between laboratory and clinical settings, it has also been described as "a cheap and dirty method"[45]. Because PIT and a variety of other electronic transfer systems have proliferated, there has been a general call for the adoption of a nation-wide standardised system. Preference has been for the adoption of the Health Level Seven (HL7) Standard:

> *Everybody agrees that this would be the best way of transferring clinical information to each other so that our computer programs can file it acceptably.* [46]

3.34 The Committee is encouraged by the limited GP takeup of technology for use in pathology transfer, but because only between 10% and 14% of GPs have computerised their practice for clinical settings, the Committee is recommending incentives to encourage greater numbers of GPs to use technology in Chapter 6 of this Report. In addition, the Committee has recommended the adoption of HL7 and its subsequent versions, which include the transfer of pathology results both within and outside the hospital system. The decision to adopt HL7 will lead to the development of standardised software packages, thereby influencing greater numbers of GPs to buy and use the technology.[47]

3.35 The Institute of Clinical Pathology and Medical Research (ICPMR) at Westmead Hospital, informed the Committee that it has been a pilot site for a number of advanced technology projects in information systems and Telehealth.[48] These include a Telepathology link with Armidale Hospital which was developed over a year ago.

3.36 The ICPMR also intended linking to hospitals in south-west New South Wales, specifically Wagga Wagga and Albury. These moves were hampered by considerable equipment problems which have delayed the project. Another link between the Hunter area and Tamworth hospitals has been delayed due to equipment problems, mainly at the Hunter end.[49]

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45 Dr Hugh Nelson, Gold Coast Division of General Practice, Transcript of Evidence, p. 184.

46 ibid, pp. 184-185.

47 See Chapter 8.

48 Sub No 41, p. 331.

49 Transcript of Evidence, p. 1148.

3.37 Despite these problems, the witness for ICPMR contended that equipment failures have not been significant but have caused delays.[50]. Part of the problem has been the necessity of transporting the equipment to Sydney for maintenance, which has led to delays in projects.[51] The ICPMR is linked to a number of other hospitals, and doctors:

> *...can now walk into any of those hospitals and if they have clearance they can look up the results of any patient in the system.*[52]

3.38 The Committee's impression is that both Teleradiology and Telepathology appear to be widely practised with well developed technology to support them. However, these processes cannot be extended to all general practitioners (GPs) until practices are fully computerised.

Multidisciplinary Approach

3.39 Queensland Health is currently supporting a multidisciplinary project known as the 'Telemedicine Network'. The project aims to develop a network of existing Telehealth users, including Queensland Health, the Rural Health Training Units, Divisions of General Practice and the University of Queensland, to promote, support and standardise the development of Telehealth for policy, clinical, education, evaluation and administrative purposes.[53]

3.40 The 'Telemedicine Network' will operate a multidisciplinary centre within the University of Queensland's Psychiatry Department.[54] On current estimates, the 'Telemedicine Network" project will continue until 30 June 1999 and will be reviewed at the conclusion of the trials.[55]

3.41 A multidisciplinary approach to Telehealth is also being developed by Glenside Hospital in South Australia. The Telemedicine unit at the hospital which began as a Telemedicine project in psychiatry, now has seven videoconferencing units installed in country centres. Predominantly used for psychiatric consultations or mental health applications, these units are able to respond to the needs of several communities. The purpose is:

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50 ibid.

51 ibid.

52 Transcript of Evidence, p. 1149.

53 Sub No 114, Transcript of Evidence, p. 118.

54 ibid.

55 ibid.

> *also to try to involve as many other community or health related disciplines as possible so that we can maximise the community advantage from having videoconferencing units installed out there.*[56]

3.42 Having the videoconferencing units in country areas allows quick responses to community needs and eliminates travel from the country to city based hospitals.[57] Glenside Hospital emphasised that the intention is not to treat the patient over videoconferencing, but to:

> *do a consultation liaison where we are doing an assessment and providing the primary care providers of the patient in the country with advice and guidance as to how best to manage that patient.*[58]

3.43 A unique approach is being taken by the South Australian Health Commission under its 'INFO2000 project'. The project envisaged a common systems approach to the implementation of technology. This was achieved by bringing the various executive officers of hospitals and other groups together to agree on a common set of data elements around which the system could be built.[59] In evidence, the representative from the South Australian Health Commission said that as:

> *part of that process we are replacing our pathology system. We are implementing a common radiology management system. We are currently looking at ICU [intensive care]. We have done a registration of interest on picture archival communications, which is digital radiology. There is also a pharmacy project under way, a dietary project and there is a number of specialist systems.*[60]

3.44 The Victorian Government is funding a multidisciplinary Telehealth program known as the Metropolitan and Country Healthcare Network Project. The project links three Melbourne tertiary and specialist hospitals with a regional hospital. These are: St Vincent Hospital; the Royal Children's hospital; and the Royal Victorian Eye and Ear Hospital, linked with Goulburn Valley Base Hospital in Shepparton, situated 200 kilometres from Melbourne.[61]

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56 Transcript of Evidence, p. 330.

57 ibid.

58 Transcript of Evidence, p. 332.

59 Transcript of Evidence, p. 283.

60 ibid.

61 Sub No 39, Subs Vol 4, p. 854.

Eight trials will be undertaken including after-hours access to a neurologist's residence and an adult psychiatry trial at the Victorian Mental Health Research Institute.[62]

3.45 According to the Victorian Government representative, the project is designed to be a specific pilot or demonstration project and a decision to extend it to include other hospitals will be made after an evaluation has been undertaken.[63] ACCI, which is managing the project, notes that its main aim is to determine the effectiveness of computing and communications technology in providing high quality health care.[64]

Involvement of Nurses

3.46 The Royal College of Nursing Australia (RCNA) informed the Committee that the nursing profession has been involved in a number of Telehealth pilot projects including the use of the Internet. In many cases, nurses have been working as part of a health care team.[65]

3.47 The representative of the RCNA expressed a strong interest in health technology but observed that the vast majority of nurses:

> *... particularly in some of the rural areas and in a lot of the health care organisations, would have had limited access or opportunity to be involved but when presented with the potential often become very enthusiastic.*[66]

3.48 The Australian Nursing Federation (ANF) informed the Committee that their members have been involved in pilot trials of their own and explained that by:

> *inputting information into the computer it meant that the client was better off because that client was not asked 10 or 12 times for name, address and so on.*[67]

3.49 While the ANF and the RCNA were unable to determine specific nursing involvement in pilot projects, the Committee did see nurses take an active role in both the Renal Dialysis Project and TARDIS when it inspected these

62 Sub No 39, Subs Vol 4, p. 860.

63 Transcript of Evidence, p. 773.

64 Sub 39, Sub Vol 4, p. 860.

65 Transcript of Evidence, p. 988.

66 Transcript of Evidence, p. 989.

67 Transcript of Evidence, pp. 914-915.

projects. In the renal dialysis demonstration, the Committee saw a teleconsultation between a specialist at the Queen Elizabeth Hospital in Adelaide and a nursing sister with a patient at a distant location. In evidence, the South Australian Health Commission confirmed the continuing involvement of nurses in the project.[68] The representative of the South Australian Health Commission also observed that:

> *In our telepsychiatry program we generally have a mental health nurse who is with the patient at the remote site, with a specialist in Adelaide who then gives advice which is relayed also to the patient's doctor.*[69]

3.50 Based on observations made by both nursing organisations who provided evidence, the Committee perceives that nurses felt they were marginalised in the technological environment. The Committee believes that if seamless health care is to become a reality, the role of all health care professionals is essential for the achievement of successful outcomes. This is particularly important for the nursing profession. It is also the Committee's belief that, without the involvement of all levels of the health profession, particularly the nursing profession, it is unlikely that the introduction of Telehealth will be achieved easily.

Health Informatics

3.51 A number of State governments are involved in health information projects. A representative of the South Australian Health Commission observed that it is the first State to implement the OACIS software package which is a system designed to build:

> *an electronic medical record. It is really coming from what I call a clinical documentation end as opposed to, traditionally, capturing patient demographic data. We are now talking about collecting data at the point of care.*[70]

3.52 The New South Wales Government is developing a health information exchange project. The project was previously known as the health information warehouse, an expression used by a number of witnesses, including the Queensland and the South Australian governments.[71] According to the New

68 Transcript of Evidence, p. 279.

69 ibid.

70 South Australian Health Commission, Transcript of Evidence, p. 278.

71 See Transcript of Evidence, p.118, p. 248 and passim.

South Wales Health Department, the change of name was made on philosophical grounds because:

> *A warehouse is something where basically you just store information and you may never see it again; it also provides a very centralist view. Our warehousing project is in fact piloting warehouses at two different areas - western Sydney and Wentworth - and those things are quite discrete from the department. The relevance in this context is that the access to information at each of those levels is also managed discretely, so that the transfer of information - for example, from western Sydney to the department - follows exactly the same rules as our paper based systems have had.*[72]

3.53 State-based Health Informatics seems to be in the early stages of development and it is unclear whether the technologies being used will lead to the development of a national storage backup system. Discreet State data management systems are unable to provide a complete patient record, in the event that an individual moves to another State. For this reason the Committee is attracted to an option which was submitted by the National Centre for Epidemiology and Population Health (NCEPH) at the Australian National University. These systems are discussed in Chapter 4.

General Practice

3.54 The view that information technologies have the potential to change the method of providing health care is endorsed by the Australian Medical Association (AMA).[73] However, GPs have been reluctant to embrace technology at the level of primary health care.

3.55 It is not clear from the evidence provided by the Department of Health and Family Services how many pilot trials have been undertaken in General Practice. There is a reference in their submission that a "small number of demonstration projects dealing with IT were funded initially",[74] and a "project aimed at providing independent advice on computer systems is due for completion soon".[75]

3.56 By August 1996, the Department had awarded 95 grants to Divisions of General Practice. These projects had a "strong" Information

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72 Transcript of Evidence, p. 539.

73 Further information, letter dated 30 June 1997, p. 5.

74 Sub No 103, Sub Vol No 1, p. 214.

75 ibid.

Management/Information Technology component and included activities in the following areas:

> *clinical decision support;*
> *medication management/electronic prescribing;*
> *electronic patient record;*
> *linking GPs to the broader system, especially GP/hospital communication Telemedicine*[76].

3.57 The Department noted in its submission that, although most of the projects are still continuing and have not been subject to a final evaluation:[77]

> *Preliminary evaluation shows that careful attention needs to be paid to developing a thorough needs analysis before commencement, hardware and software selection and installation, ongoing support during project implementation, and GP education when GP use of computers is involved.*[78]

3.58 A needs assessment should be an essential prerequisite to any pilot trial. The Committee is, therefore, concerned about the inexplicable *ad hoc* approach taken by the Department of Health and Family Services, particularly given the range of projects it has commissioned and the development of the 'strategic plan' designed to inform its decisions.

3.59 The Executive Director of the ACT Division of General Practice, Dr Brian Richards informed the Committee that in 1995, his Division submitted a range of Information Technology projects to the Department which were not approved by the Minister's delegate because the Department "did not have an Information Management Strategy for general practice."[79]

3.60 It is obvious that a national strategic approach has not been developed as demonstrated by the number of Divisions of General Practice seeking to implement their own independent pilot trials based on local requirements and without reference to other trials already being carried out. This worrying trend is continuing the fragmentation of health care and will maintain the isolation of General Practice from the broader health system. If these developments continue, they would counter the unique advantages offered by communications technologies to consolidate health information in order to achieve better outcomes.

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76 Sub No 103, Sub Vol No 1, p. 215.

77 ibid.

78 ibid.

79 Transcript of Evidence, p. 1164.

3.61 Given the importance of GPs to the development of an electronically networked health care system, the Committee believes that every effort must be made to ensure their participation. In Chapter 6, the Committee will make recommendations regarding the current Medicare billing process and the recognition of non face to face consultations through the Medicare Benefits Schedule (MBS). It is the Committee's intention to encourage GPs to embrace Telehealth and Health Informatics.

Pharmacies

3.62 The major distribution outlets for medicinal drugs under the Pharmaceutical Benefits Scheme (PBS) are community pharmacies.[80] The Pharmacy Guild of Australia estimates that 5 million visits are made to pharmacies each week.[81] Therefore, the Guild believes that there is scope for improvements in Health Informatics within community pharmacies as well as in their dealings with government agencies, particularly the Health Insurance Commission (HIC).[82]

3.63 The Guild observed that community pharmacies are among the most highly computerised of all small businesses in Australia. The Guild also indicated that they are well ahead of other health professionals in the degree to which computers are used in daily activities. It is estimated by the Guild that close to 100 per cent of all pharmacies are computerised.[83]

3.64 Pharmacists use their computers for a range of activities, including their principal function, that is dispensing prescriptions.[84] Pharmacists are able to build up a picture of each patient's medication history by recording information about each dispensing event on the computer. This is done for public health reasons, for claiming purposes and to minimise unfavourable drug reactions.[85]

3.65 At present, pharmacists lodge monthly claims for payment with the HIC for dispensing prescription drugs. In addition, pharmacists are required to lodge the original copies of all prescriptions dispensed during the previous months. The HIC then processes these claims and determines the amount payable to the pharmacists. An electronic computer disk is also lodged which

80 Submission No 57, Subs Vol No 1, p. 40.

81 ibid.

82 ibid.

83 Transcript of Evidence, p.83.

84 Sub No 57, Subs Vol No 1, p. 41

85 ibid.

contains a summary of the information on each prescription.[86]The Guild has argued that this current system "has become an anachronism in today's rapidly changing Information Technology environment,"[87] and that there is scope for further improvements.

3.66 The Guild favours 'paperless claims',[88] where all relevant information is presented and verified on disk, without a written prescription. Paperless claims are said to decrease the administrative burden and lead to greater efficiencies. The Guild and the Commonwealth Government have agreed to explore the introduction of paperless claiming for pharmacists under the terms of a five-year agreement between the Guild and the Minister for Health and Family Services (for the period July 1995 to June 2000).[89]

3.67 From March to May 1996, a paperless claims trial was undertaken in Victoria. The trial involved 15 community pharmacists and included two pharmacists servicing private hospitals. The HIC established the methodology for the trial in consultation with representatives from the Guild, the Society of Hospital Pharmacists and the Pharmaceutical Society. In addition, the HIC prepared a detailed protocol for the trial "and certain amendments were made" to the HIC's processing rules in order to allow the trial to proceed.[90]

3.68 The trial had the following objectives:

- *to test run a new system of claims processing and payment which no longer involves the submission of hard copy prescriptions to the Commission;*
- *to reduce pharmacists' administrative/clerical workload in both the community and hospital settings; and*
- *to identify and resolve any problems which may arise from both the pharmacist's and the Commission's point of view.*[91]

3.69 According to the Pharmacy Guild, the results of the trial were mixed. The Guild surveyed the trial pharmacists in order to assess whether or not paperless claiming in the trial's format reduced the amount of clerical work the pharmacist must perform when claiming for PBS/RPBS (Remuneration Pharmaceutical Benefits Scheme) prescriptions. A period of five months was

86 ibid.

87 ibid.

88 ibid.

89 ibid.

90 Sub No 57, Subs Vol No 1, p. 42.

91 ibid.

chosen to ensure that information was collected for the periods before, during and after the trial. Out of the 15 pharmacies in the trial, 11 returned their forms.

3.70 Analysis of the results showed that only two trial pharmacists experienced a significant reduction in normal administrative time. Two others showed some increase and the remaining seven experienced little change. In almost all cases, significant extra time was taken responding to requests from the HIC for prescriptions to be found and delivered to the HIC's Melbourne office. In "nearly all cases paperless claiming increased rather than reduced the clerical burden on pharmacists."[92]

3.71 Trial pharmacists were generally supportive of the concept of paperless claiming, but not the particular model used in the trial.[93] The conclusion of the pharmacists was that the concept of paperless claims was "the right way to go", but that the model which was trialed was inadequate. Many stated that requests by the HIC to find prescriptions was "a nuisance" and "a hassle" and they were particularly concerned that they risked not getting paid if a prescription was not located. Because they were required to submit prescriptions to the HIC during the trial, pharmacists did not perceive the trial as paperless.[94]

3.72 The Committee supports paperless claiming and believes this will reduce the administrative burdens on pharmacies. However, for a paperless system to operate effectively, pharmacists must be consulted as broadly as possible. In the following chapter, the Committee will discuss the Canadian PharmaNet project as a possible solution.

Coordination and Evaluation

3.73 Comments were often made about the "many projects under way (we are aware of about 35 in the pathology and general practice areas alone)..."[95] According to a witness from the Australian Association of Pathology Practices, there is not enough knowledge being disseminated about what is being trialed:

> *I sat in a meeting with about 20 people in the AMA and the College of General Practitioners - the people that you would expect to know what was going on in Australia. We wrote on the*

92 ibid, p. 43.

93 The Pharmacy Guild of Australia, PharmaNet and PCS Health Systems, February - March 1997, Final Report, p. 7.

94 The Pharmacy Guild of Australia, Sub No. 57, Subs Vol No 1, p. 43.

95 Australian Association of Pathology Practices, Sub No 106, Subs Vol 1, p. 241.

> *whiteboard about 35 projects that were going on in Australia, nobody in the room knew of all of them and many of them overlapped.*[96]

3.74 In evidence, the Department of Health and Family Services indicated that some early projects associated with their General Practice Strategy had been evaluated. The projects were "fairly diverse" and were designed to demonstrate what could be achieved in bringing new information technologies to General Practice.[97]

3.75 According to the Department, the overall lessons it drew from these projects was more about "how you proceed to introduce technology than about how the technology will actually work now".[98] The Department also observed that rapid technological developments meant that technologies had been superseded by the time the trial had finished.[99] The HCN explained that the Commonwealth:

> *basically advertised for and sought out organisations that could demonstrate relatively quickly the type of applications in telecommunications and health that would show an improvement in either effectiveness or efficiency or savings or in better outcomes, and selected a range of projects - six projects - that were a broad type of technology spread as well as different parts of the health system as well as different parts of the country.*[100]

3.76 Telstra observed that many pilots are driven by particular interest groups with a customer base. This possibly explains why there is a broad spread across Australia. In a hospital setting, Telstra seeks out a "white knight" with sufficient dedication to trial a pilot, which might then be deployed nationally.[101]

3.77 It is the Committee's observations that committed project teams, together with enthusiastic State governments are driving pilot trials and are well informed in this area. As outlined earlier, most States have developed future long-term and strategic planning to inform their policy direction. However, there is still a general reluctance to disseminate information on a national basis.

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96 Dr Michael Legg, Vice-President and Chairman, Informatics Committee, Australian Association of Pathology Practices, Transcript of Evidence, p. 1160.

97 Transcript of Evidence, p. 9.

98 ibid.

99 ibid.

100 Transcript of Evidence, pp. 40-41.

101 Transcript of Evidence, pp. 49-50.

3.78 The problem appears to be with the method of calling for pilot trials. It is generally recognised that the initial approach by the Department of Health and Family Services to Telehealth and Health Informatics trials lacked focus. In reply to a question about its method of approving and funding pilot projects, the Department stated that:

> *These projects cover a wide range of issues and have been funded under a variety of programs. In many cases, the information management component is secondary to the primary aim of the project which is often about providing specific services. Consequently there has been no overall process of evaluation of the projects in toto and methods of dissemination of results will also vary.*[102]

3.79 The Department has indicated that its future approach will be less concerned with the capability of the technology and more focussed on standards setting:

> *So we are pulling back from trying to get things set up, in place and working and are focusing now on getting some of those basic building blocks in place, like an agreed medical terminology, knowledge bases like medicine resources information, that machines can understand and can deal with.*[103]

3.80 While it is disappointing that there were no plans to deliberately pilot and assess the full potential of trials, this problem is not confined to Australia. Governments and project teams in other countries are trying to determine the potential and the impact of modern technologies on the delivery of health care. The Deputy Director-General of Queensland Health explained that:

> *the process is still in its embryonic stages as far as producing results. In fact, getting the infrastructure put together is a significant challenge in its own right. I think these projects are raising all the issues we need to address before we get to an end product.*[104]

3.81 A similar observation was made in Sydney by the Professor of General Practice at Sydney University. Professor Kidd, who has written widely on this subject area, welcomed the Inquiry as "very important and timely",[105] but wished to impress upon the Committee that:

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102 Transcript of p. 1208.

103 Transcript of Evidence, p. 10.

104 Transcript of Evidence, p. 135.

105 Transcript of Evidence, p. 594.

> *we are still very much in the infancy of the information age and we can compare where we are now, if you like, to the early days of flying machines: we are not exactly sure where this Information Technology is going to take us or how it is going to take us there, but we have very vague notions of where we want to go. Those notions will become clearer as time goes on, but at the moment we are still very much in the early days.*[106]

3.82 It is accepted that Telehealth and Health Informatics are in the early stage of evolution. Despite their early evolutionary phase, it is the Committee's view that any activities in the area should be planned and focussed and should not be driven primarily by the technology itself.

3.83 While evaluation of any technology undertaken for its sake alone is unnecessary because of the rapid developments in this area, technologies should not be developed without appropriate consultation with the health professions. Dr Robert Whiting, Project Director of the TARDIS trials is concerned about the likelihood of this trend taking hold:

> *Much of it has been driven by industry, by the technologists trying to find some value in there. In doing that, what has happened is that systems have gone in with very little appraisal, very little evaluation, and very little where you can, at the end of the day, say why this is effective, why this works.*[107]

3.84 Professor Kidd agrees that without "substantial evaluations"[108] there will remain an inability to draw out lessons which have been learned and the method of applying those lessons in other settings.[109] The problem, according to Professor Kidd, appears to have been:

> *rather a dearth of publication from many of the pilot projects on Telemedicine around the world. Partly this is because this is a new area and people are only starting to get results which they feel can be put into the literature.*[110]

3.85 The widespread dissatisfaction with the current process of developing pilot trials has resulted in demands for a more coordinated approach to the conduct of pilot trials. The Medical Director of the Family Medicine Research Unit at Sydney University, articulated this in the following way:

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106 ibid.

107 Transcript of Evidence, p. 162.

108 Transcript of Evidence, p. 595.

109 ibid.

110 Transcript of Evidence, p. 596.

> *At the moment the comment about all the pilots is that they get done, but nobody implements them because there is no integrating plan in order to do that. This is one of the major difficulties that we would see.*[111]

3.86 In similar terms, Professor Kidd proposed that coordination is necessary for the dissemination of information from pilot projects and that this should be done at the national level:

> *we certainly need to encourage in this country that the projects occurring in the states do get drawn together and again shared with projects which are being funded by the Commonwealth, particularly projects being funded in general practice so that we can all learn from each other.*[112]

3.87 Professor Malcolm Mackinnon saw an international, as well as a national necessity for the coordination of pilot projects:

> *because I think that what we are going to see over the next five years is a significant globalisation of Telemedicine.*[113]

3.88 Given the lack of any evaluation or dissemination of information from the pilot trials which have already been undertaken, the Committee questioned the usefulness of continuing such trials. Associate Professor Branko Cesnik, of the Centre of Medical Informatics at Monash University, saw little value in pilot programs for a variety of reasons and believed it is time to move on from the pilot stage because:

> *... pilot studies are not the way to go; they should perhaps become more operational. The information concerning them around Australia is not well shared. This is often due to internal instrumentalities in government, academic enterprises, business, a whole range of industries that hold on to such information rather than share it. It is a common characteristic.*[114]

3.89 There must be a responsibility for project teams to share the results of their trials, particularly as these trials have been made possible by means of public funding. Without the sharing of information, there is a real danger that trials will be repeated with costly consequences.

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111 Transcript of Evidence, p. 679.

112 Transcript of Evidence, p. 596.

113 Transcript of Evidence, p. 401.

114 Transcript of Evidence, p. 819.

3.90 The Committee, therefore, encourages project teams currently undertaking trials to read the evaluation report of the Queen Elizabeth Hospital Renal Dialysis Project which has moved from a trial to a working system of delivering health care. Evaluation results published by the project team should benefit development of projects in other States.

3.91 However, evaluation of the capabilities of the technology being trialed is not appropriate or necessary, particularly as there is wide acceptance that technology is changing at a very rapid pace. Attention is drawn to the experience of trials undertaken under the General Practice Strategy of the Department of Health and Family Services which demonstrated that:

> *One of the real difficulties about trying to make advances in this area is that the technologies are changing so rapidly that if you have a project which was trialing early technologies, by the time the trial has finished those technologies have been superseded. And so you can learn that that approach was not very useful, but that does not then tell you whether the failure was because Information Technology will not assist general practice or whether it was simply that the early systems were very primitive*[115]

3.92 Whether the medical profession needs to be educated about what technology can achieve or whether there is broad reluctance to embrace change, Professor Mackinnon considers that:

> *...pilot projects are important at the moment in that not everyone in medicine is aware of the potential impact of Information Technology in medicine.*[116]

3.93 This view is not shared by the Committee. Substantial resources have already been spent on pilot trials and pilot trials which focus primarily on the capabilities of technology are diverting funds from more important coordinated activities.

3.94 The absence of an appropriate evaluation model and insufficient national dissemination and coordination of information is blamed for the lack of knowledge about pilot trials in Telehealth and Health Informatics across Australia. The Committee is concerned that the national interest is not being served by the fragmented approach which has characterised the development of pilot trials and supports the development of a national approach[117].

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115 Transcript of Evidence, p.9.

116 Transcript of Evidence, p. 401.

117 See Chapter 10.

Costs and Benefits

3.95 There is widespread agreement that the evaluation of the costs and benefits of deploying Telehealth and Health Informatics in any health system is complex and, so far, has not been achieved in any significant way. The Department of Health and Family Services predicts that while Information Technology "would be of considerable benefit" in some areas, in others, the "cost implications are high and may not be justified by the likely benefits."[118] On the benefits side, the Department lists the following areas as offering opportunities to improve health outcomes:

- continuity of individual care through the implementation of such approaches as hand held patient records or improved data and information interchange between providers;
- population health through a better capacity for surveillance, research and analysis;
- access to health services for rural and remote communities;
- health administration to enable better distribution of resources according to individual and community needs and to maximise health outcomes from a particular health budget, such as casemix;
- the availability to health practitioners of current guidelines for population health interventions such as screening for disease in its early stages; and
- consumer choice through access to information and appropriate services, which has the potential to empower individual consumers and local communities through better knowledge and understanding of threats to their health and the effectiveness of interventions.[119]

3.96 In addition, the Department agrees with the generally held view that health care service delivery is information intensive[120] and that managing and maintaining information and data coming from a variety of sources in paper based systems is:

118 Sub No 103, Subs Vol 1, p.191.

119 Sub No 103, Subs Vol 1, p. 192.

120 ibid, Vol No 1, p. 195.

> *unwieldy and costly to maintain and access, and data coming from services is often inaccurate, incomplete or absent, the latter especially true in the primary health care sector.*[121]

3.97 Therefore, the Department suggests that there are significant benefits to be derived from improved information management, regardless of the technology applied. The Department points to anecdotal and verifiable evidence which indicates that when patients move from an examination with a GP to other health care settings, the records and information about that episode of care are not easily transferred with the person. So that:

> *at each point in the process the information is reinvented. From a cost efficiency point of view that tends to lead to further tests and extra examinations which have already been done in an earlier setting but were not transmitted in some way to go with the patient.*[122]

3.98 The Department emphasised that improved outcomes can be achieved if information is better managed across the health sector. However, the "issues associated with doing that are not trivial and there is not just a simple solution sitting there."[123] These include privacy and confidentiality, standards setting, coding and classification systems and those of a medico-legal nature which are dealt with in subsequent chapters of this Report.

3.99 On the specific issue of Telehealth, apart from improving access to rural and remote communities, the Department of Health and Family Services is:

> *not prepared to say at the moment that in all of its implementations and all of its guises it is absolutely cost effective and the only way to go. We are being quite cautious about that. That is because the underlying infrastructure costs of some of these technologies are very high and frequently they are not brought to the table when you are actually looking at a particular thing.*[124]

3.100 The Department further warns that current Telehealth activity is using low level networks and to expand in this area requires "more than just the telephone lines".[125] During the course of the course, it was widely acknowledged that in a deregulated telecommunications industry, costs are

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121 ibid.

122 Transcript of Evidence, p. 7.

123 Transcript of Evidence, p. 8.

124 Transcript of Evidence, p. 20.

125 ibid.

likely to be reduced significantly. For example, in an initial submission from the Division of General Practice Northern Tasmania, an estimated figure of between $1.2 million and $2.2 million was quoted for a network to include rural coverage.[126] A year later the representative for the Division indicated that..."that cost is very greatly reduced.".[127]

3.101 Not only is there likely to be shifting costs in a deregulated telecommunications environment, but it is very likely that costs for the associated technologies will also change over time. An initial estimate for the Melbourne Metropolitan Country Hospital Network made by ACCI, who are managing the project, was quoted at $65,000 per workstation. A recent review of the project resulted in a changeover to a PC based system developed by a Victorian company at a much lower cost of between $20,000 and $25,000 per workstation.[128]

3.102 Equipment is only one cost component and could, in the long-term, according to the South Australian Health Commission, facilitate access to health services resulting in a corresponding increase in costs:

> *because as you increase access to services you tend to increase the volume of services and there tends to be a net additional cost at the end of the day that has to be borne by someone, somewhere, within the health system.*[129]

3.103 These views are shared by the President of the American Telemedicine Association, Dr Jay Sanders. During a conference in Adelaide, Dr Sanders is reported to have said that the resulting rise in the quality of care likely from Telehealth could be offset by a potential increase in the cost of the overall expenditure on health. That increase, according to Dr Sanders, is because the "technology is providing access to medicine for people who would never before have had access to health care".[130] The people to whom that access is being provided are in Dr Sanders' estimate, the 40 million people in the United States of America who had been "disenfranchised" from health care because they lived in remote areas of the country.[131]

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126 Transcript of Evidence, p. 1136.

127 Transcript of Evidence, p. 1137.

128 Further information from the Victorian Department of Human Services, letter dated 5 June, 1997, pp. 1-2.

129 Transcript of Evidence, p. 267.

130 cited in the *Financial Review* Friday 4 October 1997, p. 47.

131 ibid.

3.104 Evidence to the Committee supports Dr Sanders' assumption that Telehealth is likely to provide greater access to health care to people living in remote areas of Australia. It is also noted that Dr Sanders' account did not appear to consider cost of travel to regional centres for medical treatment, compared with the cost of greater access to health care via Telehealth. In addition, Dr Sanders' view that the 40 million people in the United States who had been "disenfranchised" will add to the overall cost of the health care system, makes no comparative estimate of the longer term costs of morbidity without treatment of that population.

3.105 Without any concrete data to support such predictions, the Committee cannot endorse the observations that rural and remote communities will increase their access to health services because of Telehealth. A cost effectiveness analysis of Telehealth by itself may not be sufficient:

> *because it fails to account for all the changes that would occur as a result of telemedicine... 'we remain in the dark' on the issue of cost effectiveness, as there is little hard data and only projections available.*[132]

3.106 Finally, it may be that better access to health services for individuals living either in remote areas or in major cities could lead to health outcomes based on prevention rather than treatment. As Dr Hawker observed, one could argue that "you are saving money if you get into the issues of primary care prevention".[133]

3.107 Health economics is made even more difficult because qualitative issues such as convenience, cultural acceptance and equity need to be considered. These issues were alluded to by Professor Yellowlees, when he observed that:

> *the provision of Telemedicine and computer technologies to rural Australia will necessarily be cost effective in a formal sense, although I expect it would be about cost neutral. What these technologies should allow is very much improved quality and access to medical care for the large proportion of the Australian population who, at the present time, do not have these facilities*[134].

3.108 The US Congress report on 'Telemedicine' observed that, while many believe in the "potential of telemedicine for providing cost-effective services,

132 Sub No 86, Subs Vol 3, p. 760.

133 Institute of Clinical Pathology and Medical Research, Transcript of Evidence, p. 332.

134 Sub No 110, Transcript of Evidence, p. 112.

not much 'hard data' is available to support that belief."[135] While these are also the Committee's findings, there is no hard data to the contrary.

Aboriginal Communities' Evaluation

3.109 The Administrator of the Pintubi Homelands Health Service at Kintore (530 km west of Alice Springs) has argued that the education of health workers via teleconferencing is more expensive than flying 3 health workers to Alice Springs, including accommodation, meals and salaries for one week. The Administrator costed 20 hours of teleconferencing at $280 per hour for 20 hours ($5,600) compared to flying 3 health workers to Alice Springs ($4,500) including accommodation, meals and salaries for one week.

3.110 The Administrator at Yuendumu (300 km north-west of Alice Springs) does not support this analysis, on the basis that these figures do not take into account the overall use made of the Network. The Tanami Network position is that the $500,000 budget for medical evacuations for the Pintubi Homelands Health Service could be spent more effectively on developing Telehealth services for the community. Although price and the reliability of telecommunications access remain the major obstacles, these are likely to change in a deregulated environment.[136]

3.111 Apart from telecommunications costs, the Tanami Network and the Pintubi Homelands Health Service at Kintore each cited cultural imperatives as essential elements for the future success of Telehealth in remote Aboriginal communities.[137] However, each assessment differed in emphasis. In a briefing paper prepared for the Committee's visit to Kintore, the Administrator of the Pintubi Homelands Health Service observed that:

> *...half of the difficulty in undertaking remote medicine is dealing with an entirely different culture and language in third world conditions. The only real way to learn of these conditions is to experience them directly.*[138]

3.112 The Administrator's point appears to be that advanced technology is inappropriate in a remote location because the:

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135 *Telemedicine Report to Congress,* Executive Summary, p. 2.

136 Tanami Network briefing prepared for the Committee's visit to Kintore on Monday 4 August, 1997, by Peter Holt, Tanami Network Pty Ltd, dated 13 June 1997.

137 Briefing prepared by Stewart Blyth, Administrator, Pintubi Homelands Health Service, Kintore Community, via Alice Springs, Northern Territory, for the Committee's visit to Kintore on Monday 4 August, 1997, *Summary of Telemedicine Trials,* p.1, and briefing prepared by Peter Holt, Tanami Network Pty Ltd, 13 June 1997, p. 5.

138 Briefing prepared by Stewart Blyth, *Summary of Telemedicine Trials,* p.2.

> *nature of community based medicine tends to be coping with daily crises and the ongoing operation of community health programs. Telemedicine is unlikely to assist in either respect and would probably, due to the time needed to arrange and conduct video links, detract from the time available to perform the clinic's main functions.*[139]

3.113 In the assessment of the Aboriginal communities canvassed by the Tanami Network, Telehealth is perceived as a solution to a number of cultural problems, particularly related to travel and access to health education:

> *Each evacuation (almost every child of 4 years has had one emergency evacuation...PHHS[Pintubi Homelands Health Service] Health Survey) involves major family dislocation as the only hospital is 530 km away and often no accommodation is available other than "camping" in the creek.*[140]

3.114 In addition, those seeking training in Alice Springs and Batchelor are subject to:

> *major family dislocation. These are also "alcohol centres" and provide many more distractions than if training was available on [sic] the community. Often family is left without support while the breadwinner is away for training courses.*[141]

3.115 In another assessment, Mr John Mitchell, the Renal Telemedicine project manager, who was involved in the Tanami Network trials, conducted an evaluation and spent "five months studying it".[142] He concluded that there are some cultural myths which have been used to discredit Telehealth. For example:

> *It is a myth that Aboriginal people have a problem about eye to eye contact or using videoconferencing. There are cultural sensitivities about who is in the room, and they may have to avert their eyes because of the people but in terms of using the technology it is one of the stunning stories in Australia of how well*

139 ibid, p.1.

140 Briefing paper prepared by Peter Holt, Tanami Network, p.5.

141 ibid.

142 Transcript of Evidence, p. 300.

> *the Aboriginal people have used that new technology. They have used it better than white people in lots of ways.*[143]

3.116 However, Mr Mitchell agreed that there are cultural sensitivities and they are many:[144]

> *...we were basically nursed along or coaxed along by the appropriate elders and the appropriate health staff at Kintore, but if we were to actively want to engage in delivering health services to an Aboriginal settlement we would need a comprehensive education program for all players on both sides.*[145]

3.117 Mr Mitchell also commented that a significant and positive side effect that flowed from the project and which is likely to have a far reaching impact on the wider society:

> *...was a strong recommendation that we use this technology also for the flow of information from an Aboriginal community back to the white society and so the information that comes back could be for, say, undergraduate medical students, educating them about all these issues - cultural sensitivities and the health problems in these communities - so the cultural issues are immense.*[146]

3.118 The wide differences in opinion between Yuendumu on the one hand and the Tanami Network and the Renal Dialysis Project team on the other can only be explained in the context of fear of modern technology itself. The Pintubi Homelands Health Service Administrator at Kintore is clear:

> *...telemedicine is not currently necessary or required by the Kintore Community.*[147]

3.119 During the Committee's visit to Kintore on 4 August, it inspected the health clinic and met with Dr Peter Tait, the resident Doctor, who with his staff provide an excellent service to the community under difficult circumstances The Committee spoke directly with Mr Stewart Blyth the Administrator of the Pintubi Homelands Health Service and also with Mr Peter Holt of the Tanami Network, who travelled from Yuendumu to meet the Committee. Both Mr Blyth and Mr Holt reiterated their respective and divergent points of view on the deployment and use of Telehealth in remote Aboriginal communities.

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143 ibid.

144 ibid.

145 ibid.

146 Transcript of Evidence, p. 301.

147 Briefing prepared by Stewart Blyth, *Summary of Telemedicine Trials*, p.1.

3.120 A significant benefit of Telehealth to Aboriginal communities is that it provides opportunities for distance learning in health care delivery settings for both health professionals and members of the community. In addition, Telehealth can provide improved access to health care in medically underserved areas and urges those committed to improving Aboriginal health care not to dismiss the capabilities of Telehealth outright.

Conclusion

3.121 The Committee believes that, despite the lack of any conclusive evaluations, there is a potential for improving health care outcomes through Telehealth and Health Informatics. However, the Committee does not support the continuation of pilot trials and agrees with suggestions that many are unlikely to continue beyond the pilot trial stage once the funding runs out.[148]

3.122 The *ad hoc* approach which has characterised the funding and establishment of pilot trials is disappointing. The Committee believes that despite the infancy of Telehealth and Health Informatics, pilot trials should not have been undertaken without thorough strategic planning. It is unfortunate that initial trials sought to determine the capabilities of the technology for its sake alone and that the funded trials were not evaluated and the information disseminated.

Recommendation

3.123 The Committee recommends that the Department of Health and Family Services should immediately:

(a) resource a major independent project in consultation with the National Office for the Information Economy with the specific aim of developing a model designed to evaluate thoroughly the costs and benefits of deploying Telehealth and Health Informatics throughout the health system;

(b) consolidate and disseminate results of all trials conducted to date;

148 Mr Kenneth Buxton, Australian Computing and Communications Institute, Transcript of Evidence, p. 963.

(c) ensure that any future pilot projects should satisfy a strategic plan which includes a thorough costs and benefits analysis and the wide dissemination of all outcomes; and

(d) that a defined aim of each pilot should be that upon successful completion, it becomes incorporated as a fully operational program.

The communication of information is fundamental to health care. In pre-history, knowledge and skills were passed from healer to apprentice by talking and example.[1]

4 Health Informatics

Introduction

4.1 The information age is providing new ways to manage data and is altering permanently the way the health sector, along with the rest of society manages that information. Data in the health care industry takes many forms. These include numbers, text, concepts (coded data), graphics, images and physiological measures (signals and sound). Health care professionals rely on all their senses, including smell, to collect data from individuals which are then recorded in a patient's medical history or health record.[2]

4.2 Advances in communications technology have made it possible for all types of data, "with the exception of smell"[3], to be produced in digital form. Such progress allows fully integrated health information systems to be developed enabling the functional needs for health information to be met.[4]

4.3 Comparisons are often made in the method of collecting and managing data in the two privacy sensitive areas of health and banking. The health and banking industries can perform more efficiently by using communications technology. However, the banking industry is much further advanced in the use of this technology than is health.[5] This has led to concerns that health is not taking the opportunities offered by advanced telecommunication and computer technologies to provide new methods of delivering health services and managing information "so that we may make optimal use of their potential to improve the nation's health."[6]

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1 Walker, Don C, 'Health Information Science', in Hovenga, Evelyn, et al, op cit, Chapter 4, p. 1.

2 Hovenga, Evelyn 'Health Care Services and Information Systems, ibid., Chapter 3, p. 13.

3 ibid.

4 ibid pp. 13-14.

5 ibid, p. 13.

6 National Centre for Epidemiology and Population Health, (NCEPH) The Australian National University, Sub No 126, Subs Vol. 5, p. 1074.

4.4 The Department of Health and Family Services has made the observation that Health Informatics has the scope to link individual and population health care more closely than has been possible in the past. With shifts in emphasis in the health care system to health outcomes, "the interests of public health and individual health care converge."[7] This view is gaining acceptance amongst State governments who support the concept of evidence based medicine and the strategic use of Health Informatics as essential to new ways of delivering health care and enabling the measurement of clinical outcomes.[8]

4.5 In order to realise the potential of Health Informatics, logically integrated systems must be developed in which the information collected serves many purposes.[9] In a growing number of industrialised countries, consumer pressure has led to the introduction of an electronic patient medical record as a solution to this problem because:

> *a significant portion of adverse health events are the result of failures in the timely exchange of health information. Here the information management issues are likely to be as much concerned with human systems as with technologies. Nevertheless, technology can offer more effective means of information exchange once the people concerned have agreed this to be desirable. Automation can eliminate human errors of omission, and electronic formats can improve timeliness and efficiency.*[10]

4.6 A number of States have already begun to establish Health Informatics systems such as data warehouses, in order to provide aggregated patient information in the form of an electronic record. There is also a growing trend in the use of electronic communications between health providers. For example, between some hospitals, an increasing number of GPs and a number of specialists, particularly pathologists and radiologists.[11]

4.7 The generally accepted aim of the electronic medical record, is to ensure the accuracy of the data collected on a health consumer throughout the individual's lifetime to include all care providers at all sites of care. This concept was summed up in the following terms by the South Australian Government:

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7 Sub No. 103, Subs Vol. 1, p.193.

8 Sub No. 123, Transcript of Evidence, p. 248.

9 Sub No. 103, Subs Vol. 1, p.193.

10 ibid, p. 195. Chapter 7 provides a wider discussion of the impact on consumers of deploying Health Informatics.

11 NCEPH, Sub No 126, Vol. 5, p. 1074.

> *to create a virtual or boundaryless[12] environment which can separate the point of care from the point of decision, expand the possible decision points and increase the client base. Used in conjunction with an information repository (data warehouse), aggregated patient information will support clinical decision making resulting in an improved patient outcome.[13]*

4.8 Likewise, the HIC strategic vision for the next century focuses on the use of Health Informatics as the platform for informed and high quality health services. The intention of the HIC's strategy is the introduction of electronic commerce in order to provide improved communications within the health sector, leading to better coordination of service delivery "with a focus on patient's best interest, rather than the functions of a great variety of programs".[14]

Benefits of Health Informatics

4.9 The AMA and the RACGP support the introduction of Health Informatics because of the potential of this process to improve health outcomes.

> *Poor communication of health information is the primary reason for duplication, and consequent waste, of health resources.[15]*

4.10 The AMA and the RACGP's Health Informatics strategy for General Practice is based on the increased role of the GP in the coordination of care. According to the AMA and the RACGP, the GP is central to the collection and dissemination of patient data through the use of an electronic record.[16]

4.11 The National Centre for Epidemiology and Population Health (NCEPH) has identified a number of areas of potential benefits of expanding computerisation and networks in General Practice. These have been largely identified by the AMA and the RACGP in their Strategic Framework[17] and summarised by the NCEPH as follows:

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12 This is explored in detail in Chapter 5.

13 Sub No 123, Transcript of Evidence, p. 248.

14 Sub No 91, Subs Vol 1, p. 155.

15 AMA/RACGP *Strategic Framework for Improved Information Management through the use of Information Technology in General Practice*, August, 1997, p. 4.

16 ibid.

17 ibid, p. 11.

1. *Improved preventive health screening.*
2. *Reduced adverse drug reactions.*
3. *More timely, more accurate and detailed referrals and hospital admissions.*
4. *Simpler ordering of tests and investigations and receipt of results.*
5. *Simpler and more accurate ordering of prescriptions and treatment services.*
6. *Improved patient education through issue of information sheets.*
7. *Improved continuing medical education for GPs through dissemination of the latest best practice guidelines and access to medical journals.*
8. *Availability of knowledge bases, eg. Cochrane Collaboration, Asthma management guidelines, Harrisons and Health Services Database, during the consultation.*
9. *Decision support systems for diagnosis and treatment to enable superior decision making.*[18]

4.12 However, as the NCEPH pointed out that increasing computerisation of GPs will not solve the problem of fragmentation of health consumer records across the health care system, particularly for those who change GPs or use a number of providers.[19] The next step advocated by the NCEPH is the aggregation of an individual's health record in order to allow the information to follow the health consumer through the health care system throughout their life.[20] The NCEPH observed that the aggregation of health information is able to provide continuity of information, even when continuity of care cannot be provided.[21]

4.13 The benefits of aggregating health information include:

1. *Reduced duplication of tests and investigations.*
2. *Improved medication management.*
3. *Reduced history taking at every change of practitioner.*

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18 Sub No 126, Subs Vol 5, pp. 1076-1077.

19 ibid, p. 1077.

20 ibid.

21 ibid.

4. *Improved decision making and treatment through availability of a full, accurate history.*

5. *Improved monitoring of health related events and utilisation of health services, and therefore improved information for planning personal and population health services.*[22]

4.14 The Committee supports aggregation of health information for all the reasons identified and believes that a complete longitudinal patient record is beneficial to both the health consumer and the health system. The Committee also supports the view that GPs have a central role in the collection and assessment of health data, particularly as they are the initial point of contact for subsequent referrals to other health professionals.

Data Management Systems

The AMA and RACGP Model

4.15 The aggregation of health data is reliant on the stored location of the information and the method by which it is accessed.[23] The AMA and RACGP Operational Plan[24] envisages a "strategic framework for coordinated activity centred on a systematic approach to implementing an integrated information technology system in the health industry with General Practice at the 'hub'."[25]

4.16 While the AMA and the RACGP did not describe a systems model, they pointed out that:

> *functionality of IT must be maximised while minimising overall expense in order to demonstrate a positive cost-benefit in general practice.*[26]

4.17 Moreover, any design envisaged for General Practice must be:

> *based on a belief that Australian general practitioners will purchase and use computers (which are a deductible business expense for taxation purposes) when the technology generates*

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22 ibid.

23 ibid, p. 1078.

24 'A Working Document - To December 1999', Submitted by the Australian Medical Association and the Royal Australian College of General Practitioners.

25 Letter from the AMA/RACGP, dated 30 June 1997

26 AMA/RACGP, 'A Working Document - To December 1999', p. 6.

> *direct benefits for the care they give their patients at a price that is worthwhile as a business investment.*[27]

4.18 The AMA further observed that:

> *General practitioners will not consider the investment sufficient if it merely provides benefits for governments, other funding agents, researchers, planners and other sectors of the health system such as hospitals...The AMA/RACGP Operational Plan envisages the provision of incentives from governments to encourage initial uptake of IM/IT in General Practice.*[28]

4.19 The approach to a delivery system based on the AMA/RACGP proposal risks isolating GPs from other levels of health care. This would contribute to the current fragmented health system and circumvent the capabilities of technology to streamline patient care. In addition, the Committee accepts de-identified health data and information plays an important role in public policy development and considers it essential that this information can be accessed under circumstances which serve the public interest.[29]

4.20 The Committee believes that the interests of the health consumer are pre-eminent. To this end, the hub of any system must be the health consumer, who will wish to have a greater say in the treatment being provided. This argument is developed further in Chapter 7

The National Centre for Epidemiology and Population Health Model

4.21 The Committee agrees with the following basic principles submitted by the NCEPH, which should drive national health. These are:

> *(a) The health information system should serve the health needs of both the individual and of the nation.*
>
> *(b) It should enable the monitoring of trends, and facilitate health administration and management.*
>
> *(c) It should improve the efficiency of health service delivery, both personal care and public health services.*
>
> *(d) It should build from a primary care and population health base.*

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27 ibid

28 ibid.

29 The privacy and confidentiality implications are discussed in Chapter 5.

(e) It should meet privacy and confidentiality requirements.

(f) Its development should be intentional rather than accidental; coordinated rather than fragmented.[30]

4.22 The issues surrounding electronic management of data are "complex and dynamic".[31] It is important to stress, in this context, that a balanced partnership must be developed between consumers, health care providers, academic institutions, industry, government and the HIC.[32]

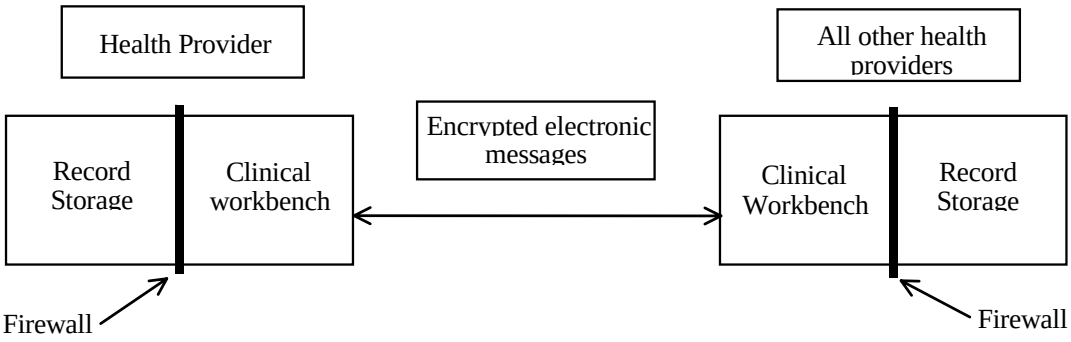
4.23 The NCEPH has produced the following three options for storing consumer data:

30 Sub No. 126, Subs. Vol. 5 p. 1075.

31 ibid.

32 ibid.

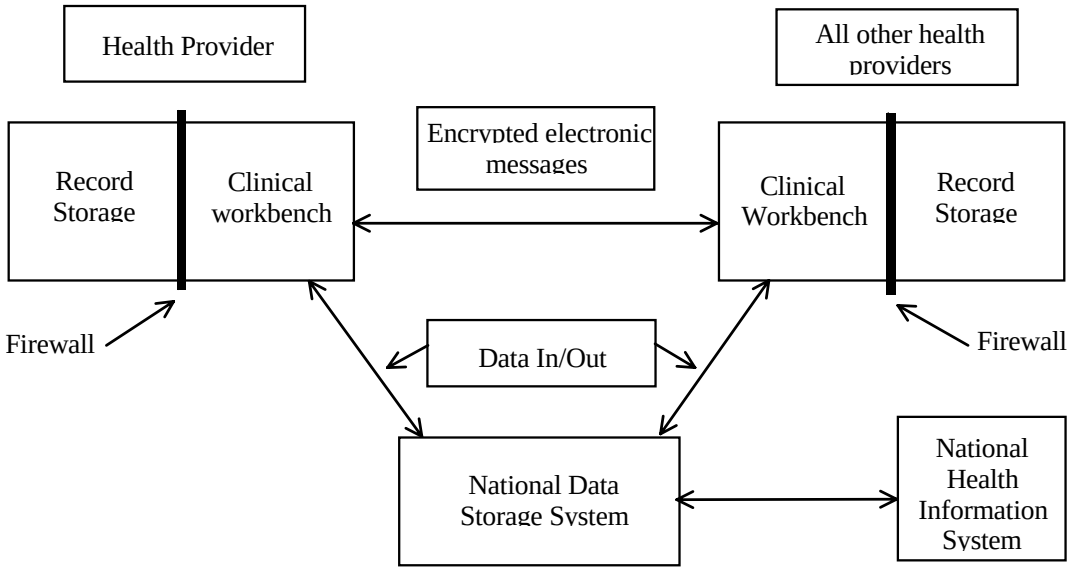
Base Line Assumptions



Notes:

1 Nearly all Health providers will use electronic clinical record systems.
2 They maintain a secure record of their work for their own purposes.
3 Communication between health providers will largely be by electronic network.

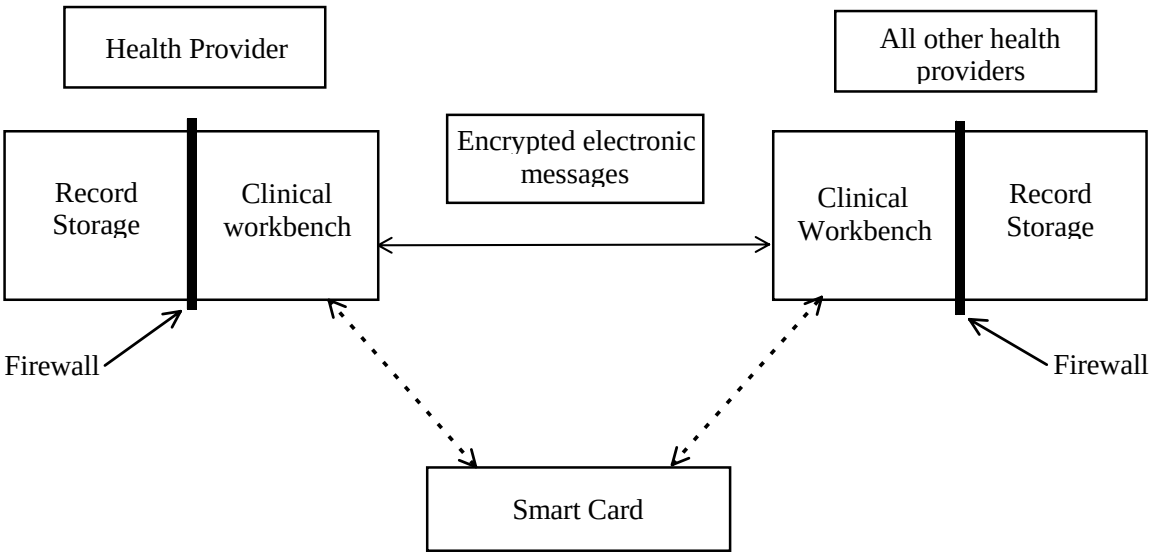
Option 1 National Storage



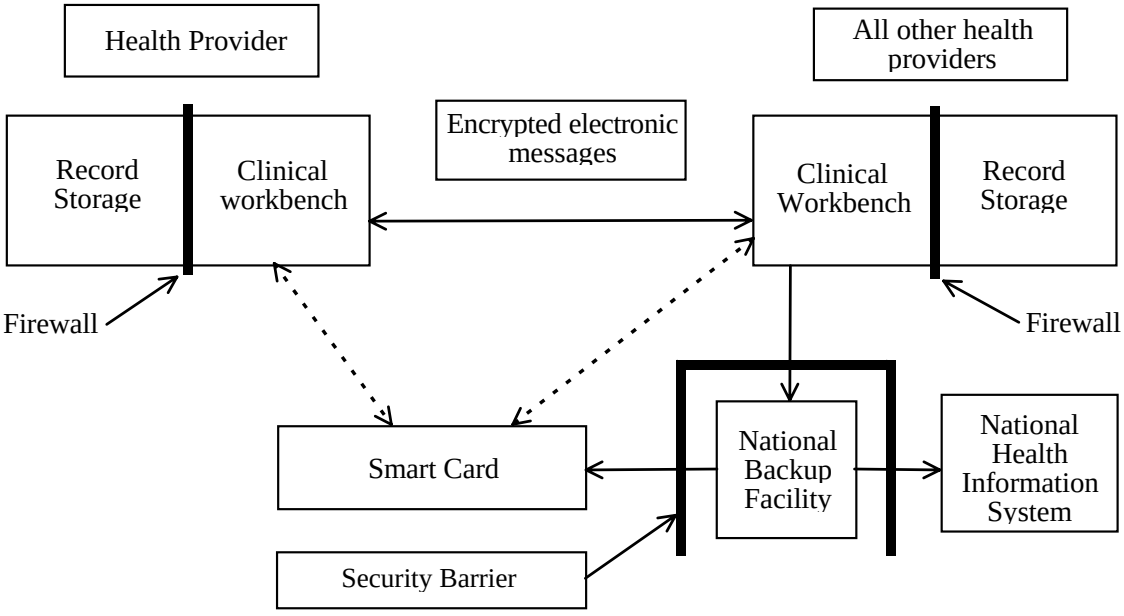
Notes:

1 The national data storage system would consist of a central indexing and processing facility and a collection of data warehouses distributed around the country.

Option 2 Consumer Storage System



Option 3 Consumer Storage System with Backup



4.24 Option 1 was not supported by the Committee because it does not provide for the use of a consumer-held health electronic card. Option 2, while providing for a health electronic card, does not have a national backup facility.

4.25 The Committee prefers Option 3. It is a system whereby health consumers collect their complete medical history and transport it between health providers on a personally-held health electronic card. Current electronic cards, commonly referred to by the brand name 'Smart Card',[33] have the capacity to carry data at a capacity of 8000 characters or more in an electronic memory. The health electronic card allows patients to become more actively involved in their own health care. Another feature is patient awareness of the rate of access of health services. Consumer-held health electronic cards are also capable of simplifying administrative procedures.[34]

4.26 In addition, a highly secure national backup system provides the means to replace data in the event of cards being lost or damaged. This option also enables the issue of suitably aggregated and de-identified health data for secondary research purposes.[35] The adoption of this model would allow the development of a system whereby the health consumer is the custodian of their health information. This is the inevitable outcome of greater consumer participation in individual health care outcomes. This proposal also addresses the concern about health information being stored in multiple agencies, in fragmented and relatively inaccessible forms.

Recommendation

4.27 The deployment of Health Informatics within the Australian health system, supported by a patient-held health electronic card, will provide a more effective means of information exchange. It will also address unreliability and fragmentation of health information and data management.

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33 The Committee prefers the use of the term 'health electronic card' to that of the brand name 'smart card'. Smart card is a term used to distinguish them from the so-called "dumb" cards. Credit cards are an example of the "dumb" card which can be recognised by the magnetic stripe on one side and which has the capacity for 200 characters. Smart cards have the capacity to carry data at a capacity 8000 characters or more in an electronic memory.

34 Privacy Commissioner, Information Paper Number Four, *Smart Cards: Implications for Privacy*, December 1995, Chapter 5, p. 25.

35 Sub No. 126, Subs. Vol. 5 p. 1079.

To this end, the Committee recommends that the National Office for the Information Economy in consultation with the Department of Health and Family Services, the Australian Medical Association, the National Centre for Epidemiology and Population Health and the Health Insurance Commission develop and deploy within the Australian health system:

(a) patient-held health electronic cards supported by the Consumer Storage System with National Backup Facility developed by the National Centre for Epidemiology and Population Health; and

(b) that the National Backup Facility to be managed and controlled by the Health Insurance Commission, thereby ensuring that the provisions of the *Privacy Act 1988* apply.

PharmaNet

4.28 In an examination of overseas initiatives which could have practical application in the Australian health system, the Committee sought information about a project entitled PharmaNet. PharmaNet was trialed and has been introduced in Canada in the province of British Columbia.

4.29 The key objectives of the PharmaNet system is:

- prevention of overconsumption of medicinal drugs;
- minimising drug interactions;
- ensuring cost effective usage of medications; and
- improving standards of practice for pharmacists and improve claims payments.[36]

4.30 PharmaNet is a:

> *computer network designed to serve all community pharmacies within British Columbia. The system records details of every prescription dispensed at those pharmacies. The network comprises telecommunication links to all 570 community pharmacies in British Columbia, and a central data system to*

36 British Columbia Ministry of Health PharmaNet Information, Prepared for the House of Representatives Standing Committee on Family and Community Affairs, pp. 1-2.

> *monitor drug usage and administer Pharmacare Benefits for the province's 3.8 million people.*[37]

4.31 From the earliest design stages, the PharmaNet Team involved the College of Pharmacists of British Columbia. The British Columbia Pharmacy Association, the College of Physicians and Surgeons and the British Columbia Medical Association, were involved in the project's implementation. It is proposed that the system be expanded for use by doctors, with prescribing data being electronically captured at the point of the patient visiting the physician.[38]

4.32 PharmaNet comprises "two tightly coupled data systems".[39] One system contains highly confidential patient profiles: the drug product data tables for drug interaction checking; other drug utilization evaluation checks; and drug monograph information for both professional support and for public education. The second major system "contains all of the eligibility and adjudication criteria, and historical claims payment information for both patients and pharmacies."[40]

4.33 Pharmacists are attracted to the PharmaNet scheme because it provides a major role for the profession in its administration. This has been the Canadian experience, where the College of Pharmacists of British Columbia acts as a gatekeeper for the system by controlling information on medication via PharmaNet. That information is kept separate from the information required by the central government paying agency, such as the HIC in Australia. The Pharmacy Guild of Australia believes "it would be essential for a similar gatekeeping role to be taken by pharmacy proprietors in Australia were a PharmaNet type system to be trialed here".[41]

4.34 In evidence, the Pharmacy Guild of Australia observed that it has an "open mind" about a PharmaNet type system.[42] The Guild understands that the:

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37 Study Tour Report, PharmaNet and PCS Health Systems, February - March 1997, Final Report, April 1997, p. 9.

38 British Columbia Ministry of Health PharmaNet Information, op cit, p. 2.

39 ibid, p. 2.

40 ibid, p. 2.

41 Transcript of Evidence, p. 75.

42 Transcript of Evidence, p. 74.

> *PharmaNet scheme offers substantial savings to government through reduced hospital admissions, better use of medicines and greater control of fraud and abuse of medications by consumers.*[43]

4.35 There are also benefits for the pharmacists and the consumers:

> *...through quicker payment times, reduced paperwork and more powerful and sophisticated patient data quality. It also offers benefits to consumers from the improved pharmaceutical care and advice they would receive from pharmacists.*[44]

4.36 PharmaNet is currently an established system and has been positively reviewed by officers from the Guild and the HIC during visits in 1995.[45] The Committee supports the PharmaNet model for deployment in Australia and has recommended in its *Report into Concession Card Availability and Eligibility for Concessions* that the introduction of PharmaNet should be undertaken after a cost benefits analysis. In addition, any technology adopted must be compatible with the option for the Consumer Storage System with national backup facility proposed in paragraph 4.27.

Recommendation

4.37 The Committee, has recommended in its Report into *Concession Card Availability and Eligibility for Concessions* that subject to a favourable cost benefits analysis there be a full scale implementation of PharmaNet within the Australian health system. The Committee further recommends that technologies proposed for PharmaNet should be compatible with the Consumer Storage System with National Backup Facility proposed in paragraph 4.27.

43 ibid, p. 74.

44 Transcript of Evidence, p. 74.

45 PharmaNet and PCS Health Systems, Study Tour op cit, p. 7.

I acknowledge that the right to privacy does not outweigh all other considerations and a balance needs to be drawn between privacy and other public interests.[1]

5 Privacy, Confidentiality and Security

Introduction

5.1 There is general agreement that electronic technology systems have enhanced the recording, storing, transferring and sharing of medical information and data.[2] Conversely, the very efficiency of these systems has given rise to concerns that data held in them, particularly in a single national storage repository, is easier to compromise through unauthorised access.

5.2 The Committee sought to determine whether the use of Telehealth and Health Informatics posed a threat to the privacy and confidentiality of individuals and their health records. The effectiveness of security systems to protect health data and information stored electronically was also canvassed.

Definitions

5.3 Witnesses to the Inquiry made little distinction between concepts of privacy, confidentiality and security. The *Telemedicine Report to Congress*, provided the following definitions:

> ***Information Privacy*** *is the ability of an individual to control the use and dissemination of information that relates to himself or herself.*
>
> ***Confidentiality*** *is a tool for protecting privacy. Sensitive information is accorded a confidential status that mandates specific controls, including strict limitations on access and disclosure. These controls must be adhered to by those handling the information.*

1 Privacy Commissioner, Human Rights and Equal Opportunity Commission, Further Information, p. 3.

2 See also chapter relating to Privacy, Security and Confidentiality in Telemedicine, *Telemedicine Report to Congress*, January 31, 1997, p. 1.

> ***Security*** *is all the safeguards in a computer-based information system. Security protects both the system and the information contained within it from unauthorized access and misuse, and accidental damage.*[3]

5.4 The following are the Privacy Commissioner's interpretations:

> **Privacy**
>
> *Modern concepts of information privacy cover all aspects of the handling of personal information. Privacy is also about individuals being informed about why their information is being collected, having access to their information and having as much say as possible about how their information is to be used and to whom it may be disclosed.*[4]
>
> **Confidentiality**
>
> *Confidentiality is generally used to describe limitations on the disclosure of information...In the health setting, patients' expectation of confidentiality in their relationship with health care providers has long been recognised by the common law*[5].
>
> **Security**
>
> *Security is one means of keeping information confidential and includes both physical measures such as locks and barriers, and logical security such as computer passwords and audit trials.*[6]

5.5 In the recently published *Health Informatics: An Overview*, it is noted that the "concepts of security and privacy in health information systems are distinct but inextricably linked, like Siamese twins".[7] The distinctions are explained in the following manner: "security is the protection of computers from people, and privacy is the protection of people from computers."[8] Confidentiality is "the extent to which the ability of the organisation to provide a service will be affected by the disclosure of a given set of data to an unauthorised person."[9]

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3 ibid.

4 Sub No. 118, Transcript of Evidence, p. 491.

5 Privacy Commissioner, Further Information, 24 July 1997, p. 2.

6 ibid.

7 Luck, Jo, 'Privacy, Security and Confidentiality', in Hovenga, Evelyn, et al, op cit, p. 77.

8 ibid.

9 ibid, p. 78.

5.6 The Committee acknowledges the Privacy Commissioner's concern that there is some misunderstanding about the concepts of privacy, confidentiality and security.[10] The misunderstanding stems from a lack of clarity of these concepts and to this end the Committee agrees with the views expressed in the *Telemedicine Report to Congress* that "understanding what the terms mean is important."[11]

Recommendation

5.7 For the purposes of clarity and commonality of interpretation, the Committee recommends the following descriptions of the concepts of privacy, confidentiality and security:

Information Privacy: the ability of an individual to control the use and dissemination of information that relates to themselves.

Confidentiality: a tool for protecting privacy. Sensitive information is accorded a confidential status that mandates specific controls, including strict limitations on access and disclosure. These controls must be adhered to by those handling the information.

Security: all the safeguards in a computer-based information system. Security protects both the system and the information contained within it from unauthorized access and misuse, and accidental damage.

Challenges Posed by New Technologies

5.8 The question of whether the wide deployment of Health Informatics challenges the principles of privacy, confidentiality, and ethical behaviour which has traditionally underpinned the protection of patients and their medical records has been the subject of wide debate. According to the Attorney-General, the Hon Daryl Williams:

> *...there are, of course, privacy issues at all stages of the information gathering and handling process. They arise in relation to the collection, storage and security, and the use and*

10 Privacy Commissioner, Further Information, 24 July, 1997, p. 2.

11 US Department of Commerce, *Telemedicine Report to Congress*, January 31, 1997, Privacy, Security and Confidentiality p. 1.

> *disclosure of personal information, as well as in relation to access by an individual to personal information about themselves.*[12]

5.9 In 1996, the Attorney-General's Department released a Discussion Paper entitled *Privacy Protection in the Private Sector*,[13] in which it was revealed that:

> *nearly 75% of people ranked 'the confidentiality of personal information' as very important, ranking it second only to education, ahead of even the economy and the environment. Nearly all people surveyed felt that governments had a responsibility to protect privacy and wanted privacy laws to apply to both government and business, rather than business being left to self-regulate.*[14]

5.10 The Discussion Paper also made the observation that:

> *New communication technologies and networks significantly increase the generation of personal information and the ability to collate. Security of information and unauthorised use or disclosure of information for purposes other than those for which it was supplied are particular concerns in this context. If personal privacy is inadequately protected in the new electronic environment, the confidence of network users will be undermined inevitably preventing optimal use of these new communication technologies and networks.*[15]

5.11 These views accord with those of the CHF who, in their Submission, advocated that:

> *privacy issues associated with technology such as telemedicine are even more significant and complex than those privacy issues associated with other forms of health information transfer because of the personally identifying nature of many of these information linkups.*[16]

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12 Keynote Address, *Whose Health Records?* A Conference, Public Interest Advocacy Centre, 7 March 1997, p. 2.

13 The Attorney-General's Department, Discussion Paper, *Privacy Protection in the Private Sector*, September 1996.

14 ibid, p. 1.

15 ibid.

16 Sub No. 130, Subs Vol 5, p. 1116.

5.12 The Privacy Commissioner raised the protection of personal health information privacy as a "significant issue"[17] and noted that:

> *Developments and applications of information and communications technology in the health sector are placing increasing pressure on traditional notions of, and mechanisms of ensuring, 'confidentiality' in the health sector.*[18]

5.13 Professor Yellowlees made the point in his Submission that confidentiality issues "...have not been fully addressed, and certainly not legally tried, in the Telemedicine area. I believe these are very major issues for the future...[19] He subsequently explained in evidence, that while there may be issues of confidentiality in the "wider information systems"[20] these do not apply to video conferencing.[21] Professor Yellowlees observed that the:

> *reality is that we now see patients by their beds. We talk about their sex lives in front of four or five other patients with just a curtain around them. We see patients with doors open, so that half the world can see us.*[22]

5.14 Dr Disney and Mr Mitchell, who sought to address the ethical privacy and confidentiality issues during the developmental stage of the Renal Dialysis Telemedicine Project within their own environment, observed that this question should be resolved within an agreed process. Dr Disney suggested that ensuring patients' rights to privacy via video consultations can be achieved:

> *... mainly in either providing a separate area so they are not overheard or, alternatively, trying to provide them with a means of communicating in an area where there are a number of other people by using earphones and microphones. We make sure that we identify people who are in the room. These are practical issues. But you never know who is off-camera, so we try to make sure that everybody is identified...When we have been taking videos...there is the usual approach to patients of seeking their permission and approval that they can be displayed*[23]

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17 Sub No 118, Transcript of Evidence, p. 489.

18 ibid.

19 Sub No. 110, Transcript of Evidence, p. 112.

20 Transcript of Evidence, p. 158.

21 ibid.

22 ibid.

23 Transcript of Evidence, p. 309.

5.15 Another method of addressing questions of privacy during a Telehealth consultation was advanced by the South Australian Health Commission:

> *if you have simple protocols that really ensure that the patient is told that they will be introduced to anyone who is viewing the videoconference at the site that they are not at. If you are careful to make sure that the patients are introduced to all the people at the other end and that, if anyone new comes into the room and becomes part of the video consultation, they are introduced properly, then the privacy issues in videoconferencing seem to be perfectly well addressed by those simple means.*[24]

5.16 Most witnesses were of the view that existing codes of ethics which have applied to the traditional method of delivering health care are equally pertinent in a technological environment. As a representative of the South Australian Health Commission noted in evidence: "The conduct of telehealth applies existing ethical practice in regard to privacy, recordings, and the presence of others."[25]

Paper-Based Records and Health Informatics

5.17 During the course of the Inquiry, the Committee posed the question of whether Health Informatics was more vulnerable to unauthorised access and breaches of privacy and confidentiality than paper based records. It was generally acknowledged that the current processes and systems in a surgery or hospital could neither be viewed as providing a desirable level of privacy protection, nor preventing information and data from being illegitimately broadcast or accessed. However, databases and their efficiency in aggregating information raised the spectre of 'Big Brother'[26] in the minds of some witnesses.

5.18 The Department of Health and Family Services admitted in its Submission that the:

> *introduction of information technology for managing health records has generated major concerns relating to the privacy and security of this data, particularly as this data is now accessed and*

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24 Transcript of Evidence, p. 281.

25 Transcript of Evidence, p. 251.

26 'Big Brother' is the title given by George Orwell in his book *Nineteen Eighty-Four*, to the enigmatic dictator who presides over an empire where information and data about citizens is managed, accessed and changed by bureaucrats to meet the goal of the State as determined by 'Big Brother'.

> *used not only by health care providers, but also by medical administrators and bureaucrats.*[27]

5.19 The Department also stated that data managed electronically, is ideal because:

> *...health information should be interpretable anywhere in the country and be capable of informing consumers, health providers, administrators, planners and researchers when reported and analysed at the appropriate level of aggregation.*[28]

5.20 Despite the CHF's concern about Health Informatics and the potential risks posed by data aggregation, it does not necessarily favour the retention of the old paper-based system which the CHF admits "is not that crash-hot".[29] The principal issue for the CHF is that by adding to a system "you are adding an ability to broadcast to a lot more people quite quickly."[30]

5.21 The scale of the risk of potential illegitimate use of Health Informatics was also a concern raised by the Privacy Commissioner:

> *The increased ease with which data can be transmitted, large data bases developed, maintained, accessed from a variety of locations and linked with other data bases automatically means that more people will see the potential value in using this information for a variety of purposes.*[31]

5.22 This point was made by another witness who observed that:

> *...if somebody gets into your surgery files, they can take a handful of files and that is a problem; but, if somebody manages to get into an electronic medical record database, they can have the records of tens of thousands of people. It is the scale of a potential breach of security which is much greater under electronic means.*[32]

5.23 The Privacy Commissioner pointed out that in matters of privacy, a balance must be reached between the individual right and the public good:

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27 Sub No 103, Subs Vol 1, p. 196.

28 ibid.

29 Transcript of Evidence, p. 1103.

30 ibid.

31 Sub No 118, Transcript of Evidence, p. 494.

32 Dr Peter Schloeffel, Transcript of Evidence, p. 417.

> *The right to privacy is not absolute and needs to be weighed against other public interests.*[33]

5.24 When the CHF gave evidence to the Inquiry, it was in the process of canvassing consumer opinion relating to the use of personal health information for research and other purposes. The first stage of the project is consultations with a range of stakeholders in the health care sector.[34] The second stage is to "test the feasibility of what consumers want with the broader health care sector."[35]

5.25 The Committee acknowledges that under the less efficient paper-based records system, large scale access is reduced. However, the Committee believes that resource intensive and inefficient management systems, or what the Privacy Commission refers to as "the very clumsiness and time consuming nature of the paper based system",[36] have, by default, protected the privacy of patients, because pieces of information are fragmented and difficult to locate. Conversely, the old system may contribute to vital information about a patient's health being lost or ignored, leading to incorrect diagnosis and treatment.

5.26 It is noted that when the banking industry imposed electronic commerce on its consumers it did not provide the opportunity for its customers to raise any privacy or confidentiality concerns. A further point which should be made is that advanced electronic systems with appropriate security safeguards are used to protect national security. A variety of electronically secure systems are available to ensure that databases are not violated and the information contained in them is not misused through unauthorised access.

5.27 The Committee found no grounds that the confidentiality, privacy and security of individuals will be compromised by the introduction of electronic medical records supported by a major data base. On the contrary, it was widely acknowledged that the old paper-based method of managing and exchanging health information and data posed greater risks of being breached by illegitimate access.

5.28 The Committee accepts that aggregated health data and information for secondary purposes is important, and supports the Privacy Commissioner's

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33 Sub No. 118, Transcript of evidence, p. 497.

34 Transcript of Evidence, p. 1105.

35 ibid.

36 O'Connor, Kevin, 'Privacy Issues Facing a Networked Health Environment' in *Health Issues No. 48* September 1996, p. 2.

views that the right to privacy does not outweigh all other considerations and that a balance needs to be drawn between privacy and other public interests.[37] However, the Committee's support for health data and information for secondary purposes is contingent on that information being deidentified. This is consistent with the Privacy Commissioner's recommendation on this point:

> *Information to be used for secondary purposes should be de-identified, wherever possible.*[38]

Privacy Protection in the Private Sector

5.29 The *Privacy Act 1988* does not extend to the operations of private sector organisations other than in certain specific areas, such as the provision of credit, the handling of Tax File Numbers and the provision of case management services for the long term unemployed. The Commonwealth Government's limited involvement in providing direct health services means that most health service providers, including private and State hospitals, health insurers and medical practitioners, are not currently bound by the Privacy Act.[39]

5.30 The Privacy Act is a binding regime on the Commonwealth and the Australian Capital Territory Government (ACT) agencies and prescribes their method of handling personal information. There are no laws equivalent to the Commonwealth Privacy Act which are binding on State and Northern Territory government agencies.

5.31 Section 14 of the Commonwealth *Privacy Act 1988* establishes 11 Information Privacy Principles (IPPs) which cover the collection, solicitation, storage and security, individual access, alteration and limits on disclosure of personal information.[40] The Privacy Commissioner who administers the Privacy Act advocates that:

> *All the IPPs are interrelated and are primarily concerned with recognising individuals' rights to exercise control over information about themselves. They aim to minimise intrusiveness by promoting fair collection practices and to maximise the transparency of information handling processes by seeking consent*

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37 Privacy Commissioner, Further Information, 24 July 1997, p. 3.

38 Sub No 118, Transcript of Evidence, p. 510.

39 Privacy Commissioner, Further Information, 24 July 1997, p. 4.

40 *Privacy Act 1988*, Reprinted as at 31 January 1995, Reprint No. 3, pp. 20-25.

> *wherever possible by giving individuals rights to explanations about how their information will be handled.*[41]

5.32 In March 1997, the Commonwealth Government announced that it would not implement privacy legislation for the private sector. The Northern Territory and Queensland have agreed not to introduce such legislation[42], whereas New South Wales and Victoria are considering their position in light of the Government's proposal.[43] The ACT expects legislation for privacy protection of health information held in both the public and private domain to be tabled in the Legislative Assembly this year.[44]

5.33 The Government's reason for not extending the Privacy Act to the private sector is meant to lessen "compliance costs for all Australian businesses, large and small".[45] A survey conducted by Price Waterhouse of 130 businesses across a range of industries after the Government's announcement found that 70 per cent supported uniform privacy laws.[46] At present, the protection of individual personal information is not found in any one piece of Australian legislation but in "various provisions of state and federal law, sectoral codes, professional codes of conduct and the common law..."[47]

5.34 In addition, Australian Standard AS4400 - 1995 *Personal privacy protection in health care information systems* places responsibility on organisations and professional groups to develop codes of practice which fit within that Standard. One example is that being developed by the RACGP together with the FMRU, at Sydney University. The interim code, entitled *Code of Practice for Computerised Medical Records in General Practice*, has been used for almost three years and is currently being revised. The development of the code was initiated by the Commonwealth Government, together with the RACGP, "to provide ethical and privacy guidelines for pilot computer network projects funded under the Demonstration Practice Grants Program."[48]

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41 Privacy Commissioner, Further Information, 24 July 1997, p.1.

42 Statement made by the Prime Minister, *Privacy Legislation*, 21 March 1997.

43 'Poll finds support for privacy bill, the *Australian*, 30 May 1997.

44 Privacy Commissioner, Further Information, 24 July 1997, p. 4.

45 Statement by the Prime Minister, *Privacy Legislation*, 21 March 1997.

46 'Companies back new privacy laws', the *Age*, 30 May 1997.

47 Privacy Commissioner, Information Paper Number Four, *Smart Cards: Implications for Privacy*, p. 34.

48 Family Medicine Research Unit, Department of General Practice, Sub 64, Subs Vol 2, p. 368.

5.35 The Committee welcomes the development of AS 4400 - 1995, and urges all those organisations who gave it their unanimous support and who are responsible for the collection and maintenance of patient databases, to develop privacy protection codes within this agreed upon Standard. According to Standards Australia, AS 4400 - 1995:

> *is the first standard in the world on this important subject and provides an essential foundation for the development of policies and procedures for health information management systems in Australia.*[49]

5.36 AS 4400 - 1995 is supported by the Human Rights and Equal Opportunities Commission, the National Health and Medical Research Council, the Department of Defence and all the major medical and health care associations, authorities, colleges, societies and universities in Australia.[50]

5.37 The Committee notes that in the USA, where, like Australia, there are various privacy provisions in State and Federal statutes, there have been recent moves to develop a set of privacy principles to respond to the protection of health information by means of new technologies. In addition, the US National Telecommunications and Information Administration, has issued a Privacy White Paper canvassing a self-regulatory framework which "encourages businesses to notify consumers of their intent to use personal information."[51] Australia has gone beyond that stage by achieving consensus on AS 4400 - 1995.

5.38 In acknowledging community concerns about privacy, confidentiality and security issues, the Committee recommended, in Chapter 4 of this Report, that health data stored in a national storage backup system should be under the control of the HIC. As a Commonwealth Government agency, the HIC is bound by the provisions of the *Privacy Act 1988.* In addition, the Committee is satisfied that new methods of managing data by means of Health Informatics technology and the delivery of health care via Telehealth, do not absolve doctors and other health care professionals from adhering to the professional codes of ethics which have traditionally governed their activities.

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49 Sub No 18, Subs Vol 2, p. 254.

50 Australian Standard AS 4400 - 1995 *Personal privacy protection in health care information systems.*

51 US Department of Commerce, *Telemedicine Report to Congress*, Privacy, Security and Confidentiality section, p. 1.

Ownership of Health Data: Introduction of Electronic Health Cards

5.39 The issue of ownership of medical records and that of patients' right of access are closely linked.[52] There is no clear answer to the question of "ownership",[53] nor is there a legislative right of access to medical records which extends to the private health sector.[54] Currently, common law is the "only binding law applying to medical records held in the private sector and does not place any obligation on the holder of the medical record to make that record available to a patient".[55] This position was confirmed in the High Court judgement *Breen v Williams*.[56]

5.40 The general privacy principle that an individual has a right to access information about themselves conflicts with current Australian common law in relation to medical records. The recently tabled Senate report, *Access to Medical Records*, confirmed that the lack of a right of access outside the public health system has created an anomalous situation, particularly where the information held on the private record is identical to that held in the public health sector.[57]

5.41 In a 1995 information paper produced by the Privacy Commissioner, the view was put forward that the ownership/access issue of individual medical records could be resolved by the introduction of an electronic health card. The point was made that while this facility:

> *offers a new opportunity for individuals to exercise some control over personal medical information (in that patients will possess the medical information by possessing a card), there are still issues to be resolved as to who controls the card (including regulating and monitoring access arrangements), who is responsible for updating it and the extent to which other records are kept*[58].

52 Privacy Commissioner, Information Paper Number Four, op cit, December 1995, p. 30.

53 O'Connor, Kevin, Federal Privacy Commissioner, 'Confidentiality, Privacy and Security Concerns in the Modern Healthcare Environment', *The Australian Computer Journal*, Vol. 26, No. 3, August 1994, p. 71.

54 The Parliament of the Commonwealth of Australia, *Access to Medical Records*, Report of the Senate Community Affairs References Committee June 1997, p. 2.

55 ibid, p. 5.

56 ibid, p. 2.

57 ibid.

58 Privacy Commissioner, Information Paper Number Four, op cit, p. 31.

5.42 A health card pilot trial was conducted in 1995 in Quebec Canada to determine whether the introduction of this system would improve medical services by enhancing communication between patients and their doctor and by involving the patient more actively in his or her own health care. This included patient awareness of their rate of use of health services. Another aim of the project was to simplify administrative procedures.

5.43 The information on the health card in the Canada trial was grouped in five zones. These comprised basic information about the holder; emergency information, such as blood type; list of administered vaccinations; prescription medications, including allergies; and personal and family medical history and treatment. An access authority for the health provider to either read (R) or write (W) on the card was included.[59]

5.44 The confidentiality issue was addressed by ensuring that at any one time, no single agency possessed a complete paper copy of the information contained on the card.[60] No agency was permitted to exchange data through on-line or off-line access between the various health providers.[61] Data on an electronic health card could also be "de-personalised through the use of a 'pseudo-identifiers', an arbitrary identifier separated from the details of the card holder's name and address".[62] This ensured the actual identity of the card holder could be suppressed but allowed the information to be made available for secondary use, such as for statistical or market research purposes.[63]

5.45 Under the German electronic health card model, the individual's name, date of birth, health care company, identification number and the card's expiry date is stored on the electronic health card. A program exists within the card to verify the authenticity of the information which covers over 20 million insured people.[64] One example currently in use in Europe allows the patient and the health service provider to swipe their separate cards, thereby creating a link between the two entities.[65] Another method of ensuring privacy is to secure the

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59 ibid, Chapter 5, p. 25.

60 ibid.

61 ibid.

62 ibid, Chapter 6, p. 39.

63 ibid.

64 ibid, Chapter 5, p. 29.

65 South Australian Health Commission, Transcript of Evidence, p. 291.

card by a PIN number (Personal Identification Number), held by the card owner and an "authorised reader system".[66]

5.46 The electronic health card is favoured because it is part of an overall electronic exchange and enables the consolidation of a highly fragmented system of health care delivery, including its resources base. As the South Australian Government pointed out, the use of information technology in health has the potential to provide:

> *the opportunity for people to own and hold their own medical record, to understand and determine its contents, and to use it effortlessly across an integrated network of health services, which promises extraordinary gains in health outcomes, quality assurance, and operating efficiencies.*[67]

5.47 A witness for the AMA, who criticised current methods of maintaining patient records, observed that a great deal of irrelevant information is placed on them. For example "even a patient with a one-day admission ends up with a one-centimetre thick paper file."[68] In the case of electronic health cards, it is necessary to minimise the amount of information to ensure that only relevant data is placed on them.[69]

5.48 The rights of a patient with a privacy sensitive medical condition and who wishes to consult another General Practitioner and a different Pharmacist was also raised as an issue. The observation was made by the AMA that these health consumers want to be in a position to determine which part of their health record should be accessed and by whom.

> *They will access a whole different system of health care for socially sensitive diseases. They may not want their primary health practitioner...to know about it. Whether that is good or bad does not matter. That is what patients want to do. Therefore, they have to be able to say, 'I only want this bit of information to go to this person.*[70]

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66 Neeme, Roderick, 'Smart Cards - the key to trustworthy health information', *British Medical Journal*, vol 314 (7080), 22 February, 1997, p. 574.

67 South Australian Government Sub No. 123, Transcript of Evidence, p. 251.

68 Transcript of Evidence, p. 570.

69 Dr Harry Nespolon, Australian Medical Association, Transcript of Evidence, p. 571.

70 AMA, Transcript of Evidence, p. 571.

5.49 Professor Kidd made a similar statement about electronic health cards and argued that they would enable people to carry their own information with them and determine which health care provider should have access:

> *In my own particular work in general practice I see a lot of people with HIV who utilise me as their HIV general practitioner and utilise someone else who does not know they have HIV as their other general practitioner. They do not want me communicating with their other GP about the sorts of problems which they are encountering because that GP may be the same person who treats their mum and dad or their wife and kids or whatever the issue may be.* [71]

5.50 Therefore, the privacy of the individual is protected because they are carrying their own health record with them, with a national back-up support at the HIC, protected under the Privacy Act. The advantage of a central back-up system is the ability of the health consumer to apply for a replacement electronic health card in cases of loss or damage. In addition, the question of ownership of health data and the closely related issue of access could be solved by the introduction of the electronic health card.

5.51 The Committee supports the introduction of electronic health cards within the Australian health system and favours the Canadian model which groups the card into separate zones. This method allows the consumer to determine access and addresses the concerns of ownership and control of the card. The health care provider who is accessing the particular zone during treatment would be responsible for updating the zone.

5.52 For example, the prescription and medications zone would be updated by the pharmacist, and the personal and family medical history and treatment by the GP. If the individual is seeking treatment for a condition which he or she wishes to keep from their usual GP, it could be placed in another section, for example, 'specialised care'. However, the entire record would be available by the national central backup facility, located at the HIC.

5.53 Health Informatics technology suffers from a bad image problem which must be addressed to ensure public confidence. In reply to a question from the Committee about the extent of confusion which exists in the community about privacy matters and the reality of a Big Brother maintaining a daily record of their activities, the acting Privacy Commissioner agreed that there is "some misunderstanding" in the community but added that:

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71 Transcript of Evidence, p. 605.

> *it is government's responsibility, including ours as the Privacy Commissioner's office, to ensure that the public is better educated and better informed. When these issues are explained to them some concerns are alleviated, but others are actually heightened.*[72]

5.54 The Committee agrees that the Government and the Privacy Commissioner's office have a responsibility to provide information to allay public concerns about the use of technologies within the health sector. The Committee also agrees with comments made by the previous Privacy Commissioner that as the use of electronic health cards in both the private and the public sectors becomes more widely used, there will be a need for a national privacy policy.[73]

Unique Patient Identifier

5.55 In an address on privacy protection, the previous Privacy Commissioner spoke about the inevitability of renewed calls for a unique identifier in the health system. A unique identifier allows the tracking of people through the health system in order to provide better coordinated health care and information on outcomes for planning and research. The Privacy Commissioner also noted that the Victorian Metropolitan Hospitals Planning Board had predicted the likelihood of the adoption of a unique system-wide patient identification and numbering system. [74]

5.56 On the other hand, the former Privacy Commissioner raised the point that a unique patient identifier, from a privacy perspective, can be a two-edged sword. In a speech to the *Privacy Issues Facing a Networked Health Environment* conference in 1996, he observed that on the one hand a unique patient identifier can assist in ensuring the accuracy of data and thereby reduce the possibility of the data being incorrectly attributed. On the other hand, serious concerns remain about the multiple uses of unique identifiers.[75]

5.57 The Department of Health and Family Services made a similar observation in its Submission.:[76]

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72 Transcript of Evidence, p. 651.

73 Privacy Commissioner, Information Paper Number Four, op cit, Chapter 1, p. 4.

74 O'Connor, Kevin , Privacy Commissioner, Australia, *Privacy Issues Facing a Networked Health Environment*, 'Health Issues Centre Discussion Forum Privacy Protections Consumers Might need with Developments in Information Technology', 18 March 1996, Melbourne, p. 13.

75 ibid, p. 14.

76 Sub No. 103, Subs Vol 1, p. 197.

> *Sometimes patient data can be completely de-identified before being passed on for research or health planning purposes. However, for shared care arrangements, or for an understanding of health events across episodes of care, or to analyse the interactions of health events, data attaching to individual patients needs to be either identified (as for clinical care purposes) or linked by some method. A unique patient identifier would make this easy.*[77]

5.58 While experiences overseas vary, the trend is towards the introduction of electronic health cards as well as a growing use of universal patient identifiers. For example, in New Zealand the issue of the unique patient identifier is dealt with by issuing a number to a health consumer the first time that person attends any health care provider. New Zealand is currently rolling numbers out across GP registers to cover a health consumer when a visit is made to the GP and to ensure that the person attending a hospital has the same number.[78] New Zealand has allocated unique identifiers to approximately 90 per cent of its population, commencing at birth.[79] Privacy issues have been addressed through the development of both the national Privacy Act and the privacy code that applies to health.[80]

5.59 In the Canadian experience, a pilot in Ontario trialed an 'Encounter Card' between 1992 and 1993 when all residents were issued with a unique health card number which was titled the 'Unique Lifetime Identifier' or ULI, supported by the Registered Persons Data Base. A number of design features were used by the project designers to address privacy and confidentiality concerns.[81]

5.60 A universal health electronic card with a unique lifetime identifier was the subject of debate in the United States health system. The potential for data matching generated considerable concern in the absence of a national privacy protection regime. However, in light of the Clinton Administration's reforms to the health system, some of the momentum has faded.[82]

5.61 The question of using the sub-sets of the Medicare number as a unique patient identifier, in conjunction with the electronic health card, was explored

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77 Sub No. 103, Subs Vol 1, p. 197.

78 Mr Paul Cohen, Group Manager, New Zealand Health Information Service, New Zealand Ministry of Health.

79 Mr Cohen, Transcript of Evidence, p. 738.

80 ibid, p. 742.

81 Privacy Commissioner, Information Paper Number Four, op cit, Chapter 5, pp. 26-27.

82 ibid pp. 31-32.

by the Committee as an appropriate method of protecting individual privacy. When this proposal was put to the Department of Health and Family Services, the observation was made that this option "has to be explored in the context of privacy considerations and other considerations which are very important".[83] The Department also added that there is no current general policy as to whether the Medicare number should be pursued.[84]

5.62 The HIC, on the other hand, supports the use of the Medicare number as a unique health identifier because it has wide acceptance in the community.[85] The HIC also observed that the use of the Medicare number as an identifier provides:

> *a practical solution that is already there and widely used, and the infrastructure to support it is already established.*[86]

5.63 The HIC also added that:

> *...clearly there would need to be a great deal of consultation from a lot of stakeholders before that could be rolled out further. It is being used for Medicare, obviously; it is also being used at the moment for the Australian Childhood Immunisation Register. It is being used voluntarily for pharmacy information*[87].

5.64 The Committee agrees with the HIC's views that the Medicare number sub-sets, which identify each individual in a family, behind the main number, is a practical solution to a complex situation. The Committee also understands that this question was placed on the AHMAC agenda. However, during the course of the Inquiry, the Committee was unable to ascertain conclusions reached on this matter.

5.65 The Committee views with concern the slow pace which has characterised these discussions and the apparent lack of communication between the HIC and the Department of Health and Family Services about the use of the Medicare number as a unique identifier. Although the question of a unique patient identifier has been discussed in various forums both nationally and internationally, it is of concern to the Committee that this issue has not been resolved as it directly affects the deployment and use of technologies.

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83 Transcript of Evidence, p. 1232.

84 ibid.

85 Transcript of Evidence, p. 68.

86 Transcript of Evidence, p. 1262.

87 Transcript of Evidence, pp. 1262-1263.

5.66 In evidence, the AMA acknowledged that privacy concerns relating to the use of unique patient identifier exist within the community. The AMA also observed that the technology now exists to allow for a biological identifier, whether that be a palm print, a fingerprint "or a fundoscopic examination - so that the information is less likely to be transmitted in the wrong way to the wrong person."[88]

5.67 In addition, the AMA argues in favour of an opt-in system on the basis that it is the "only way" people will have confidence in the system. The AMA admitted, however, that administratively, the opt-out system "would be much better in the sense that you have to go out of your way to opt out",[89] but is opposed to it because people should demonstrate their confidence in the system by agreeing to be a part of it.[90]

5.68 The AMA is of the view that in order to have confidence in the system people need to be secure in the belief that their privacy is being protected and the security of their information ensured.[91] In addition, the AMA pointed out that there "will be a large number of people who will not care because they will not have a lot of information about them."[92]

5.69 In evidence, Dr David McWilliam, Director of the Department of Intensive Care at the Royal Prince Alfred Hospital observed that a unique patient identifier would be helpful in the transfer of intensive care patients from rural areas to the city and for the redistribution of workload within the city to match the intensive care resources.[93] Dr McWilliam warned that:

> *With what we are currently doing, it is very difficult to identify transfers. If there is a patient in intensive care in a country hospital, the central database would get data on that patient. They are then transferred to the city. The city will have information on another patient who was admitted from another intensive care unit, but we will not be able to match the two. We will not realise that this is a rural to city transfer. We do not have that*

88 Transcript of Evidence, p. 558.

89 Transcript of Evidence, p. 559.

90 ibid.

91 Transcript of Evidence, pp. 558-559.

92 ibid.

93 Transcript of Evidence, p. 729.

> *information because what we get from each individual hospital does not contain information on the transfer.* [94]

5.70 The Pharmacy Guild of Australia raised similar concerns and has recommended the endorsement of the concept of the use of a unique patient identifier.[95] The Pharmacy Guild observed that without a unique patient identifier:

> *the implementation of any national system involving the Commonwealth's national responsibilities for the Pharmaceutical Benefits Scheme will fall short of meeting the desired objectives...*[96]

5.71 The patient-held electronic health card supported by a Consumer Storage System with National Backup Facility is essential to building a comprehensive health record. The Committee is convinced that fears of wholesale access to technological data bases and the so-called 'Big Brother' factor would be addressed adequately by the recommendations in this Report. The range of evidence to the Inquiry suggests that privacy, confidentiality and security matters are more effectively addressed through Health Informatics than by the conventional paper-based records storage systems.

Recommendation

5.72 The Committee recommends that a national Privacy Policy should be developed and that the Attorney-General's Department, in conjunction with the Department of Health and Family Services, the Health Insurance Commission, the Australian Health Ethics Committee of the National Health and Medical Research Council, the Privacy Commissioner and the National Office for the Information Economy:

(a) develop a national Privacy Policy based on the Australian Standard AS4400 - 1995 *Personal privacy protection in health care information systems* to facilitate the introduction of the patient-held electronic health card supported with the National Backup Facility;

(b) amend relevant legislation in order to provide for the introduction of the sub-sets of the Medicare number as a unique lifetime patient identifier for each person in Australia;

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94 ibid.

95 Further Information, The Pharmacy Guild of Australia, p. 1.

96 ibid.

(c) ensure that an extensive and balanced education campaign is launched to inform the public of the benefits to their health care, by emphasising that:

- **adverse health events are compounded by a fragmented method of managing health information and data;**
- **privacy is protected because each individual carries his or her own health record and determines who can have access;**
- **access is protected by a personal PIN number;**
- **that a national backup repository under the jurisdiction of the Health Insurance Commission, protected by the *Privacy Act 1988*, can provide replacement cards in the event of loss or damage; and**
- **the health consumer has the ability to ascertain all access to their health records.**

Security Systems

5.73 It has been suggested that the oldest control to access is a guard and the second oldest is a lock.[97] Data can be vulnerable to a range of disasters such as vandalism, unauthorised access and interception and what is known as an act of God. The most appropriate successful recovery system for a centralised repository is constant backup. These backups should then be stored off-site to permit professionals to recreate the entire system. [98]

5.74 Technological security to protect information during transmission is also required. The science of cryptography for the encryption of messages is used to conceal text[99] and when utilised over Telehealth links and Health Informatics, prevent interception and protect information transmission.[100]

5.75 As well as encryption, other measures to safeguard data access include dissemination on a need-to-know basis, passwords which, should be changed regularly and encrypted and audit trails. Hardware which possesses enhanced

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97 Hovenga, Evelyn., et al, op cit, Chapter 8, p.80.

98 ibid, p. 79.

99 ibid, Chapter 8, p. 80.

100 Telstra Sub, No. 62, Subs Vol 1, p. 61.

security and software which contains audit trails, monitoring usage of the program, read and write limitations and physical keys should be installed.[101]

5.76 The former Privacy Commissioner has argued that, because computerised information databases are able to support vast storage capacity, there is an element of risk by one act of unauthorised access affecting a large number of people. The risk is far greater than that associated with one act of intrusion into a paper-registry.[102] That argument was qualified by the former Privacy Commissioner by noting that:

> *On the other hand, there is a greater potential for highly personal information to be held in a paper file, so the damage caused by an act of intrusion into a paper file for the individual actually affected may be far greater than if a narrower band of data stored in a computer file is improperly obtained.*[103]

5.77 According to one system to be trialed in South Australia, if a security key is set up and a security breach is suspected, an adjustment is made to the software to readjust the security "... a bit like changing the locks on a house."[104] During the Inquiry, there was general agreement that a variety of technological aids exist to overcome security issues. As a representative of Mater Misericordiae Public Hospital in Brisbane pointed out, although there is a general negative public perception about the electronic transmission of personal information, there is also growing acceptance:

> *...I think mainly that has been led by the financial institutions. Obviously there is a lot of information going down-line right at the moment which is very well encrypted and protected by banking institutions and vendors of financial services. I think certainly we could follow suit in their type of practice in being able to guarantee a very secure and protective environment for those people to receive health care over a long distance.*[105]

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101 O'Connor, Kevin, 'Emerging Information Privacy Issues in Health Care', in Carter, B E L and Walker, D (Eds) Proceedings of the Second National Health Informatics Conference Gold Coast, Australia 1-2 August 1994, p. 23.

102 O'Connor, Kevin 'Confidentiality, Privacy and Security Concerns in the Modern Healthcare Environment', *The Australian Computer Journal*, Vol 26, No. 3, August 1994, p. 72.

103 ibid, p. 72.

104 Dr Brian Symon cited in the *Medical Observer*, July 11, 1997, p. 2.

105 Transcript of evidence, p. 228.

Intranets and the Internet

5.78 The Department of Communications and the Arts explained that Intranets are:

> *virtual private networks that utilise the functionality, cost effectiveness and reliability of Internet protocols, and at the same time can be customised to meet particular corporate or government needs (in respect of security requirements, applications etc).*[106]

5.79 For a health intranet system to be installed throughout Australia, it would need to be negotiated with every State and Territory government, every hospital and medical practice and include the various agencies who would require access. In a highly fragmented health system, an intranet would not be practicable and central control would be difficult to establish. An intranet may be effective within a discrete organisation, for example, the Australian Defence Force, which is centrally controlled.

5.80 The Committee believes that given the appropriate security safeguards, utilising the Internet is preferable in the long term, particularly in relation to cost effectiveness. As the Department of Communications and the Arts observed:

> *Competition among Internet Access Providers has been instrumental in driving down prices in urban areas: competition is also now starting to have an effect in some regional areas.*[107]

5.81 Another attraction of the Internet is that it operates on basically the same standard used by all consumers of the service.[108] HCN expressed enthusiasm for the Internet as a means of transmitting health information:

> *While HCN was being formed, the Internet grew from being what was really an academic tool into what we think will become the primary means of electronic communication of health information. We are talking about anything from simple referrals and pathology results reporting, through to electronic Medicare claims...It is user friendly and it is becoming more so.*[109]

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106 Sub No 94, Vol 1, p. 178.

107 ibid, p. 179.

108 Department of Communications and the Arts, Transcript of Evidence, p. 28.

109 Transcript of Evidence, p. 33.

5.82 The HCN also stressed that a great deal of money and brain power are being applied to solving the problem of security on the Internet. The Network also observed that full banking will soon be available on the Internet and challenged whether people had lesser concerns about the security of their banking records than their health records.[110]

5.83 The HCN is aiming to provide a wide range of health information through Internet services, in brief form or in full text form. The intention is to have a "one-stop health information shop", which would include health journals, health databases, clinical guidelines, textbooks, consumer information.[111] In the HCN Submission, emphasis was placed on the potential of the Internet to provide health practitioners with the ability to communicate with fellow practitioners and health professionals either in Australia or internationally:

> *Our server can also be used to host closed discussions groups amongst practitioners and we provide encryption software when required. Such e-mail discussion groups will become a potent force in aiding fast dissemination of information and observations across the health sector and particularly across specialities.*[112]

5.84 In addition, the HCN believed that encryption and scrambling messages at one end and unscrambling at the other is likely to offer the:

> *most secure method of transmission, in which case it will be possible to move information across the Internet without having the closed networks...*[113]

5.85 Since providing evidence to the Committee, the HCN has been instrumental in developing an on-line evidence-based health care system on the Internet known as HCNet. The HCNet will enable doctors and hospitals to exchange patient records and results of tests carried out on patients across secure online connections between computers on a doctor's desk and the hospitals. HCNet provides a pre-installed security software which is able to encrypt selected e-mails. According to the HCN, a Victorian government body, the Southern Health Care Network:

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110 Transcript of Evidence, p. 33.

111 Transcript of Evidence, p. 34.

112 Sub No. 84, Subs Vol 2, p. 472.

113 Transcript of Evidence, p. 44.

> *...is evaluating the HCNet for deployment across all public hospitals under its charge...Early indications are that Victorian Health will support, if not enable, the deployment of HCNet across the remainder of the State.* [114]

5.86 Of significant benefit to health consumers is that the HCNet will enable doctors to prescribe the best drugs and treatments without being influenced by promotional literature from pharmaceutical companies.[115] The HCN observed that the benefits of the scheme will be to improve patient care, cut costs significantly and reduce patient frustration, and probably save lives.[116]

5.87 The HCN emphasised that the security on the HCNet is based on commercial grade encryption software offering a higher level of security than current virtual private networks. In addition, any user may take advantage of the HCNet regardless of their present hardware.[117] According to advice from the HCN, the RACGP has given its support for the HCNet.[118]

5.88 The Department of Primary Industry and Energy (DPIE) is also moving towards the use of the Internet as a secure means of transacting its business. The DPIE has been able to get accreditation as a provider of secure Internet access services from the Defence Signals Directorate.

5.89 The system introduced by DPIE is known as Secure Gateway Environment (SGE) and operates with a multiplicity of hardware and software to provide it with a high level of security. The SGE is more than a firewall service, it actually monitors the logs of the area and has automatic software monitoring to indicate changes. Eventually, it is proposed that consumers will manage their own social welfare accounts through a kiosk, or by using an electronic health card or a public key encryption system.[119]

5.90 The Committee believes that these key advances in protecting consumer data across the Internet should help to allay consumer concerns about the method of managing personal data and information through this technology. The Committee supports the use of the Internet with highly developed security

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114 HCN Further information, 28 August, 1997, p. 3.

115 The Australian Financial Review, August 8, 1997

116 The Age, 1st Edition 12 August, p. D3.

117 HCN, Further information, 28 August 1997, p. 2.

118 ibid, p.3.

119 The Australian, 22.7.1997.

safeguards, particularly as it will allow rural and remote health care practitioners to communicate safely and easily with their colleagues across Australia, thereby lessening their isolation.

5.91 A full exchange of health information and data between the various levels of health is essential to the delivery of enhanced health care. Information should be accessible to the relevant health care provider without being hindered by location. The Internet achieves this, subject to adequate security safeguards.

Recommendation

5.92 The Committee recommends that the National Office for the Information Economy proceed to develop an Internet security system, as accredited by the Defence Signals Directorate, which would facilitate the use of the patient-held electronic health card, supported by the National Backup System.

Physician, heal thyself.
Luke 4:23

6 Impact on the Medical Profession

Introduction

6.1 The potential benefits of deploying computer technologies within the health care system have been widely canvassed in this report. Pharmacists have enthusiastically embraced technology,[1] while radiologists and pathologists are seeking greater computerisation of General Practice in order to streamline Teleradiology and Telepathology.

6.2 According to figures provided by the Health Communication Network (HCN), about 40% of GPs have computers installed to aid in practice management but only 14% use computers in the clinical side of their practice.[2] This level of support, according to the Department of Health and Family Services, has meant that GPs "have not been well integrated into the rest of the health care system".[3]

6.3 Since 1992, the Department of Health and Family Services has developed a number of strategies to encourage GPs to computerise their practices. In developing its 1992 General Practice Strategy, the Department of Health and Family Services identified General Practice as an area:

> *critical to health sector management overall, and an area where their involvement in information management and their use of Information Technology we saw as being critical for how things could develop.*[4]

6.4 The AMA and the RACGP are similarly concerned about the reluctance by GPs to computerise and reinforce the point that:

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1 According to the Pharmacy Guild of Australia almost 100% of all pharmacies are computerised, Sub No 57 Sub Vol 1, p. 41.

2 Sub No 84, Subs Vol 2, p. 473.

3 Department of Health and Family Services, Sub No 103, Subs Vol 2, p. 196.

4 Transcript of Evidence, p. 4.

> *Poor communication of health information is the primary reason for duplication, and consequent waste, of health resources.*[5]

Barriers to Adopting Technology

6.5 As mentioned in previous chapters, the AMA and the RACGP have identified the lack of a national framework and the absence of demonstrated benefits as principal contributors to the unwillingness of GPs to deploy and use information technologies. The following is a summary of the main barriers which are said to discourage GPs from participating in a move to computerise health care activities:

- large initial cost outlays for technologies, including recurring telecommunications charges and upgrading of systems;
- lack of recognition in the Medicare Benefits Schedule;
- belief that trends are being driven by a self-interested technology industry;
- limited demonstrable evidence of benefits;
- lack of technological standards;
- lack of Government policies and a national strategic outlook;
- inability to consult in other jurisdictions without national registration thereby minimising the use to which Telehealth can be applied;
- medico-legal concerns; and
- computer illiteracy and lack of training and support, as well as lack of time to undertake training.

6.6 These are all legitimate concerns which can only be addressed in joint negotiations between the various stakeholders and with cooperation by GPs, who so far, have resisted a number initiatives to computerise General Practice.

6.7 Added to this, Queensland Health emphasised that the technology industry should work together with the medical profession:

> *because the medical profession is very complicated and so an IT company cannot come up with a product and dump it in a doctor's or nurse's lap.*[6]

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5 AMA/RACGP, *Strategic Framework for Improved Information Management through the use of Information Technology in General Practice*, August 1997, p. 4.

6.8 This point was also emphasised by Professor Yellowlees who observed that doctors would use anything to help them clinically. However, if a system is not perceived by the doctors to be useful, "they will write it off very quickly".[7] Professor Yellowlees was critical of the initial methods used to introduce health information technology, as these were viewed with suspicion by the profession:

> *The large proportion of money from government that has gone into developing new systems has essentially developed financial management systems and accountability systems, all of which make doctors increasingly paranoid. It is all about observing what they do and checking on what they do and slapping them on the wrist.*[8]

6.9 The Committee accepts that these perceptions, combined with an apparent lack of tangible benefits, have not yet convinced GPs that a computer on the desk will improve the delivery of health care. It is anticipated that peer pressure and pressure from the community will lead to change.[9]

6.10 While those not using computers for clinical purposes are in the majority, once that balance changes they may see that as reason enough "to invest their time and energy in making the transition."[10] Professor Basil James from Townsville Hospital agrees that when technology within the health profession becomes commonplace, and easily accessible, the barriers will drop very rapidly.[11]

6.11 When asked what would encourage GPs to take-up health technology, one witness remarked: "Make it as easy as picking up a telephone".[12]

Strategies and Incentives

6.12 Since the development and implementation of the General Practice Strategy in 1992, the Department of Health and Family Services, in conjunction with a number of advisory groups, has been exploring methods aimed at

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6 Transcript of Evidence, p. 147.

7 ibid.

8 Transcript of Evidence, p. 153.

9 Transcript of Evidence, p. 44.

10 HCN, Transcript of Evidence, p. 45.

11 Transcript of Evidence, p. 156.

12 Dr Alexander Disney, Transcript of Evidence, p. 307.

improving information management within General Practice. These advisory bodies comprise representatives of General Practice, General Practice informatics experts and consumers.[13]

6.13 In 1993, the Department commissioned an Information Management Steering Group (IMSG)[14] to develop strategies aimed at improving information management in General Practice. The result was a 'strategic plan' designed to enhance the acceptance of technology. While the IMSG was referred to in evidence, it does not appear to be meeting its aim of developing a strategic approach to computerise General Practice.

6.14 In evidence to the Committee about other strategies being pursued by the Department, it was observed that they are at the stage of "reviewing and defining the needs and the technical aspects of clinical and administrative computer systems..." [15] The Department also anticipates the results of an IBM consultancy during the course of the year. This consultancy was commissioned by the IMSG to develop detailed functional specifications for General Practice computer systems ultimately leading to the provision of appropriate software to meet the needs of GPs:[16]

> *One of the underlying assumptions of this project is that if software provides an integrated solution to GP computing needs - including practice management, finances, planning and clinical solutions - this will provide better incentives to adopt technology.*[17]

6.15 The Department is planning to consult widely with GPs and the public on the question of incentives within the context of the review of the General Practice Strategy. In addition, the Department is implementing new processes designed to increase the value of computers for GPs:

> *...the Divisions Program is moving towards an outcome based approach for funding and over time this will require the collection*

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13 Sub No 103, Subs Vol 1, p. 213.

14 The Membership of the IMSG is composed of: two nominees from each of the AMA, RACGP, The Department of Human Services and Health; a consumer adviser to be nominated by the CHF and a Divisions adviser to be nominated by the Divisions Steering Group and industry representatives to be co-opted as required. Sub No 103, Attachment 6, *Improving Information Management in General Practice*, Executive Summary, p. 2.

15 Reply to Question on Notice, Transcript of Evidence, p. 1182.

16 ibid.

17 ibid.

> *of better data. In the first instance this will be set up based on available data.*[18]

6.16 The Committee welcomes these approaches, but notes that despite a number of strategies over a period of five years GPs are still not applying computer technology in clinical settings to any significant degree. The Committee is also concerned about the possible failure of the system which the Department is developing through the IBM consultancy, if the views of GPs are not canvassed widely. There is general scepticism about the value of practice systems and software packages which are not developed in close consultation with health professionals.

6.17 The AMA and the RACGP in their recently produced Strategic Framework, have suggested that the most appropriate means of encouraging GPs to computerise is to provide a variety of financial incentives.[19] These two organisations believe that the:

> *...proportion of existing funding allocated to the Better Practice Program would be more beneficial if targeted to specific projects, including the implementation of IM/IT in General Practice. Funding should assist with installation and training and ensure maintenance of income levels during a transitional period of lower activity. Additional resources to Divisions to enable IM/IT support and training should underpin the implementation process.*[20]

6.18 The Department of Health and Family Services does not support the provision of free computers to medical practitioners, a view which was supported in varying degrees by other witnesses. According to the Department:

> *experience overseas has been that the way to go is not to just have the government subsidise free computers for all general practitioners. It needs a lot more underpinning than that, such as education and other incentives which might be non-financial, as well as financial incentives.*[21]

6.19 Under the current arrangements, the HIC provides limited assistance in the form of payment towards the cost of connection to ensure that practitioners

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18 ibid.

19 Australian Medical Association, The Royal Australian College of General Practitioners, *Strategic Framework for Improved Information Management through the use of Information Technology in General Practice*, p. 6.

20 AMA and RACGP, *Strategic Framework for Improved Information Management through the use of Information Technology in General Practice*, August, 1997, p. 13.

21 Transcript of Evidence, p. 5.

are linked electronically. Further incentives are provided to medical software providers who are supplying practice software to facilitate connection of practices to the HIC.[22] However, the HIC warned that "considerable practical problems" exist in arranging for practitioners to be connected, because of the large numbers of small software providers. For this reason, the support has been uneven and, in part, has been a disincentive for providers to connect to the HIC.[23]

6.20 The United Kingdom's experience with the provision of free hardware and software to GPs confirms that little advantage is gained. According to Professor J Michael Brittain from the University of South Australia, 85 % of GP practices in the United Kingdom are computerised and less than half that figure, approximately 40%, use computers as a clinical tool.[24]

> *There was an incentive some eight or nine years ago, because some computer companies offered GPs a free computer; but it was not much of an incentive. I think the incentive has come, really, by having champions. A few people, to begin with, were very keen and then other GPs came on board...*[25]

6.21 The Committee supports assistance being given to GPs through the Divisional structure, particularly as GPs are the first point of contact in health care and are involved in the collection of patient data.

Training

6.22 The Committee was told that there was a significant need for training and education in order to provide health professionals with a degree of computer competence and resolve their so-called 'technophobia.' Training of practitioners has also been identified as a key goal in the AMA and the RACGP Strategic Framework.[26] The Royal Australian and New Zealand College of Psychiatrists advocated basic training in order to provide health professionals with the necessary competence to make the best use of technological systems.[27]

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22 Transcript of Evidence, p. 62.

23 ibid.

24 Professor J Michael Brittain, Professor of Information Management, and Leader, Health Information Research Group, University of South Australia, Transcript of Evidence, p. 382.

25 ibid.

26 AMA/RACGP *Strategic Framework for Improved Information Management through the use of Information Technology in General Practice*, p. 12.

27 Transcript of Evidence, p. 790.

6.23 In his opening statement to the Inquiry, Professor Brittain observed that in studies of failed systems, a key reason for these failures was the lack of established education and training plans.[28] Training has been cited as part of infrastructure development.[29] The recent RACGP 9th Computers in Medicine Conference passed a resolution calling for its Council to establish and develop education and training advice support for its members.[30]

6.24 The Committee welcomes the RACGP's resolution to conduct training and education programs on an ongoing basis and is concerned that if GPs do not actively pursue such training, they may not be able to meet the expectations of health consumers and other health professionals.

Recommendation

6.25 Given the essential role of General Practitioners in collecting health information and data, the Committee believes that they should be given incentives to encourage them to computerise their practices and to undertake appropriate computer training. The Committee therefore recommends that the Department of Health and Family Services refocus its General Practice Strategy to take account of these requirements and provide assistance for:

(a) training of General Practitioners in the use of Health Informatics packages to facilitate their access to health data, use of patient-held health electronic records and maintaining a consistent record of consultations;

(b) the purchase of approved data codes and classifications systems which are essential to record health information and data on an electronic patient record and to promote adequately their understanding and usage;

(c) training General Practitioners in Telehealth consultations, particularly those being posted to rural and remote areas; and

(d) partial funding for the establishment of a 'Help Desk' unit to provide computer advice for all General Practitioners.

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28 Transcript of Evidence, p. 380.

29 Dr Christopher Brook, Department of Human Services (Victoria), Transcript of Evidence, p. 769.

30 Media Release, *RACGP Computer Conference Success*, RACGP 9th Computers in Medicine Conference, 11 August, 1997.

Reimbursement for Electronic Billing

6.26 The current method of processing MedClaims was raised, principally by the RACGP, as a barrier to the implementation of electronic systems.[31] MedClaims is an HIC electronic transmission system for direct bill claims and can be used only by those practitioners who elect to direct bill their patients.[32]

6.27 The RACGP is calling for a system where non-bulk-billing doctors could access the MedClaims system for the Medicare rebate proportion of the medical bill, with the patient paying the balance. The RACGP believes that earlier payment for those doctors who deal with claims electronically would be a "major incentive to increasing the use in patient management...[33]

6.28 Currently, there is a minimum waiting period of 10 days from the time the HIC receives the claim until the cheque is dispatched to the doctor. If it is an EFT payment, the HIC can complete the process by the ninth day and payment into the bank on the 10th day.[34] It was put to the Committee that if non-bulk-billing doctors were able to bulk-bill the Medicare rebate proportion of the doctor's bill, with the patient paying the balance to the practice, or to bulk bill with co-payment, the utilisation of the MedClaim system would be dramatically increased.[35]

6.29 At a private briefing, the HIC informed the Committee that they are able to process claims electronically overnight and reimburse the following day.[36] The RACGP observed that under this system, a charge is being levied by the HIC for computer generated prescribing stationery, on the grounds that the stationery is of a particular type, yet no charge is made for manual stationery which practitioners use.[37]

6.30 At its 9th Computers in Medicine Conference, the RACGP called for the Medicare rebate portion of a patient's account to be paid directly to medical practitioners for claims lodged electronically.[38] The Committee believes this is

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31 Transcript of Evidence, p. 552.

32 ibid.

33 Transcript of Evidence, p. 553.

34 HIC, Transcript of Evidence, p. 68.

35 Transcript of Evidence, p. 183.

36 HIC, Private Briefing, Transcript of Evidence, 18 September 1996, p. 6.

37 Transcript of Evidence, p. 553.

38 RACGP 9th Computers in Medicine Conference, Media Release, op cit.

a positive incentive for GPs to computerise and will save a great deal of paper work, particularly if they are not charged for the computer paper. This system would also incur benefits to the Commonwealth. As the AMA observed in its Submission, the cost to the Commonwealth of processing a written document by the HIC is $1.60, while an electronically lodged claim would cost 30 cents.[39]

6.31 The HIC has established an Electronic Commerce Team to develop strategies for the creation of a standardised electronic commerce framework. According to the HIC, this team is working toward getting an agreed health sector framework for electronic commerce with a number of organisations including the AMA, the RACGP and the Pharmacy Guild of Australia .[40] The HIC estimates that electronic commerce:

> *can provide patients with easier claiming and easier payment mechanisms. It can also be a basis for improved communication between health care providers; thus allowing better delivery of health care to the patient.*[41]

Recommendation

6.32 The Committee supports doctor access to the MedClaims system for the Medicare rebate component of a medical bill. Such a move would:

- **improve consumer convenience;**
- **provide further incentives for the essential computerisation of medical practice, and general practice in particular; and**
- **reduce administrative costs to the Health Insurance Commission.**

The Committee recommends, therefore, the:

(a) overnight electronic processing of payments to doctors who lodge claims with the Health Insurance Commission electronically. Any outstanding balance for patient-billed services may be paid at the time of the consultation; and

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39 Sub No 90, Subs Vol 1, p. 144.

40 Sub No 91, Subs Vol 1, p. 157.

41 ibid.

(b) continuation of the current system of reimbursement for those doctors who have not computerised and who continue to lodge paper claims. In particular, there should be no change to the current paper-based bulk billing arrangements or entitlements.

Extension of Medicare Benefits Schedule

6.33 Under the current regime, the Medicare Benefits Schedule (MBS) applies only to face to face consultations. For the purposes of Telehealth consultations, this issue has been highlighted as a major barrier. It was put to the Committee that changes to the MBS would be necessary in order to allow these consultations to take place in private practice. Because Telehealth is currently being trialed or practised in public hospital settings the issue of payment has not yet arisen.

6.34 According to Professor Yellowlees, the:

> *....single most important block to the continuing development of Telemedicine in the health area is the lack of recognition of Telemedicine consultations on the Medical Benefits Schedule [sic].*[42]

6.35 The Department of Health and Family Services explained that personal attendance of the medical practitioner upon the patient is necessary for it to be regarded as a "professional service" for attendance items, under the current Health Insurance Act and to attract Medicare benefits. On the other hand, in relation to diagnostic imaging, or Telehealth consultations, and its impact on the Medicare rebate, it is questionable whether the costs are significantly different from current transfer mechanisms which are already built into fees. The Department also acknowledged that the "computer transfer of images may need to be looked at".[43]

6.36 Telephone consultations have been referred to as Telehealth or Telemedicine services and a precise definition would need to be made for receipt of MBS benefits.[44] The Department of Health and Family Services advised that telephone consultations are not included in the MBS:

> *The cost implications of paying benefits for these types of consultations are enormous. There is also a problem with*

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42 Sub No 110, Transcript of Evidence, p. 113.

43 Sub No 103, Subs Vol 1, p. 221.

44 South Australian Health Commission, Transcript of Evidence, p. 268.

> *accountability and the potential for frivolous or trivial use is large.*[45]

6.37 While consideration of remuneration for remote consultations may have consequences for telephone consultations,[46] the Committee has been asked to consider the impact on the MBS of Telehealth. When the Department of Health and Family Services was asked to make a comment on this issue, it observed that:

> *...the general answer to the question is that new forms of technology fit into the health system right across it - across hospitals, across non-MBS items, across non-PBS items, across the whole of the health system. It will be funded, as appropriate, in whatever setting it emerges.*[47]

6.38 The Department's perceptions are not shared by the medical profession, who consider it a major barrier preventing the adoption of technologies for clinical use. The Committee does not accept the Department's explanation and despite continued questioning, the Department was unable to provide options to help the Committee with its deliberations on this matter.[48]

6.39 Telehealth will not go beyond the pilot trial, at present hospital-based, if it is not reimbursed through the MBS. As health technologies become increasingly part of the process of delivering health care, the question of payment will become more critical.

Recommendation

6.40 In order to provide remuneration for health care professionals who practise Telehealth, the Committee recommends that the Department of Health and Family Services, in consultation with the Health Insurance Commission and the Australian Medical Association, consider the question of remuneration of Telehealth services with a view to the inclusion in the Medicare Benefits Schedule of item numbers to cover such services.

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45 Sub No. 103, Subs Vol 1, p. 221.

46 Dr Ian Graham, Royal Australian College of Medical Administrators, Transcript of Evidence, p. 813.

47 Transcript of Evidence, p. 1231.

48 Transcript of Evidence, pp. 1234-1236.

6.41 In determining the appropriate levels of remuneration, the Committee recommends that Telehealth consultations be distinguished from telephone consultations and defined as a consultation performed at a distance by means of interactive video-conferencing facilities.

Taxation Relief

6.42 Some form of tax relief has been suggested as a means of encouraging GPs to take up the challenge of computerising their practice for clinical purposes.[49] In their Strategic Framework, the AMA and the RACGP make the assumption that GPs will have the cost of the computers deducted as a business expense for taxation purposes.[50]

6.43 The Committee believes that the provision of tax relief is appropriate if it encourages GPs to take up the technology. While General Practice is a small business and similar incentives are not provided to other small businesses, the Committee also accepts that, unlike lawyers, for example, who would charge a client for legal advice provided over the telephone, GPs over time have as a matter of course provided health care over the telephone and in other settings without being remunerated.

Recommendation

6.44 In order to provide further incentives for General Practitioners to encourage them to computerise their practice, the Committee recommends the reduction of sales tax on computer hardware and software purchased by General Practitioners specifically for on-line clinical and epidemiological purposes. This equipment should attract accelerated depreciation. The Committee asks the Department of Health and Family Services to negotiate these provisions with the Australian Taxation Office.

Rural and Remote Practitioners

6.45 Telehealth is likely to impact on rural and remote practitioners in a variety of settings. Dr Rufus McLeay, a rural councillor for the Australian Society of Consultant Physicians in General Medicine saw educational

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49 Dr Raymond Martyres, President, Melbourne Division of General Practice, Transcript of Evidence, p. 859.

50 Australian Medical Association, The Royal Australian College of General Practitioners, *Strategic Framework for Improved Information Management through the use of Information Technology in General Practice*, p. 5.

opportunities as one of the values of Telehealth.[51] Dr McLeay believes that isolation from a teaching hospital would be addressed by having a visual link to tutorials and "grand rounds" that are undertaken at teaching hospitals. Dr McLeay also suggested that geographic barriers to education events and the necessity of travel from remote country areas, coupled with overnight stays and early flights back the following morning, would be obviated by Telehealth.[52]

6.46 On the other hand, Dr McLeay did not see Telehealth as the panacea for country medical practice. His view was that the "real limitations" in country hospitals were the lack of nursing staff and technological hardware, such as various imaging techniques, CT scanners, nuclear medicine and other diagnostic tools which are shared in country general practice.[53] Similarly, the Royal Flying Doctor Service did not see Telehealth replacing the services it currently provides, "but rather enhancing them."[54]

6.47 The Committee accepts that Telehealth is a tool which should assist greatly the work of GPs and other health professionals who practice in rural and remote areas. At the same time, the Committee detects a reluctance on the part of rural and remote practitioners to explore the possible dimensions of Telehealth. Having visited a very remote Aboriginal community, the Committee is conscious of the limitations which isolation can impose on a clinical practice.

6.48 For this reason, Telehealth is an essential tool which could assist rural and remote health care professionals in resolving some of the problems imposed by their isolation. In addition, the Committee believes that it is essential for country and remote health professionals to embrace Telehealth as a modern process at this early stage of its evolution so that the way health is delivered in rural and remote Australia can evolve and be assisted by the new systems.

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51 Dr Rufus McLeay, Rural Councillor for South Australia, Australian Society of Consultant Physicians in General Medicine, Transcript of Evidence, p. 432.

52 ibid.

53 Transcript of Evidence, p. 433. See also evidence provided by Professor Yellowlees, pp. 150-151 and Dr Robert Broadbent, Executive Director, Royal Australian and New Zealand College of Psychiatrists, p.787.

54 Transcript of Evidence, p. 713.

Medico-Legal Issues

6.49 There is growing realisation that greater access to Health Informatics is likely to change traditional conventions between health service providers and patients.[55] As the Department of Health and Family Services observed, information management "means exchanging as well as accessing information".[56] Health Informatics, therefore could place an onus on the health care provider to be aware of current opinion in medicine and failure to either access or exchange information in a timely fashion could be considered an act of omission and a doctor made liable for professional negligence.

6.50 The Committee is not aware of a definition of duty of care in health within a technological environment. Various definitions of duty of care exist in case law and these may vary from State to State. Whether current laws will be effective in dealing with duty of care cases in a electronically networked health system, is, as yet, unknown and is a matter for the Attorney-General.

6.51 The Australian Medical Council (AMC) drew the Committee's attention to the issue of definitions of medical service under State medical legislation. The AMC stated that a medical service or treatment is not defined in State medical Acts in Australia and believes that this will be necessary. [57] Most State Acts "direct attention to what doctors can do and what is a medical condition that only a doctor can treat."[58]

6.52 The Mater Misericordiae Hospital's Submission advocated that questions of liability "must be addressed" because they carry an element of risk for service providers. In their Submission, they raised the question of liability in a legal action or malpractice suit, as Telehealth could diffuse responsibility for patient care "as more parties get involved and information is increasingly shared across a broader range of institutions at diverse geographic locations."[59]

6.53 Very little data is available on medico-legal issues surrounding Telehealth. Questions of liability and malpractice have not yet been resolved in the United States, where Telehealth is practised more widely than in Australia.

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55 See Chapter 7.

56 Sub No 103, Subs Vol 1, p. 195.

57 Transcript of Evidence, p. 1074.

58 ibid.

59 Submission No. 63, Subs Vol 3, p. 617.

In addition, the medical legal implications of Telehealth have not received a great deal of attention in Australia.

6.54 In evidence, Dr Disney observed that this question did not arise in the Renal Dialysis Project, as the project operates "strictly within the public system and we have very little interaction with other professionals."[60] Dr Disney added that while the issue "is a serious one",[61] a particular position has not been developed, although if a fee for service to the wider community was being provided, "there will be considerable concern."[62]

6.55 Mr John Mitchell, the Project Manager for the Renal Dialysis Project noted that the issue of liability in Telehealth, from a number of perspectives, is exercising legal minds internationally:

> *Recently in Singapore, I was lucky enough to hear a lawyer from Gillette Sharp, a firm that operates between Sydney and Singapore. One of their legal staff gave a very good presentation about it. He basically argued that the whole thing is a minefield and that it is loose. He actually scared the audience by saying, 'You may be culpable if you don't use the equipment.' Most of us are worried about specialists giving poor advice and there being maltreatment...He did not satisfy anybody, but he was honest and said that the whole issue was still very open.*[63]

6.56 Witnesses to the Inquiry offered a variety of views. While some believed that medico-legal issues should be addressed, there is an acknowledged dearth of information to allow any easy resolution to questions of liability and indemnity. One opinion was offered by Dr Epstein who observed that the issue of liability relates to who is actually the "prime treater" in Telehealth.[64]

> *The major way it has been used has been in the consultation role and treatment and responsibility remains with the GP, by and large.*[65]

6.57 Radiologists were uncertain where they stood with regard to medical indemnity in Teleradiology. Mr Roy Manning from Benson Radiology noted

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60 Transcript of Evidence, p. 305.

61 Transcript of Evidence, p. 306.

62 ibid.

63 ibid.

64 Transcript of Evidence, p. 793

65 ibid.

that image quality is becoming less of an issue but also observed that he did not know where Radiologists stood medico-legally if a diagnosis was missed and was picked up on a hard copy later. "I do not believe that indemnity insurance or medical insurance has looked specifically at that question."[66]

6.58 In the *Telemedicine Report to Congress*, it was observed that definitions of standards of care and professional duty have been provided in statute, regulations and case law. The report also acknowledged that the diverse nature of definitions and their sources are further complicated by jurisdictional issues when applied to Telehealth.[67] These unresolved legal issues were referred by that report to a suitable body for exploration.[68]

6.59 The Committee believes a similar approach should be taken in Australia by consultation between the Commonwealth and State Attorneys-General. In addition, the Committee agrees with the assessment of the AMC that there is a need to define duty of care in legislation.

Recommendation

6.60 The Committee recommends that the Commonwealth Attorney-General, together with State and Territory Attorneys-General, as a matter of priority, canvass medico-legal issues as they apply to Telehealth and Health Informatics, and proceed to the establishment of appropriate regimes.

Medical Registration

6.61 A related issue is the question of medical registration of health care professionals. The AMA has recommended a review of the present system of medical practitioner registration[69] and State governments have been unanimous in calling for a simple multi-State registration mechanism or mutual recognition in all jurisdiction for the purposes of providing medical services via Telehealth.

6.62 Under the present system, the registration of medical practitioners is the responsibility of each State and Territory and each jurisdiction has legislation in place which governs the practice of medicine, including registration procedures and disciplinary action. Registration provides a medical practitioner with the

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66 Transcript of Evidence, p. 364.

67 US Department of Commerce 'Legal Issues - Licensure and Telemedicine', in the *Telemedicine Report to Congress*, op cit, p. 8.

68 ibid, p. 9.

69 Submission No 90, Subs Vol 1, p. 141.

right to practice medicine in the jurisdiction in which he or she is registered, but does not provide any entitlement to bill services under Medicare, which is a separate process under the control of the Federal Government.

6.63 The passage of Federal legislation providing for State and Territory mutual recognition of qualifications for a range of professions (including medical practitioners) has not altered the requirement for medical practitioners to be registered in each individual State and Territory. On the other hand, the mutual recognition legislation has simplified the process for practitioners seeking interstate registration.

6.64 If Telehealth is to be practised across Australia without hindrance, the registration issue must be resolved. This question is not only inconvenient and expensive for the individual practitioner, but raises serious medico-legal questions in the event that Telehealth is practiced across borders without registration.

6.65 The Committee was informed by the South Australian Health Commission, that currently South Australia has patient referrals from Alice Springs in the Northern Territory and Broken Hill in New South Wales. This is problematic for health care professionals as it is "very inconvenient" to be registered in three States.[70]

6.66 It is not clear whether the Commonwealth has powers to legislate in this area. A simplified system of mutual recognition has worked well for certified practising accountants. Under the Certified Practising Accountants regime, mutual recognition laws can allow a person to practise throughout Australia by paying a registration fee in one State. This allows people to move between jurisdictions without being penalised, because they are not required to seek further registration or to pay an extra fee.

6.67 The Committee is concerned that insufficient commitment to national registration of health care professionals is preventing the simplification of mutual recognition. At the present time, the question of registration has been identified as another barrier to the practice of Telehealth[71]. The AMA has

70 Transcript of Evidence, pp. 268-269.

71 South Australian Health Commission, Transcript of Evidence, p. 287, Department of Human Services (Victoria), Transcript of Evidence, p.785.

proposed that appropriately defined fees should be paid "where the doctor is normally resident".[72]

Recommendation

6.68 In order to eliminate existing artificial barriers to the practice of Telehealth across Australia, the Committee recommends that urgent talks be undertaken by the Australian Medical Council with the registration bodies in the States and Territories for the purpose of introducing a national framework of mutual recognition. The mutual registration model of Certified Practising Accountants should form a basis for discussions.

Undergraduate Training and Education

6.69 The Committee welcomes moves being made by many universities to provide research training by computers to their medical students. During the Committee's visit to the Faculty of Medicine at the University of Sydney, it was clear there was wide enthusiasm for the capacity of technologies to provide fast and current information, particularly via the Internet, to help students solve medical problems.

6.70 The Committee was informed that universities across Australia are including Medical Informatics training packages in their medical curricula. Since January 1997, it has been mandatory for all medical students entering the University of Queensland to be computer literate and recommended to have their own computer notebook.[73] At Monash University, Medical Informatics is a compulsory subject for medical degrees. Newcastle University is also advanced in this area and Flinders University of South Australia recently appointed the first Chair of Telemedicine. The RACGP has developed a training program for postgraduates, which according to the AMA, provides "basic literacy and hands-on-skills for doctors training for general practice".[74]

6.71 The Committee welcomes the direction being pursued by universities across Australia, which is an acknowledgment of the role which computer and telecommunications technology will play in the delivery of health care. The Committee urges other universities who have not introduced Health Informatics training into their curricula to do so.

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72 Transcript of Evidence, p. 573.

73 Transcript of Evidence, p. 156.

74 Transcript of Evidence, p. 557.

It may be self evident that consumers should be placed at the centre of any new development in health care practice. However they are frequently the last people to be consulted or included in discussions. [1]

7 IMPACT ON HEALTH CONSUMERS

Introduction

7.1 For the purposes of this report, a 'health consumer' is a recipient of health services. A similar definition was provided in a recently tabled Senate Report entitled *Access to Medical Records*, which noted that it has become more common in recent times to refer to patients as "consumers of health services".[2] The following definition differentiates between health consumers and health providers in terms of:

> *consumers who represent and advocate from a particular perspective as distinct to providers and professionals who represent the needs of an industry. Consumer may also refer to one individual, or the collective voice. It is a term with less implication of power differences than the term patient.*[3]

7.2 From the point of view of the Consumers' Health Forum of Australia (CHF) Telehealth is in its "honeymoon period."[4] While people see many benefits "there is some caution and concern"[5] in relation to cost effectiveness and privacy matters.[6] Because of a lack of evaluation and dissemination of information, there is also general confusion amongst community groups and consumers generally about the possibilities offered by health technologies:

> *...perhaps not quite enough discussion of how many of these things we should do - not just what we can do. There is a fair bit of concern that things are moving fast.*[7]

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1 O'Connor, Debra, 'Health Consumer Issues', in Hovenga, Evelyn, et al, op cit, p. 251.

2 The Parliament of the Commonwealth of Australia, *Access to Medical Records*, op cit, p. 39.

3 O'Connor, Debra, 'Health Consumer Issues', op cit, p. 259.

4 Ms Hilda Bastian, Chairperson, Consumers' Health Forum of Australia, Transcript of Evidence, p. 1103.

5 ibid.

6 ibid. Questions of Privacy, Confidentiality are canvassed in Chapter 5.

7 Transcript of Evidence, p. 1103.

7.3 The impact of the wide deployment of communication technologies within the Australian health system will be as profound on the health consumer as on the health provider.

Patient/Doctor Relationship

7.4 The Department of Health and Family Services has predicted that as information systems continue to develop and become more widely available and used, health providers should expect greater consumer pressure to manage health information "to new levels of competence".[8] Beyond that, the Department estimates that effective management of health information should result in improved health outcomes. As a general guide, this will include:

> *improving consumer choice through the potential to empower individual consumers and local communities through better knowledge and understanding of threats to their health and the effectiveness of possible interventions, as well as information about access to appropriate services.*[9]

7.5 Ms Debra O'Connor, writing from the perspective of health consumers, has also identified a change in the relationship between doctor and patient. The observation is made that traditionally, health care has been delivered by "experts who know what is best for their patients and have felt it may even be counterproductive to share knowledge and ideas with them".[10] This "attitude still prevails in many areas of health care and medicine today, but it is increasingly being attacked and challenged by a growing movement of health consumers who feel they have the right to have a say in their health care."[11] It is further asserted that this movement is increasingly being supported by a growing number of health professionals, many of whom are attempting to influence their "more conservative colleagues".[12]

7.6 Ms O'Connor claims that there appears to be a shift in the philosophy of consumer involvement in health care gaining acceptance both nationally and internationally. This shift is evident in the degree to which consumers are being allowed to affect health policy and practice. She also asserts that there appears to be a gradual, if not reluctant, acceptance that individuals and

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8 Department of Health and Family Services, Sub No 103, Sub Vol 1, p. 195.

9 ibid, p 192.

10 O'Connor, Debra, 'Health Consumer Issues', op cit, Chapter 21, p. 251.

11 ibid.

12 ibid.

communities may have some responsibility for their own health care policy and services.[13]

7.7 The likely consequence of these projections is that the traditional compact between the health care provider and the patient will change completely. This may also mean:

> *acknowledging that many patients will know more about their condition than their doctor. It will almost certainly mean that most practitioners will feel the need to have ready access to the latest health information available.*[14]

7.8 There are also suggestions that the role of the physician will continue to evolve and change as consumers become more involved in researching their own medical conditions. Under such circumstances the doctor will become the interpreter of information, obtained by patients from a variety of sources whose reliability will be critical.[15]

7.9 Professor Michael Kidd agreed that the pattern of health care is changing in Australia and is being driven by consumer pressure. Professor Kidd observed that:

> *...we are seeing people become more responsible for their own health care. That has been happening over the last generation with people insisting on having more of a say in what happens and being involved in decisions. One group which I have been involved in working with clinically is people with HIV and AIDS who have shown to me that you get a group who all of a sudden want to get access to the information and go out and source this information...It is a great challenge for doctors and for other health care providers as well.*[16]

7.10 In his Submission to the Committee, Professor Mackinnon reflected on:

> *the largely untested but nevertheless attractive concept that the better informed the patient is about his/her disease the less they will access the Health Care delivery system...*[17]

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13 ibid.

14 Department of Health and Family Services, Sub No 103, Sub Vol 1, p. 195.

15 Department of Health and Family Services, Transcript of Evidence, p.18.

16 Transcript of Evidence, p. 600.

17 Sub No 56, Subs Vol 3, p.738.

7.11 When asked to comment about the proposition that enhanced access to information could lead to patients knowing more than the doctor about their medical condition, Professor Mackinnon explained that few patients, for example, people with diabetes, are likely to:

> *understand the implications of their disease in terms of how to prevent complications developing down the track and, secondly, I think there are episodes in the diabetic patient's life that cause anxiety and concern. Given the fact that they are not particularly aware of the consequences of their disease, in relation to an anxiety inducing moment...They will call their doctor in some way or another...*[18]

7.12 The Committee agrees with Professor Mackinnon's assumptions and believes that while the Internet will provide access to vast amounts of information, a great deal of it is unsourced and should be treated with caution. As the Department of Health and Family Services observed, technological information systems are a tool by which consumers are able to access a considerable amount of information hitherto "arcane and belonging to the profession".[19] There is little doubt that as health consumers become better informed, a shift in the philosophy of health care to one of partnership between the patient and the physician will occur.

Equity of Access for Rural and Remote Consumers

7.13 Telehealth is capable of providing an essential service to both the patient and the doctor living in remote areas. For example, a doctor can determine by way of a Telehealth consultation with a hospital, whether or not to move a patient thereby avoiding unnecessary cost and inconvenience to both the patient and the family. The South Australian Health Commission observed that if a patient:

> *in a remote place has a particular problem, and an ambulance driver can point a camera at them, you can decide whether you need to evacuate them and whether they can be driven to the nearest hospital or whether you need to put them in a helicopter or whatever.*[20]

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18 Transcript of Evidence, pp 397-398.

19 Transcript of Evidence, p. 18.

20 Transcript of Evidence, p. 279.

7.14 The South Australian Health Commission added that it has now had about four years of experience in developing Telehealth services for people living in country regions and has two very well developed programs; one in renal medicine and one in psychiatry.[21] It is their experience that:

> *Telemedicine by videoconferencing, can enhance medical services provided in country regions, but that it cannot totally eliminate the need for face-to-face consultations with doctors.*[22]

7.15 Dr Fiona Hawker, who has been involved in developing Telepsychiatry from the Glenside Hospital, a project which aims to "deliver mental health services equitably to country communities",[23] expressed similar views:

> *...I believe very strongly that we certainly do not pretend - and I would question anybody who does pretend - to treat patients at a distance over videoconferencing.*[24]

7.16 Professor Yellowlees, who supports the development of Telehealth as an effective multi-disciplinary clinical tool, is also adamant that it:

> *is not as good as face-to-face work; nobody can argue that it is. It is clearly preferable to see a patient up front. Where it is really useful is in a system organised for patients, such as psychiatry, where the clinicians can go out and see people individually - maybe on a monthly visit to a town - and then follow up on them via telemedicine.*[25]

7.17 In reply to a question as to whether the quality of care delivered by Telehealth is as good as a face to face consultation, Dr Disney, from the Renal Dialysis Telehealth Network, observed that the:

> *issue is whether you have to be in the same room...I think that, ideally, you should be in the same room, for clarity of viewing and for the human interchange; but I do not think that that is essential. I would regard it as preferable. But, if people have seen each other before and established the necessary human interconnection, then I certainly do not think that it is essential.*[26]

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21 Transcript of Evidence, p.266.

22 Transcript of Evidence, p.267.

23 Transcript of Evidence, p. 330.

24 Transcript of Evidence, p. 332.

25 Transcript of Evidence, p. 151.

26 Transcript of Evidence, p. 297.

7.18 As indicated in the previous chapter, the Renal Dialysis Network was visited by the Committee and is a specific example of Telehealth in operation. The specialist was located at the base site communicating with a nurse who was located in a satellite dialysis centre some 300 km away. As Dr Disney explained, the potential for Telehealth to rural and remote communities is that it provides:

> *a service which is not provided in the rural and remote areas, or which is inadequately provided there or which is infrequent to those areas.*[27]

7.19 A representative from Mater Misericordiae Hospital in Brisbane made a similar observation and said that the use of Telehealth is inevitable "in light of future economic constraints within the delivery of health care..."[28] In addition Telehealth:

> *allows the knowledge and expertise of metropolitan specialists and hospitals to be transferred to remote and rural health care providers and in effect, bridges the distance geography imposes.*[29]

7.20 The CHF was cautious. While acknowledging that there are positive aspects to Telehealth for rural and remote populations, particularly where unnecessary travel could be lessened, the CHF stressed that a:

> *lot of the things that in the early stages we think will work out really well, when people go back a few years later and check they find, 'Well, these were the side effects, these were the things that happened and these were the things that came along with this not envisaged by us in the beginning. 'So we are just saying, 'Be careful'*.[30]

7.21 The CHF also acknowledged the long standing use of technology by rural people and stressed the importance of community involvement. The Forum also highlighted the necessity for evaluating activities in Telehealth and Health Informatics, while emphasising that "we have to innovate carefully."[31]

7.22 While the introduction and use of Telehealth is seen to have potential for improving health care delivery, this is tempered by the view that it should not

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27 ibid.

28 Sub No 63, Subs Vol 3, p.615.

29 ibid.

30 Transcript of Evidence, p. 1107.

31 Transcript of Evidence, p. 1109.

replace face to face consultations in the short term. There are suggestions that, in time, this could change, particularly for those located at a distance remote from the nearest doctor. The South Australian Government has predicted that the use of Telehealth will be widespread and the "many Australians who can not see a doctor, because there isn't one to see, will use telehealth to do so."[32]

7.23 As indicated previously in the Report, equity of access is reliant on the availability and cost of appropriate telecommunications infrastructure. Until health consumers in regional Australia are provided with the same level of infrastructure as their urban counterparts, they will continue to be a disadvantaged group in terms of quality of care and the promise of Telehealth for these communities will not be realised in the short term.

Computer Age Underclass

7.24 During the Learning Environment Technology Australia Conference, speakers warned that low income earners who are unable to access technology could become an emerging underclass. One speaker reportedly observed that a "foot soldier early next century will require many of the technological skills of a fighter pilot of today".[33]

7.25 When the Committee posed the question of the possible development of a computer age underclass, one witness indicated that the problem was not necessarily related to socioeconomic standing but to education. While the witness admitted that there was a link between socioeconomic status and education, he added:

> *I do a lot of after-hours home visits and I work in both the more affluent and certainly the very poor areas of Adelaide. Even people who are unemployed and living in very basic accommodation will very often have a computer which their children are using mainly to play games on...you cannot necessarily relate it to their economic or social status.*[34]

7.26 In a keynote speech to the Health Informatics Conference 1995, Debra O'Connor from the CHF made some contrary observations. She asserted that

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32 Sub No 123, Transcript of Evidence, p. 251.

33 Dr Stephen Alexander, Electronic Strategies Trading Group, one of participants at the Conference and cited in *The Advertiser*, Tuesday, 1 October 1996, p. 7.

34 Dr Peter Schloeffel, Director, Medical Communications Associates Pty Ltd, Transcript of Evidence, p. 422.

there is a major gap between consumers and "the initiated" in the use of "sophisticated technology"[35] and that a major equity issue is cost[36].

> *Computers are an expensive capital outlay for any organization, and are probably the only one that rapidly turns into a recurrent one. Most consumers I know do not have the means to keep up with the pace. Either as individual advocates or on an organisational level. They often have more fundamental survival issues to concentrate on.*[37]

7.27 Ms O'Connor referred to the widening gap between 'the rich, powerful and knowledgeable'.[38] These words were also used by Professor Nancy Milio, a United States health policy analyst, who observed that these groups are 'hijacking' information and questioned the ultimate use of information.[39] According to Ms O'Connor, Professor Milio has asserted that "IT is focussed and controlled by the 'advantaged' "[40]

7.28 Professor Kidd supports the argument that technological illiteracy is likely to lead to disadvantage. He reflected on a claim that those who cannot use Information Technology by the end of this century will be as disadvantaged as those who were illiterate at the beginning of the century. Professor Kidd added that this situation "probably applies as much to health professionals as it does to any other member of the community."[41]

7.29 Dr Hawker did not accept these views and was of the opinion that socioeconomic status and computer literacy had no bearing on whether people were able to access a health service. Dr Hawker suggested that as the installation of videoconferencing units becomes more widespread, particularly the concept of the so-called 'telecottages', smaller communities would be able to own and access their own videoconferencing equipment. That is one

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35 Debra O'Connor, 'Consumer Presentation HIC 95', *Informatics in Healthcare Australia, The Official Publication of the Health Informatics Society of Australia, HISA*, November/December 1995, Vol 4 No 5, p. 173.

36 ibid, p. 178.

37 ibid.

38 Debra O'Connor, attributes these observations to Professor Nancy Milio, a United States health policy analyst who made them at an Information Technology conference in Melbourne, circa 1995. See keynote speech by Debra O'Connor, ibid.

39 ibid.

40 ibid.

41 Transcript of Evidence, p. 594.

possibility that would, according to Dr Hawker, "stop the underclass occurring."[42]

7.30 The Committee accepts the point made by Dr Hawker that until such time as telecommunications infrastructure, comparable to that in urban areas, is widely available in rural and remote areas of Australia, there is a need for 'telecottages' or 'telecentres'. However, the Committee does not accept the view that equipping 'telecottages' or 'telecentres' with technology is sufficient to provide the health consumer with appropriate technological competence, in the long term, as these centres are mainly designed for the health care professional.

7.31 While Telehealth will continue to be a tool used primarily by the health care professional, the Committee believes that it is inevitable that Telehealth and Health Informatics will, in the future, also be driven by the health consumer. As indicated earlier, the predictions are that the traditional compact between the patient and the physician will change, and that such change will be consumer driven.

7.32 Computer skills are now being taught widely in Australian schools. It is therefore realistic to expect that future generations of health consumers and providers alike will not only be computer literate but will live with this technology as previous generations made use of the telephone or the automobile.

7.33 This is not the case for older groups and for those who have poor literacy skills. For people in these two groups, it is unrealistic to expect that they would take up computer training, although anecdotal evidence seems to indicate that an increasing number of people in retirement are purchasing and using computers and accessing the Internet.

7.34 A suggestion has been made that there is a diverse consumer market for computers:

> *Health consumers groups are very interested in information technology in order to meet their own needs for networking and research particularly disabled and older persons groups...Other uses...include reducing isolation of palliative care and other housebound patients, enabling them to access other people as well as their health providers.* [43]

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42 Transcript of Evidence, p. 343.

43 Debra O'Connor, ' Consumer Presentation HIC 95', op cit, p. 178

7.35 The Committee believes that for older people, those with disabilities and for those without English literacy skills, there is a niche market for creative software packages. The Committee urges the industry to investigate this area of need, particularly as the population ages and computers are increasingly used as a medium of communication between the health consumer and their health care provider.

7.36 A major concern raised by CHF and the Privacy Commissioner, amongst others, relates to questions of privacy, confidentiality and security, particularly in the management of electronic health records. These are discussed in Chapter 5 of the Report.

Conclusion

7.37 It is widely predicted that costs of computers and telecommunications are likely to decrease in a deregulated environment. This should lead to an increasing number of people acquiring and using computers in their own homes and increase their acceptability.

7.38 Health consumers are becoming increasingly active in conducting their own research via the Internet in order to become better informed about medical conditions. While it is possible that they may acquire some useful information, ultimately it will be the doctor who will assess an individual's condition.

7.39 On the broader question of consumer participation in the decision making and policy formulation process, the Report proposes an intersectoral approach to future developments in health information management.[44]

Recommendation

7.40 The Committee recommends that the Department of Health and Family Services design and promote a national education campaign which stresses the necessity to verify the accuracy of health related information, obtained on the Internet, with a reliable source including their medical practitioner.

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44 See Chapter 10.

With broad guage equipment already ordered, the irritated Victorians asked London to veto the New South Wales' about-turn. But Earl Grey was in the process of giving the colonies more freedom to make their own mistakes...[1]

8 Protocols, Standards, Codes and Classifications

Introduction

8.1 Standards form the essential basis of modern production. Standards address measurements and units, sizes, safety, colours and cover the manufacture of goods and supply of services. They also address methods by which compliance with the standards can be checked.[2]

8.2 Standards are essential to "facilitate the sharing and exchange of information"[3] between the various levels of health. Electronic health records require standards to index and catalogue related information effectively for rapid retrieval and to ensure accessibility of uniform clinical data for research purposes. Without the benefit of standards, coding and classification systems, it is impossible to make useful comparisons of health status, health care, costs and outcomes between various treatment options, health agencies, regions or countries.[4]

Protocols

8.3 Protocols are a set of rules or guidelines which, are necessary to facilitate communication between levels of health care, such as, between the General Practitioner and hospital patient health provider. As protocols form the link to many diagnoses, cross-referencing between actual performance and agreed protocols becomes a valuable basis for quality assurance.[5] In order for the

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1 Danvers, Marie, Jay, Christopher and Affleck, Fred, *Across one Nation: Commemorating the Completion of Rail Guage Standardisation Across the Nation June 1995, National Rail Corporation Limited Australia*, Adelaide, South Australia, June 1995, p. 24.

2 Standards Australia, Further Information, paper entitled *Standards for Health Informatics and Telemedicine*, p. 1.

3 Hovenga, Evelyn, et al, op cit, Chapter 5, p. 41.

4 ibid.

5 The Australian National University, National Centre for Epidemiology and Population Health, *Health Information Issues in General Practice in Australia, NCEPH Discussion Paper Number 2*, Canberra, 1991, p.31.

various Telehealth and Health Informatics systems to work together, it is essential that agreed standards and protocols are established.[6]

8.4 A standard could emerge from a protocol if that protocol has been in constant use and has been recognised as a benchmark. The Health Level Seven (HL7) is an electronic data exchange application protocol in a health care environment. Its wide use and acceptability has seen it develop into an agreed standard in Australia.

Standards

8.5 A simple definition of a standard is a benchmark.[7] Standards Australia has provided the following definition:

> *A standard is a published document which sets out the minimum requirements necessary to ensure that a material, product, or method will do the job it is intended to do. Broadly, standards can be divided into five categories: dimensional standards; standards for quality and performance; standards which define test methods; standards for terms and symbols; and standards which establish codes of practice.*[8]

8.6 The preparation and maintenance of Australian standards occurs through a process of open consensus. This process ensures integrity and technical quality. There are 1589 technical committees[9] and each is responsible for one or more of the 5000 Australian standards currently published.[10]

8.7 The Australian standard undergoes seven stages of preparation. The first is a request from "an authoritative source, such as an industry body, government department or a private company".[11] The subsequent stages are: 'Evaluation of national needs and benefits'; 'Committee draft'; 'Draft for public comment'; 'Consideration of comment'; 'Draft for postal ballot'; 'The published standard'.[12]

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6 US Department of Commerce, *Telemedicine Report to Congress*, op cit, Evaluation Chapter, p. 8.

7 Hovenga, Evelyn, et al, op cit, Chapter 5, p. 41.

8 Standards Australia, Australian Standards, fact sheet, op cit.

9 Figure provided by Standards Australia from their 1996 Annual Report, p.24.

10 The information in this section came from Standards Australia, Australian Standards, fact sheet, op cit.

11 ibid.

12 ibid.

8.8 Most Australian standards are published by Standards Australia, an independent non-profit organisation. The primary role of Standards Australia is to prepare standards through an open, participatory and consultative process which operates on consensus. All interested parties are invited to participate.

8.9 As far as possible, the policy of Standards Australia is to align Australian standards with international standards. Where a relevant international standard exists, it will generally be adopted. This policy is in accordance with the requirements of the Commonwealth Government.[13] In 1991, Standards Australia formed a Health Informatics Committee (IT/14) which is responsible for taking a Health Informatics standard through the various processes until it is agreed upon by consensus.

8.10 The future development of Health Informatics will be greatly reduced if communication and user interface standards, data formats, terminology used and date interchange are not established.[14] Developments in global standardisation will enable technological applications from a variety of producers to "interchange information as though they were fully integrated."[15]

8.11 In order to realise this potential, logically integrated health information systems will be necessary to establish:

- *standardised definitions and concepts,*
- *uniform standards for electronic data transmission,* and
- *standard classifications for all items of interest...*[16]

8.12 A prerequisite to cost efficient and accurate data collection and storage is effective standards which guide conditions of data access, data usage and technically feasible electronic data exchange. This enhances retrieval of quality health information. Likewise, it is essential that information exchange provides a mutual understanding of the meaning of the data. Therefore a standard

13 ibid.

14 The Australian National University, National Centre for Epidemiology and Population Health, *Health Information Issues in General Practice in Australia,* op cit, p. 23.

15 ibid, p. 33.

16 Sub No 103, Subs Vol 1, p. 193.

language is needed.[17] It has been suggested that high quality health information:

> *can only be delivered when standards dealing with issues such as electronic compatibility, character encoding and message structuring are adhered to by the many different computer environments and software programs which may need to be connected to make for example one hospital network.*[18]

8.13 While that view is generally accepted, opinion differs as to when standards should be set and how their use should be formalised and monitored. Opinion is divided between those who support the position that standards should evolve and those who believe that there should be pre-developed standards.

8.14 The Department of Health and Family Services articulated the view of supporters for the evolving position in the following terms:

> *Choices for standards are difficult in a rapidly changing environment. Standards have to 'emerge' from usage, and suit the needs of all parties to be adopted, but there still need to be mechanisms for guiding agreement.*[19]

8.15 Supporters of that position also argue that:

> *...a standard produced too soon can inhibit innovation. Attempting to set standards for an ill understood and rapidly evolving technology can fail. Standards must enable common goals to be achieved, and yet establish an environment in which competition and innovation can flourish. Often an "industry standards" is a healthy precursor to a "national standard". All too often the cost and effort required to create and maintain standards is underestimated or ill understood.*[20]

8.16 Those who see chaos being the result of the lack of pre-developed standards argue that:

> *A very real obstacle for the development of clinical information systems is the lack of pre-developed standards...Standards, data definitions and data dictionaries should be developed now, not*

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17 Hovenga, Evelyn, et al, op cit, Chapter 5, p. 42.

18 ibid.

19 Department of Health and Family Services, Sub No 103, Subs Vol 1, p. 203.

20 Further Information, Department of General Practice, University of Adelaide, D C Walker, *Health Informatics in Australia*, p. 4.

> *after the development phase when there are already several fully integrated clinical information systems in operation and the development of uniform standards becomes impossible.*[21]

8.17 Although the AMA is supportive of the wide deployment of communications technologies and is represented on the Standards Australia Health Informatics Committee, which developed the HL7 standard, it is sceptical about the development of standardised medical information for a technological environment. In evidence, the AMA pointed out that some symptoms defy a code, for example, patients who complain of dizziness "could have a million sorts of diagnoses and you may never get a diagnosis,"[22] and in such situations, the coding system may not be helpful.[23] The representative from the AMA also observed that:

> *...as a general practitioner I do not know very much about standards such as HPL7 [sic] or the whole lot of them, and frankly I do not care. I have a need as a practitioner for the computer to do things. It is up to Standards Australia, the technologists and all the rest of them to work out how it does it. I do not care. I do not want to learn machine code. I do not want to learn about coding systems. I have no interest in them and hopefully I never will.*[24]

8.18 The Committee is keen to ensure that a number of competing "industry standards" which could fit the criterion of 'emerging from usage', become eligible as "national standards". The ensuing competition for the appropriate standard could result in considerable costs before an agreed upon national standard is selected in a particular area of health.

8.19 Until standards are set and used, it is likely that duplication will continue at the various levels of health care and inadequate and inappropriate treatment delivered, because health records are incomplete. As a witness from the Gold Coast Division of General Practice observed, GPs have been guilty in their lifetime of duplicating investigations, "which potentially would disappear if you had really efficient communication from different health care providers to each other."[25]

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21 The Mater Misericordiae Hospital, Brisbane, Sub No 63, Subs Vol 3, pp. 614-615.

22 Transcript of Evidence, p. 571.

23 ibid.

24 ibid.

25 Dr Hugh Nelson, Chair, information Technology Management Subcommittee, Gold Coast Division of General Practice, Queensland, Transcript of Evidence, p. 184.

8.20 The Department of Health and Family Services has pointed out:

> *If we are going to move clinical information from one point to another point [for example]...a patient moving through different service providers - then each of those points is going to have to understand exactly what that information means and use the same meanings, otherwise you are opening another danger of a person being treated as though something else has happened to them because the information went through in a form that was not understood at each level.*[26]

8.21 These comments by the Department are further evidence of the need for early action in the development of standards. Pre-developed standards, whether these are electronic communications standards or clinical codes and classifications should be developed and agreed upon to ensure consistency and common understanding of the terminology.

8.22 The Committee is aware of the competing interests and concerns which must be considered during the development of a standard. As mentioned earlier, the committees formed by Standards Australia include representative of the various interest groups who agree upon a standard by consensus.

8.23 However, costly, unproductive and lengthy negotiations should be avoided as these are likely to lead to entrenched positions being formed and standards failing to emerge. As a representative of Queensland Health pointed out:

> *With the trillions of dollars that are spent on information management in health throughout the world, we still do not have universally accepted health information systems anywhere. I can get six pathologists around the table who want six different pathology systems.*[27]

8.24 The problem with this approach is that with incompatible systems, information technology in health will fail to deliver what is widely accepted, namely improved national health care outcomes. The Committee supports the observation made by Standards Australia that a benefit of adhering to a standard is that whenever the need arises for changes to be made, these can be made in a unified way.[28]

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26 Transcript of Evidence, p. 11.

27 Transcript of Evidence, p. 143.

28 Standards Australia, Further Information, *Standards for Health Informatics and Telemedicine*, p. 2.

8.25 Standards are essential to the establishment of clinical computing systems and these must be based on national and international standards. The agreed upon HL7 electronic standard is one which meets this criterion.

Health Level Seven (HL7) Standard

8.26 The HL7 Standard is delivered in what is known as structured communication and has been defined as:

> *an Application Protocol for Electronic Data Exchange in Healthcare Environments, providing a universally accepted standard, and a standard method of exchanging certain key data in a multi-system healthcare environment.*[29]

8.27 The number 7 in Health Level Seven comes from the seventh layer of the Open Systems Interconnection Reference Model of the International Organisation for Standardisation. According to Standards Australia, HL7 is the only available international standard which is totally comprehensive for computer messaging between disparate computer systems within a hospital.[30] HL7 Versions 2.2 protocol was published in the USA in 1994, by the Health Level Seven organisation.

8.28 The Australian Standard AS4700.1 is a world first standard on how to implement HL7 Version 2.2 for every hospital. The IT/14 Health Informatics Committee unanimously agreed on this as the Australian Standard for implementing the HL7 version 2.2 protocol in Australian public and private hospitals. AS4700.1 sets the foundation for the building of most clinical messages between computer systems and was published in Australia on 5 March 1997 by Standards Australia and launched by the Minister for Health and Family Services, the Hon Dr Michael Wooldridge on 12 March 1997.

8.29 In all the other countries which have used HL7, each hospital has implemented it for their own specific use. Standards Australia noted in evidence that:

> *The benefits for Australia in defining it in a standard way, an agreed way, for every single hospital is that it will significantly reduce the cost of computer systems in our hospitals and*

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29 Creevey, A J, 'Health Level Seven (HL7) : A Healthcare Computing Standard', in Swinkels, W, Hovenga, E, Edgecumbe, J (Eds), HIC 95, Proceedings of the Third National Health Informatics Conference Adelaide, Australia 16th -17th October, 1995, *It's time for healthcare*, Melbourne, Australia, p. 227.

30 Transcript of Evidence, pp. 666-667.

> *significantly reduce the time that it takes to produce those computer systems.*[31]

8.30 The subsequent HL7 Version 2.3 protocol was published in the USA on 13 May 1997. This protocol replaced HL7 Version 2.2 and extends coverage outside the hospital system to the wider health care community. As a result, a number of working groups of the IT/14 Committee are developing specific standards for the Australian implementation of HL7 Version 2.3.

8.31 These draft standards all build upon the foundation established by the agreed upon AS 4700.1 standard. The draft Australian Standard for pathology messaging using HL7 will be released by Standards Australia for public comment in late 1997.

8.32 According to a news release issued by Standards Australia, HL7 has been widely welcomed by the health informatics community, as a time and cost effective measure which will lead to systems compatibility.[32] A representative of the Alfred Hospital and Caulfield General Medical Centre in Melbourne, observed that future products would be HL7 compatible and be able to interface with their various sites "subsequently saving enormous costs".[33]

8.33 Associate Professor Branko Cesnik at Monash University's Centre of Medical Informatics pointed out that: "We will be able to buy products that will be able to talk to each other, even though they will be from different companies".[34] A Hewlett-Packard representative stated that HL7 "is all about making the industry more efficient and giving customers better value for money".[35] On the other hand, one observer wrote that HL7 was not the "panacea for all application interfaces, however, it does provide an acceptable protocol standard to which many vendors adhere".[36]

8.34 The HL7 Standard was developed at the request of a number of State Government health departments, in particular New South Wales and South Australia.[37] As indicated earlier in this chapter, Standard Australia secures consensus across relevant stakeholders. All State and Territory Government

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31 Transcript of Evidence, p. 667.

32 Standards Australia, News Release, *Standards Australia revolutionizes Australian health services*.

33 ibid.

34 ibid.

35 Standards Australia, News Release, op cit, p. 3.

36 Creevey, A J, 'Health Level Seven (HL7) : A Healthcare Computing Standard', op cit, p. 228.

37 Department of Health and Family Services, Further Information, p. 1.

Health Departments, the Australian Health Care Association, the Australian Private Hospital Association, the Australian Health Insurance Commission, the Australian Medical Association and the various professional associations were involved in its development.[38]

8.35 As the Department of Health and Family observed, the HL7 standard "has wide acceptance across the Australian health industry, in particular within State government health agencies."[39] According to further information from the Department:

> *New South Wales has already stated that 'any clinical system procurement undertaken by NSW Health now has required compliance to the HL7 Standard as mandatory' and it is expected that other State health agencies will follow suit.*[40]

8.36 The Department made the point that the requirements by State and Territory health authorities to collect minimum health data sets under the National Health Information Agreement would be further encouragement to adopting the HL7 Australian Standard. The Department also indicated that at the six-monthly meeting of Government Health Information Technology Managers, the question of HL7 compliance will be raised and all States encouraged to comply. [41]

8.37 Despite the fact that the Australian Private Hospital Association was a member of the Standards Australia Committee which supported the development of the HL7 Standard for use under Australian conditions, Mr Chris Williams, the Chairman of the National Consultative Group for Private Healthcare Electronic Data Interchange stated in evidence that he is

> *not aware that HL7 as the North American standard or the adaptation to Australian conditions - that is, the recent standard released by the minister - is in common use within health facilities today.*[42]

8.38 Mr Williams further observed:

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38 The professional Associations include: Royal Australian College of General Practitioners, Royal Australian College of Obstetricians and Gynaecologists, Royal Australian College of Medical Administrators, Royal Australasian College of Physicians, Royal College of Nursing, Australia and the Royal College of Pathologists, Australia.

39 Department of Health and Family Services, Further Information, p. 2.

40 ibid, p. 1.

41 ibid, p. 2.

42 Transcript of Evidence, pp. 1120-1121.

> *Some organisations may be using HL7 - the North American version - to communicate between patient admission and discharge systems and, say, pathology, but they would be only a small number I would suggest. While the Australian standard has been released, it will take some time for software vendors and others responsible for software to incorporate that standard into their systems.*[43]

8.39 These observations are at variance to the commonly held view that HL7 is widely used and that it is highly desirable to introduce the standard on a national basis. In addition, the Committee was widely urged to recommend legal adherence to standards and sought advice from the Department of Health and Family services on this issue. According to the Department's initial advice, it is unclear whether it is constitutionally possible for the Commonwealth to enforce compliance on a national basis.[44]

8.40 HL7 has the potential for ordering and receiving radiology and pathology results, to transmit computer messages for ordering and dispensing drug prescriptions, patient billing and finances, and episode care summary reports detailing ongoing treatment.[45] In addition, HL7 has been mapped to the National Health Data Dictionary and is proceeding to reconcile differences.

8.41 The advantages of following a single standard include greater cost effectiveness, streamlined and improved communications. It will be possible therefore to have communications:

> *within hospitals; between hospitals and general practitioners; between general practitioners and pathology providers; between general practitioners and pharmacies; and all with the Health Insurance Commission.*[46]

8.42 A number of discipline specific standards have been used in certain areas of Telehealth. For example, most pathologists use what is known as the Pathology Information Transfer (PIT) standard to transmit Telepathology and the most commonly accepted digital image communication standards used for Teleradiology is the Digital Imaging and Communications in Medicine (DICOM-3). HL7 has the capabilities of translating both PIT and DICOM-3, therefore incorporating both into the one Standard.

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43 Transcript of Evidence, p. 1121.

44 Department of Health and Family Services, Further Information, p. 2.

45 Standards Australia, News Release, 12 March 1997, p. 2.

46 Standards Australia, Transcript of Evidence, p. 669.

8.43 Given the wide acceptance of HL7, particularly in the USA and Europe, the Committee supports the adoption of HL7 as a message transfer Standard. By ensuring that dissimilar information systems are wrapped up in one standard, such as HL7, different products will be able "to talk to each other".[47] The Committee, therefore urges Standards Australia to continue its process of consensus within the IT/14 Committee to ensure that subsequent versions of HL7 are agreed upon.

8.44 Because Standards Australia is not a government body, its standards are not legally binding, unless they are incorporated into Federal or State legislation. Currently about 2431[48] standards have become mandatory through such incorporation.

Recommendation

8.45 The Committee believes that uniform enforceable and accepted standards are essential to the effectiveness of Health Informatics. The Committee recognises the inter-sectoral consensus reached on the adoption of Australian Standard AS4700.1 - 1997: *Implementation of Health Level Seven (HL7) Version 2.2: Part 1: Admission, discharge and transfer* as a national messaging Standard for communication within Australian public and private hospitals.

The Committee therefore recommends the following options be explored in order to ensure that Health Level Seven is widely adopted within the health system as a uniform national standard:

(a) the introduction of Federal legislation to ensure the implementation within the Australian health system of Health Level Seven and its subsequent versions as a uniform Australian Standard. This is the preferred option.

(b) Alternatively, the simultaneous introduction of legislation by each State and Territory government, given their support for the Standard.

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47 Associate Professor Branko Cesnik, Transcript of Evidence, p. 825.

48 Figure provided by Standards Australia from their 1996 Annual Report, p. 24.

Coding and Classification Systems

8.46 The maintenance of uniformity and consistency of data labelling and health information stored in electronic form is reliant on coding. Of the many international and local coding systems which exist, some identify a nomenclature and some classify concepts.[49] A discussion paper issued by the NCEPH observes that: "The choice or development of appropriate health care coding systems is very complex and difficult. Centres world wide struggle with these tasks."[50]

8.47 A code has been described as "a shorthand for a concept. It accurately compresses the data for storage."[51] A classification "is merely a method of placing the codes in a sorted and meaningful manner."[52] It is generally held that free text is an unsatisfactory method of storing information, if it is intended to retrieve and collate data at a later point in time. Without codes, accessing information stored in free text by use of word search mechanisms is possible, but "the margin for error is great."[53]

8.48 By using word search, the computer is asked to search for every term the GP uses to describe a diagnosis. The search will miss words which have been misspelt and will miss abbreviations which have been entered in a hurry and perhaps forgotten. By employing word search mechanisms, the GP must be aware of all terms which have been used by other partners or locums, if analysis across the practice is required.[54]

8.49 In 1993, the RACGP held a workshop at which specific reasons were identified for coding data in medical records:

> *to provide an audit trail; practice audit; memory prompts; continuity of care; assisting other carers in the practice (for example, partners and locums); quality assurance; better record keeping; decision support and protocols; periodic and incidental*

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49 The Australian National University, National Centre for Epidemiology and Population Health, *Health Information Issues in General Practice in Australia*, op cit, p.17.

50 ibid.

51 Britt, Helena, Beaton, Neil, Miller, Graeme, 'General Practice Medical Records: Why Code? Why Classify?' Australian Family Physician Vol 24, No 4, April 1995, p. 612.

52 ibid, p. 614.

53 ibid, p. 612.

54 ibid.

> *health checks; checking for disease-medication interactions; dynamic structured patient records; cost savings.*[55]

8.50 Synonyms, acronyms and key words to describe concepts in a medical record are not precluded by the use of codes. Codes ensure uniformity for all practitioners, resulting "in greater consistency of data input and reliability of reporting."[56]

8.51 Codes can aid the selection of records of groups of patients and the linkage of events over time within a patient record. By using a single code to represent the disease or problem during a consultation, a GP can monitor all encounters for a particular patient at which a particular code was used. The use of a computer and encoded information to ascertain a patient's history is easier than a search through volumes of records, whether in paper form or on computer.

8.52 Coding may also impact on the style of the medical practice. Using codes will require the practitioner to be precise when selecting a term to describe a problem. Coding systems, like computerised records, require professionals to think in a new way about the way records should be kept. While some regard coding as useful only in the diagnostic area, coding systems are likely to include codes for a variety of information including details of drugs prescribed, therapeutic procedures, pathology results, family history and risk factors.

8.53 Codes also need to be classified, to enable sorting of encoded information in a meaningful manner. A good structure will lead to the management of data within a practice "in terms of groups of codes rather than just a specific individual code."[57] In General Practice an example of structure coding would be where D = digestive disease; D1 = digestive infection: D116 = specifically gastroenteritis. Therefore it is possible to select records at all these levels.

8.54 The International Classification of Diseases (ICD) clinical classification is a World Health Organisation publication and is the oldest and most widely recognised diagnostic classification available. The National Coding Centre

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55 ibid, pp. 612, 614.

56 ibid, p. 614.

57 ibid.

(NCC) at the University of Sydney,[58] since its establishment in 1994, has developed and promoted clinical coding standards for ICD-9-CM *(International Classification of Diseases - 9th revision - Clinical Modification).* The *Australian Coding Standards* form Volume 4 of the 2nd edition. Coding alterations are published annually in the *Official NCC Addendum.*[59] In developing its classifications, the NCC has adhered to the *National Health Data Dictionary* definitions, which are published under the auspices of the Australian Institute of Health and Welfare.[60]

8.55 In the Submission from the NCC, it was observed that coding standards and new codes are developed by the Centre "in consultation with clinicians and expert coders".[61] The modified version of ICD-10, "accompanied by an Australian MBS-based procedure classification"[62] is planned for release in July 1998.[63]

8.56 The Read Codes are a comprehensive nomenclature of medical terms. These are derived from international classifications such as the ICD 9. The Read Codes were devised in the United Kingdom by a General Practitioner, James Read, who started with a list of terms he used in his practice. The Read Clinical Codes are updated every three months in response to requests from GPs for additions of specific terms.[64] Read Clinical Codes have been mapped to both ICD-9 and to International Classification of Primary Care (ICPC).[65]

8.57 Another system, known as Systematised Nomenclature of Medicine (SNOMED), is an internationally designed classification which is based on pathology. It is designed on a combination of pathophysiology, histopathology and anatomical sites. The SNOMED model allows the development of highly specific codes useful in pathology and its level of specificity allows it to go

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58 The National Coding Centre, University of Sydney, is an independent body, which was funded by the Casemix Development Programme, Department of Health and Family Services.

59 Sub No 20, Subs Vol 2, p. 261.

60 Transcript of Evidence, p.637.

61 Sub No 20, Subs Vol 2, p. 261.

62 ibid, p. 262.

63 ibid.

64 Britt, Helena, 'Which Code? Which Classification?' *Informatics in Healthcare Australia,* September/October 1996, Volume 5, No. 4, p. 141.

65 Britt, Helena, Beaton, Neil, Miller, Graeme, 'General Practice Medical Records: Why Code? Why Classify'? op cit, p. 615.

beyond the level of primary care. In addition, the system "allows you to 'build' nonsensical constructs such as 'broken heart', fractured eye'."[66]

8.58 There are variety of other international systems in addition to a number developed in Australia. Systems which have been specifically designed in Australia are not internationally based. The Committee received a Submission about the Docle system, which is "the two strands of biology and medicine together..."[67]

8.59 The NCC warned in its Submission that problems of incompatibility will arise as new coding classification systems emerge.[68] The NCC also observed that classification systems are being developed or established for a range of health service providers. These include ambulatory care, outpatient and General Practice services:

> *If such systems are implemented in isolation from others and established as standards within certain fields, the exchange of health data will be impeded, if not impossible.*[69]

8.60 In reply to a question regarding the development of coding systems for a variety of health episodes, a representative of the NCC observed that the longitudinal approach should be emphasised.[70] The NCC is of the view that ICPC and ICD-9 or ICD-10 should combine in a "sort of umbrella ANDRG[71] that covers episodes of illness."[72]

8.61 The ICPC classification is an international classification developed by the World Organisation of Family Doctors. The Family Medicine Research Unit (FMRU) at the University of Sydney is represented on the Classification Committee of the World Organisation of Family Doctors by its two principals. The FMRU is also the distributor of ICPC for Australia and the South East Asia/Pacific region.[73]

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66 Britt, Helena, 'Which Code? Which Classification?' *Informatics in Healthcare Australia,* op cit, p. 143.

67 Sub No 3, Subs Vol 4, p. 793.

68 Sub No 20, subs Vol 2, p. 262.

69 Sub No 20, subs Vol 2, pp. 262-263.

70 Transcript of Evidence, p. 642.

71 ICD-9 is used as a base for ANDRG (Australian National Diagnosis Related Groups). ANDRG has been used for Casemix based funding for hospital in-patient care. See Transcript of Evidence, p. 641. and Hovenga, E, et al, op cit, Chapter 27.

72 Transcript of Evidence, p. 642.

73 FMRU Sub No 64, Subs Vol 2, p. 369.

8.62 ICPC was originally designed for paper based records in General Practice and provided a code for a medical concept. According to the FMRU the ICPC was far too broad for computerised medical records and ICD-9-CM or ICD-10-AM "are no good because they are much too detailed."[74] The FMRU also suggested that the ICD classification is "hospital based, death based, diseased based."[75] A witnesses for the FMRU also argued that:

> *There are a lot of issues in primary care and community health that have nothing to do with physical illness, social, or psychological problems.*[76]

8.63 The ICPC with the PLUS[77] extension is an Australian expansion. In evidence, the FMRU stated that the ICPC was not detailed enough, it was therefore expanded for computerisation.[78] Under Federal funding, the Unit has now completed mapping ICPC PLUS to the hospital system so that it is now able to communicate between ICD-9 CM or ICD-10 AM and those using the ICPC in the health community. ICPC PLUS is also being tested in a number of computerised medical record systems around Australia, in community health, including the Royal Flying Doctor Service, Aboriginal health and in some State health agencies, including Western Australia, Victoria and the Northern Territory.[79]

8.64 Accurate medical histories are essential for the health care of individual patients and for secondary purposes such as in research, State and national planning and for international comparisons. The Committee supports the view that in order to meet these competing interests, one universal coding system is essential. In situations where the chosen classification does not meet all needs, multiple systems can be used through a 'mapping' process, as described earlier. Under this process, a determination is made about the relationship between individual codes in each of the systems. Therefore, it is possible to place together a group of codes, or multiple individual codes from a variety of sections, in one system. [80]

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74 Transcript of Evidence, p. 676

75 ibid.

76 ibid.

77 The Australian version of the ICPC classification is referred to as ICPC PLUS.

78 Transcript of Evidence, 676.

79 ibid.

80 The information on Codes and Classifications has been obtained from Britt, Helena, Beaton, Neil, Miller, Graeme, 'General Practice Medical Records: Why Code? Why Classify?' op cit, pp. 612-615

8.65 The NCC has called for national implementation of standards for the coding of clinical information using compatible classifications to ensure the adequate planning for the future of health information interchange within Australia.[81] The Committee agrees that it is essential to ensure compatibility and supports the argument for uniform national standards for message transfers, as well as coding and classification systems. In addition, if Australia is to become a player internationally, it is more appropriate that it adopts internationally based standards on which it can build.

Software Industry

8.66 The Docle classification system mentioned earlier is marketed solely by Medical Director. According to Medical Director, its package has an "80 to 90 per cent share of the clinical software market because it is simple to learn, easy to use and contains features of real practical benefit to doctors...[82] According to the Submission from Medical Director, over 2,500 copies of the program have been "supplied on request."[83] The Medical Director program is supplied to GPs free of charge, but the practice is charged $150.00 per annum for quarterly updates of drug information.[84]

8.67 The Medical Software Industry Association, (MSIA)[85], of which Medical Director is a corporate member, also gave evidence to the Inquiry. The Association was concerned about perceived inaction regarding the choice of a code and classification system, without nominating one. In its Submission, MSIA was critical of the continuing arguments about the relative merits of the various coding systems and believes that a great deal of the argumentation "is based on semantics";[86]

> *It is time to bite the bullet and choose one of the better systems, even if arbitrarily. This will enable Australian developers to*

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81 Sub No 20, Subs Vol 2, pp. 262-263.

82 Transcript of Evidence, p. 691.

83 Sub No 98, Subs Vol 2, p. 506.

84 ibid, p. 508.

85 MSIA was formed in January 1994 and "established to represent the interests of the Australian-based commercial developers and suppliers of computer software, informatics services and telematics services to the medical sector." Sub No 77, p. 943. Corporate members include: Advanced Computer Software Supplies; AMFAC Medrecord; Clinical Reporting Systems; Genisyst; JAM Software; Locum Software; Medipak Australia; Medical Director; Medical Windows Australia; Mediflex; MIMs Script; Mita Computer Systems; Practice Innovators; Rx Healthcare Systems; Synapse Medical Systems. See further details in MSIA Sub No 77, Subs Vol 4.

86 Sub No 77, Subs Vol 4, p. 951.

> *produce clever, useable and exportable interfaces and will also enable further enhancement of the chosen coding system.*[87]

8.68 In evidence, one of the representatives of the MSIA noted that his preferred choice for General Practice is the ICPC PLUS as developed by the FMRU.[88] The witness also observed that in order to provide that system, a 'one-up' fee of $150 is paid to the World Organisation of Family Doctors and an additional fee $150 a year to the FMRU "for every single user of the system."[89] Therefore, in the first year the cost is $300 per doctor and then $150 per doctor each year thereafter.[90]

8.69 In the case of the ICD hospital system, the fee amounts to $250, which is paid once. According to the MSIA, the lower price reflects the fact that the NRC which develops this classification has received Federal funding to develop the ICD-9 system.[91] The MSIA made the point that the ICPC PLUS which is "the coding system that the majority of us would like to see get up in general practice,"[92] receives no funding from the Commonwealth Government.[93]

8.70 The MSIA made the further observation that many of the codes which have been developed are "very expensive".[94] As a result, they are unattractive to manufacturers, particularly as they have not been mapped and cannot all be used in the same program.[95] The MSIA stated that in the USA, a substantial universal medical language study was developed with the aim of mapping one code to the other so that when one code is being used it is possible for the meaning of the other to be known.[96]

8.71 The Committee accepts the concerns raised by the MSIA on behalf of its members. The Committee is also aware that the lack of a national strategic approach has left many players, including the software industry, without clear

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87 ibid.

88 Transcript of Evidence, p. 976.

89 ibid.

90 ibid.

91 ibid.

92 ibid.

93 ibid.

94 Transcript of Evidence, p. 978.

95 Dr Zahra-Newman, ibid.

96 Transcript of Evidence, pp. 978-979.

directions. However, the development of agreed codes and standards by the various players in the system requires long term investment in both financial and human resources.

Choice of Coding and Classification Systems

8.72 The Department of Health and Family Services in its Submission observed that the ICD classification does not provide sufficient detail for a comprehensive medical record system. The Department noted that there is a widespread view that Australia needs a clinical coding system which is suitable at all levels in the health system, but states that "Such a system is not yet available anywhere in the world..."[97]

8.73 In its Submission, the Department pointed out that there is some work being undertaken in the United Kingdom to develop the Read Codes beyond General Practice, for which it was developed. Similarly in the United States, the SNOMED coding system, an American pathology code, is currently being expanded to support clinical records in all areas of health care.[98]

8.74 According to the Department, if Australia decided to develop its own system, it will be necessary:

> *to create a mechanism for building and maintaining it. Alternatively, we could wait for international developments to lead to a system considered suitable for importing. New Zealand has already opted for a national license of the Read Clinical Codes developed for the National Health Service in the UK, as has the Australian Defence Force. Even this course would probably require a national centre or other mechanism for maintaining an Australian version.*[99]

8.75 The development of the universal coding system is unlikely in the foreseeable future.[100] At a conference in Washington in 1995, the question of developing international standards for coding in primary care was discussed. The decision was taken that it could not be done at the present time but that there should be moves in that direction so that mapping information from one coding system to another could converge.[101] It is not possible, according to

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97 Sub No 103, Subs Vol 1, p. 205.

98 ibid.

99 ibid.

100 Professor Michael Kidd, Transcript of Evidence, p. 606.

101 ibid.

Professor Kidd, to predict when a universal coding system is likely to emerge.[102]

8.76 A witness for the Australian Medicines Handbook also spoke in favour of the mapping concept. He suggested that "it is difficult, if not impossible"[103] for the many stakeholders involved to agree on a single definition which has universal acceptance. It is open to question whether a particular standard or coding system for particular concepts, terms or definitions should be developed.[104] Therefore, it is more important to develop a map which brings all these strands together, regardless of terminology or definition in use.[105]

8.77 The witness further observed that the Australian Medicines Handbook is not developing its own terms, but deriving definitions for concepts and terms from standard sources.[106] The Australian Medicines Handbook Submission also observes that its database has made "significant progress" in developing a standard structure into which all terminologies could be incorporated and would facilitate linking of applications and systems by developers:

> *This could include linking classifications systems such as the 'Read' codes, SNOMED, ICPC and the UMLS vocabularies.*[107]

8.78 The Australian Medicines Handbook is a Commonwealth funded, national, non-profit project between the Australasian Society of Clinical and Experimental Pharmacologists and Toxicologists, the RACGP and the Pharmaceutical Society of Australia. Its objective is to "enhance quality use of medicines by promoting rational, safe and economic drug use."[108]

8.79 While a number of countries are developing structured messages, including the European Standards Organisation, according to one witness, a "slowdown" is evident with that Organisation. According to Dr Roderick Neame,[109] that is:

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102 ibid.

103 Transcript of Evidence, p. 369.

104 ibid.

105 ibid.

106 Transcript of Evidence, pp. 369-370.

107 Sub No 78, Subs Vol 3, pp. 751-752.

108 Australian Medicines Handbook, Further Information.

109 Dr Roderick Neame, who appeared as a witness to the Inquiry, is a visiting health information consultant from the United Kingdom and previous Chairman of Standards Australia's IT-14 Committee.

> *because the need for less structured messages is becoming very clear, as a result of the need for horizontal communication versus vertical communication.*[110]

8.80 Dr Neame explained that there is a need for less structured message development and a move to the development of a framework within which natural language can be placed.[111] The hypertext markup language, which is the language used on the Internet, is an example of a less structured message.[112]

8.81 Dr Reginald Crampton, from the AMA, in discussing coding systems observed that "In general practice the coding system that we primarily use is called English".[113] Dr Neame suggested that:

> *Maybe that is the best way of dealing with it. At the clinician level, they do not want codes. Clinicians want to exchange words with each other. Codes do not mean anything; they have to find a table to look them up.*[114]

8.82 In the meantime, Australia has not decided which codes and classifications it should adopt despite funds amounting to $1.9m being provided to the NCC to develop its ICD-9CM and the next version ICD-10. Moreover, the comments from the Department of Health and Family Services seem to indicate that it is not supporting the work being undertaken by the NCC, which is scheduled for completion in mid 1998.

8.83 The Committee is disappointed with the Department's comments about the general development of codes and classifications which were presented as a problem rather than a solution. The Committee notes that the New Zealand and the Australian Defence Force have already opted for the national license of the UK Read Clinical Codes.

8.84 The Committee is disturbed that with the considerable resources available to it, the Department was unable to provide a comparative assessment of costs between buying and maintaining another country's system and developing one in Australia.

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110 Dr Roderick Neame, Transcript of Evidence, p. 749.

111 ibid.

112 ibid.

113 Transcript of Evidence, p. 569.

114 Transcript of Evidence, p. l749.

8.85 The Committee was further dismayed that this inaction has prevented Australian software manufacturers from proceeding to develop and supply systems within the health sector. Given the importance of determining which codes and classifications should be adopted for the Australian health sector, the Committee believes the National Office for the Information Economy should appropriately undertake a feasibility study of the various systems and make appropriate recommendations to the Minister.

Recommendation

8.86 The Committee considers it essential to maintain uniformity and consistency of data labelling of health information stored on Health Informatics systems. Hesitancy in the choice of a code and classification system is delaying the Australian software industry's ability to develop and produce appropriate interfaces for domestic use. The Committee recommends, therefore, that the National Office for the Information Economy should examine the following options:

(a) the purchase from the United Kingdom of a national license for the Read Clinical Codes;

(b) the purchase of the United States SNOMED (Systematised Nomenclature of Medicine);

(c) the continuation by Australia of its adaptation of the ICD (International Classification of Diseases) clinical code classification and the ICPC (International Classification of Primary Care) General Practice classification, mapped to produce one umbrella system; or

(d) whether Australia should be involved in developing a framework which uses English, in hypertext markup, such as that being developed by the European Standards Organisation.

8.87 The Committee further recommends that a completed report be presented to Parliament within three months of the tabling of this Report.

With increasing universality or globalisation of communication, it is conceivable that within the foreseeable future a medical school in Indonesia *will access the same curricular material as schools in Australia, the United States or the United Kingdom.*[1]

9 Australia's Export Potential

Introduction

9.1 Due to a number of factors which have occurred in recent years, managing health systems has become a major concern within the international community. These include the break-up of the Soviet Union and the exploration of health financing structures within a market economy of a large number of nations who have reestablished their sovereignty. In addition, the growth in a number of Asian economies and the emergence of an educated, prosperous and sophisticated middle class has led to a demand for western style medicine and for access to health care as an individual right.

9.2 These developments reflect a growing interest in health system management, which has been supported by the various international funding agencies, such as the World Bank and the Asia Development Bank. At one stage, these agencies viewed the health issues of developing nations in basic terms, such as access to clean water, establishment of public health measures, vaccination programmes, education and provision of medicines. While continuing to acknowledge the validity of these traditional concerns, international financing institutions are now taking a more structured approach to the management of health systems, including health financing options.

9.3 Increasingly, health information technology is being acknowledged by most OECD countries to be a fundamental health infrastructure issue. It is, therefore, very likely that as emerging economies begin to develop their health infrastructure for the first time, they will wish to take advantage of the available expertise. International banking agencies are likely to aid this process.[2]

9.4 The likelihood of Australia being a key player in these events was widely discussed during the Inquiry. Frequent reference was made to Australia's high

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1 This quote was attributed in *The Australian*, 'Computers News Features', 17 September 1996, to Professor Malcolm Mackinnon, Professor of Telemedicine, Flinders University of South Australia.

2 This information was derived from the HIC Sub No 91, Subs Vol 1, p. 171.

level of medical expertise and its significant potential for regional and international trade in services. However, standards must be harmonised, medico legal issues addressed and privacy and confidentiality questions resolved, before Australia, or any other member of the international community, is able to become a successful player in the international market place.

Trade with Asia and the Pacific

9.5 It was widely acknowledged that Australia's medical knowledge and expertise has the significant potential to provide a niche market in health education by way of teleconference links with universities and teaching hospitals with countries in Asia. It was stressed, however, that Australia could not be considered a leader in the field of Telehealth and Health Informatics because these processes have not yet been sufficiently developed domestically.

9.6 The University of South Australia observed in its Submission that before Australia is able to promote, market and sell overseas, a thorough evaluation is essential and should be carried out in the context of internationally accepted standards. Likewise, systems have to be operational and proven in the working environment for a relevant length of time.[3]

> *The best champions for the marketing and sale of Australian healthcare systems undoubtedly will be healthcare professionals themselves, rather than the computer and IT commercial sector that has developed them.*[4]

9.7 With regard to technological systems, Professor Robert Helme, Director of the National Ageing Research Institute, suggested that it is extremely complex and difficult for health care professionals on their own to develop a product to market in an Asian country.[5]

> *In fact, we cannot even find a product for our own area from the US that is essentially applicable to what we do. So to try and do it for another culture, another language, another health care system is extraordinarily difficult.*[6]

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3 Sub No 121, Transcript of Evidence, p. 264.

4 ibid.

5 Transcript of Evidence, p. 803.

6 ibid.

9.8 Dr John Youngman, a representative of Queensland Health, agreed that a great deal of work needs to be done domestically if we are aiming to impress markets internationally.

> *There is no point in exporting lemons - our credibility as an exporter will not be enhanced: I think we have a lot of work to do between the states in conjunction with the Commonwealth to get our act more consistent, given the fact that we are a country of only 18 million people.*[7]

9.9 The Medical Communications Associates referred to the improbability of Australia becoming either a regional or an international leader in health computer software if it does not choose niche applications and develop a broad base of excellence locally.[8] Dr Peter Schloeffel, its Director, made the observation that the issue is one of marketing. His company's strategy is to align with multinational organisations which already have the electronic infrastructure in health care overseas. In his company's case, they have developed networks with IBM.[9]

9.10 Suggestions regarding the creation of niche markets related also to areas of medical knowledge and health education, where it is generally held that Australia has a comparative advantage. This advantage could be lost to Europe and the USA, unless a greater sense of national strategic planning informs our approach to the development of links with Asia.[10] According to Dr Tony Moore, Director, Medical Teleconferencing, this is of specific interest to the Malaysian Government, which is keen to develop teleconferencing links with Australian universities.[11]

9.11 Mr John Mitchell[12], advocated the approach being pursued by the Queen Elizabeth Hospital, which is to conduct trials with one hospital, to be increased later to a three hospital trial, with one of the countries in Asia. Mr Mitchell believes this approach is likely to be more rewarding in the long term.[13]

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7 Transcript of Evidence, p. 145.

8 Medical Communications Associates Pty Ltd, South Australia, Sub No 2, Subs Vol 3, p. 678.

9 Transcript of Evidence, p. 420.

10 See comments made by Professor Malcolm Mackinnon, Transcript of Evidence, pp. 401-404.

11 Transcript of Evidence, p. 426.

12 Mr John Mitchell was the Manager for the Renal Dialysis project at Queen Elizabeth Hospital.

13 Transcript of Evidence, p. 318.

9.12 Exporting educational expertise was also supported by Professor Yellowlees who said that:

> *At a professional training level, the medical specialist training is of an extremely high standard in Australia, as is the case for both general practice and general medical training. The same applies to non medical areas. This means that we have a very large pool of education expertise in the health area.*[14]

9.13 There have been suggestions that Australia's expertise in provincial and rural health could make it a regional leader. The Australian Association of Provincial Radiologists observed that this is particularly so in Teleradiology, where Australia has available a high level skills base.[15]

9.14 Dr John Nelson, representing Benson Radiology, agreed that radiology was an area where Australian expertise could be marketed. Although Teleradiology has not emerged as the major focus to date, there is an apparent need for expertise in radiology in Asian countries.[16] Teleradiology could become a potential export growth area for Australia, but Australia's proximity to Asia does not guarantee an advantage over the United States and Europe, because Teleradiology can be practised from anywhere in the world. According to Dr Nelson:

> *I think if we are going to do it, or want to get into that market, we should be looking at it sooner rather than later while there is a perception that physical proximity is helpful. I think there is export potential there, for sure.*[17]

9.15 Another potential area for export is the clinical management of adult and paediatric sleep disorders. In a Submission by Dr Ronald Grunstein, he indicated that in the sleep area, Sydney University and an equipment manufacturer were attempting a Telehealth link between Sydney and Shandong Province in China. In the initial stage, the manufacturers will meet costs. However, long-term funding for the Telehealth link is uncertain,[18] and with the

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14 Sub No 110, Transcript of Evidence, p. 113. See also South Australian Government Submission No 123, Transcript of Evidence, p. 250, Sub No 121, University of South Australia, Transcript of Evidence, p.259, Evidence by Mr John Mitchell, Transcript of Evidence, p. 318.

15 Sub No 44, Subs Vol 3, p. 608

16 Transcript of Evidence, p. 367.

17 ibid.

18 Sub No 69 Subs Vol 2, p. 420.

exception of international goodwill, Dr Grunstein questioned the tangible benefits of developing Telehealth services with third world countries.[19]

9.16 Professor Malcolm Mackinnon, first Chair of Telemedicine at Flinders University in South Australia, questioned the viability of Australia competing in a globalised Telehealth environment. Professor Mackinnon observed that, over the next five years, the globalisation of Telehealth will be apparent and that a company called World Care is in the process of setting up a hub spoke Telehealth worldwide network. World Care is considering establishing the Asian hub in Singapore rather than in Australia and it is in these global networks that Australia should seek involvement.[20]

9.17 Professor Mackinnon also warned that Australia was behind some Asian countries in the development of information infrastructure:

> *If one visits Malaysia or Singapore, for instance, and looks at what is happening in those countries, I think that we are probably behind. I think it is unrealistic to expect that the Malaysians and the Singaporeans are going to come to us and ask us to help them. There is a level of sophistication in those societies that we do not actually meet.*[21]

9.18 These views were also shared by Mr Keith Anthonisz, a consultant for Technology and Innovation Management, who believes that Singapore and Malaysia, in particular, are taking the lead in the Asia-Pacific Region. For example, the Malaysian government together with industry, is developing a multimedia supercorridor.[22] Mr Andrew Davis, from the South Australian Health Commission, agrees that South-East Asia and East Asia will adopt information technology, particularly in hospital practice, much faster than Australia:

> *I think they will probably leapfrog a lot of the mistakes that we have made and go straight on to the next one. We want to be around to see what they do so that we can pick up from the experience as well.*[23]

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19 Sub No 69 Subs Vol 2, p. 420.

20 Transcript of Evidence, p. 401.

21 Transcript of Evidence, p. 404.

22 Transcript of Evidence, p. 1049.

23 Transcript of Evidence, p. 286.

9.19 Mr Davis indicated that while Australia may be lagging in some areas, in Telepsychiatry and Telerenal medicine "Australia is probably the world's leader".[24] Mr Davis also said that while he observed extensive interest in Telehealth in South-East Asia during his visits there, he did not think the interest was related to any income generation "and I do not think for us it is ever going to be a great income generation source."[25]

9.20 Dr Disney expressed similar views and noted that despite American enthusiasm, particularly from the Mayo Clinic,[26] there has been little penetration into the Asian market. Dr Disney suggested that developing Telehealth links with Asia needs to be worked on "very carefully."[27]

9.21 Becoming known in international forums assists in the development of links, according to Professor Kidd. Australia, for example, is recognised through the Primary Care Group of the International Medical Informatics Association (IMIA) and the Informatics Working Party of the World Organisation of Family Doctors (WONCA). Australia has traditionally worked at establishing international links through membership on international forums and the Committee sees value in the continuation of this trend.

9.22 While Australia is able to build on its participation with experts in the international arena, trade links should be pursued more strategically. Such an approach is being adopted by the Victorian Government through a Multimedia project with Malaysia. According to one witness, the Malaysia project of Multimedia Victoria is attempting to create linkages with the Malaysian Government, in order to facilitate participation by Victorian firms in the Malaysian markets.[28]

> *Essentially, it is an exercise whereby we identify and create strategic linkages between the Victorian and Malaysian private sectors, to deliver products and services into Malaysia. We hope also that this exercise will encourage Malaysian investment, in due course, in the Victorian multimedia industry. There is a recognition by Malaysian firms and the Malaysian government that countries such as Australia have a lot of potential to*

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24 Transcript of Evidence, p. 272. See also Dr Fiona Hawker, Transcript of Evidence, p. 338.

25 Transcript of Evidence, p. 286.

26 Transcript of Evidence, p. 307.

27 Transcript of Evidence, p. 302.

28 Ms Sue Peng Yau, Adviser Malaysia Project, Multimedia Victoria, Department of State Development, Transcript of Evidence, p. 960.

> *contribute in ideas and concepts in the area of multimedia technology.*[29]

9.23 The Committee believes that Australia has the potential to play a very important role in the developing economies of Asia by creating educational links between Australian universities and teaching hospitals and similar institutions in the country concerned. Being in a similar time zone, Australia has a greater opportunity to develop these links with Asian countries than countries in Europe and North America.

9.24 For the many students and scholars who come to Australian universities to study and extend their education in the area of health, a continuing relationship can be maintained through telecommunications links. This will enhance the relationship between Australia and prospective health professionals in the Asia-Pacific region and potentially facilitate the development of future links in teleconsultations. The Committee further believes that the benefits would be mutual, as health professionals are learning about the variety of cultures which exist in the region.

9.25 Australian universities are urged to continue developing teleconferencing links in the area of health education. Australia has developed an excellent reputation in the Asia/Pacific Region for its education programmes, particularly in health, and the Committee believes that these links should be extended.

9.26 In addition, the Committee believes that Standards Australia is able to develop a niche market for its standards which have emerged from those internationally recognised in the health sector. The AS4700. *1 - 1997 Implementation of Health Level Seven (HL7) Version 2.2* which has been promoted as a world first by Standards Australia should be exported world-wide. The Committee urges Standards Australia to proceed to market this Standard internationally.

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29 Ms Sue Peng Yau, Adviser Malaysia Project, Multimedia Victoria, Department of State Development, Transcript of Evidence, p. 960.

Recommendation

9.27 The Committee believes there is real potential for Australia to build on its reputation of excellence in education, particularly in health, in the Asia/Pacific Region. The similar time zone Australia shares with its neighbours provides an advantage over countries in Europe and North America. The Committee therefore recommends that the National Office for the Information Economy develop a program in consultation with the universities and teaching hospitals to stimulate the export of health education to countries in the Asia/Pacific Region.

G7 Projects

9.28 In its Submission, the Department of Health and Family Services referred to the significant benefits to Australia from participation in G7 projects. Australia's participation in the G7 environment facilitates the exchange of information and experience with the G7 Healthcare project coordinators and promotes Australia's capabilities in Telehealth and Health Informatics.[30]

9.29 In late 1995, Australia was received as a participant in two G7 projects, namely, the Global Healthcare Applications project and the Government Online project. The Department of Health and Family Services claims that it collaborated with relevant government departments and Australian industry "and recognised centres of excellence" for expressions of interest in the G7 initiatives.[31] The Submission also emphasised that Australia's participation could lead to opportunities for Australia to compete for "partial funding" through the G7 process for one or more nominated projects.[32]

9.30 The Department advocates that through Australia's participation in the G7 process, it is able to showcase what Australian can do:

> *...because they are allowing us to take a very high level of medical expertise, which is something which this country has got, and move it long distances and use it.*[33]

9.31 A representative of the Department of Communications and the Arts explained that Australia has had to lobby for acceptance in that forum because

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30 Sub No 103, Subs Vol 1, p. 235.

31 ibid, p. 234.

32 ibid, p.235.

33 Transcript of Evidence, p.14.

it is not a G7 partner.[34] The Committee accepts that by participating in a range of international forums, particularly the G7, Australia is able to raise its international profile if its projects are endorsed. The Committee also agrees with Standards Australia's view that the G7 projects provide an appropriate way of evaluating standards.[35]

International Privacy

9.32 The Submission from the Privacy Commission referred to the examination of privacy protection of personal health information by a number of countries and international organisations. Some have been considering the specific issue of protecting the privacy of health information "in the context of developments in information and communications technology."[36] The Privacy Commission Submission also indicated that a number of countries have specifically referred to categories of sensitive data "to which more stringent rules apply than to other types of personal information".[37] Medical data is included under the category of sensitive.[38]

9.33 New Zealand has enacted a Privacy Act which regulates both the public and the private sector and sets down a number of Privacy Principles, similar to those contained in the Federal Privacy Legislation Act.[39] Also, the United Kingdom has a Data Protection Act which applies to computerised records held in both the public and private sectors and the Access to Health Records Act, which allows individuals the right of access to their own health records, whether that record is held in a computerised or paper form.[40]

9.34 The Council of Europe has in place a Convention for the Protection of Individuals with regard to Automatic Processing of Personal Data. The protection of sensitive information, including medical information, is specified under Article 6 of the Convention.[41] The European Union Directive, which

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34 Transcript of Evidence, p. 31.

35 Transcript of Evidence, p. 670.

36 Sub No 118, Transcript of Evidence, 493.

37 ibid.

38 ibid.

39 Sub No 118, Transcript of Evidence, 517.

40 ibid, p. 516.

41 ibid, p. 518.

was adopted in 1995, deals with personal data generally but sets stricter safeguards for sensitive data which includes health data.[42]

9.35 On the other hand, the United States of America has not developed a comprehensive national law for privacy protection of medical information.[43] Like Australia, the United States has varying legislation across State and Federal levels.[44]

9.36 In the 1995 *In Confidence* Report by the House of Representatives Standing Committee on Legal and Constitutional Affairs, the Single Market Commissioner, Mario Monti, is quoted as saying that the European Union Directive provides major advantages for business:

> *...particularly as it constitutes an essential element for the free flow of services in the Information Society by fostering consumer confidence. And besides the development of these new markets, business competitiveness stands to gain considerably from the efficiency gains made possible by the application of these services.*[45]

9.37 The *In Confidence Report* further stated that the significance of the information superhighway was specifically considered by the European Union in developing the Directive. Difficulties associated with separate protection regimes was discussed by the European Union and this impacts on all countries, including Australia, seeking to pursue markets with countries in the Union:

> *If each Member State had its own set of rules on data protection, for example on how data subjects could verify the information held on them, cross-border provision of services, notably over the information superhighways, would be virtually impossible and this extremely valuable new market opportunity would be lost.*[46]

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42 ibid.

43 Sub No 118, Transcript of Evidence, p. 515.

44 ibid.

45 Delegation of the European Commission to Australia and New Zealand, *Council adopts common position on protection of personal data directive, 21 February 1995,* cited in Parliament of the Commonwealth of Australia, House of Representative Standing Committee on Legal and Constitutional Affairs, *In Confidence,* A report of the inquiry into the protection of confidential personal and commercial information held by the Commonwealth, p. 164.

46 ibid.

9.38 The Australian acting Privacy Commissioner advised that the European Community has produced a new set of standards which all European countries will need to adopt by 1998.[47] It was also observed that most non-European countries are also using these as a benchmark.[48]

9.39 The previous Privacy Commissioner, Mr Kevin O'Connor, made the point that there has been an "explosion" in demand for secondary use of health data and information.

> *The existence of superhighways and networks leads to, for example, researchers, epidemiologists, government planners, health insurers, police investigators, debt collectors all airing public interest claims for being allowed to access or make use of the information held in the system, sometimes only in aggregate form, sometimes in personally identified form and sometimes in ways that involve both aggregate and personally-identified uses.*[49]

9.40 On 17 April 1997, the ABC Lateline program discussed the question of the strict controls passed by Europe on the use of information. It was noted that the European Union had issued an ultimatum to all countries, including Australia, prohibiting trade, if they do not have in place strong privacy laws.[50]

9.41 Some commentators on the program observed that the European Union has consistent and high standard protection of personal data and that this is representing a threat to Australian business.[51] Likewise, countries wishing to trade in Europe's common market must first show they can protect personal data and demonstrate that they can be trusted with the vast information flow on citizens which is routinely collected, stored and traded.[52]

9.42 The point was also made during the program in relation to international trade in information, that other structures would be more appropriate to deal with international obligations than either one country or even one group of countries making a determination on other sovereign nations.[53] The

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47 Transcript of Evidence, p. 656.

48 ibid.

49 O'Connor, Kevin, 'Confidentiality, Privacy and Security Concerns in the Modern Healthcare Environment', *The Australian Computer Journal*, Vol 26, No 3 August 1994, pp. 74-75.

50 ABC Lateline programme of 17 April 1997, transcript, Department of the Parliamentary Library Information Storage and Retrieval System, p.2.

51 ibid.

52 ibid.

53 ibid, p. 6.

Committee agrees and believes it is incumbent on the international community to enact and abide by an international treaty or convention which aims at protecting individual data, particularly sensitive health data.

9.43 The Committee is concerned about the implications of international trade in personal data, particularly sensitive data, and does not support any trade in data which is not de-identified. As discussed in Chapter 5 of this Report, AS4400 - 1995 *Personal privacy protection in health care information systems* is an Australian standard which organisations must follow when developing personal privacy information policies or codes of practice.

Legal Implications to Practising International Telehealth

9.44 The jurisdictional implications of medical registration of doctors practising between Australia and Asian countries was raised with the Committee.[54] The AMC informed the Committee that some South-East Asian countries do not have a registration system.[55] As far as the AMC is aware, in some countries there is no formal register of medical practitioners, as exists in Australia. Most countries in Asia have a method of licensing "but it does not involve the disciplinary and the oversight capacity that you have, say, in Australia or the UK or North America."[56]

9.45 The Committee sees the question of medical registration in other countries as one which should be resolved if regional Telehealth links are to be developed in the future. The complexity of medico-legal questions increases in the light of the AMC's observation that some countries in South East Asia do not have a registration system. Health care professionals seeking to participate in teleconsultaltion links between Australia and countries in the region cannot assume that they will receive protection under Australia laws.

As many countries, including Australia, have based their privacy legislation on the Organisation for Economic Co-operation and Development (OECD) Guidelines Governing the Protection of Privacy and Transborder Flows of Personal Data, they should form the basis of an international treaty. In addition, Codes of Ethics, which have been developed by the AMA, the RACGP and other professional associations could form a suitable base for the

54 Dr Peter Schloffel, Transcript of Evidence, p. 419.

55 Transcript of Evidence, p. 1077.

56 ibid.

development of international medico-legal laws and should be submitted by Australia in international negotiations.

9.46 The increasing international interest in the deployment and use of Telehealth and Health Informatics, raises medico-legal and privacy concerns in the international arena. The Committee believes that it is timely for these issues to be canvassed by all members of the international community, and not left to any one Region or trading bloc to determine or use as a coercive tool in trade relations.

Recommendation

9.47 The Committee strongly recommends that the Australian Government should take the lead in stimulating international interest in the negotiation of an international treaty to protect the privacy of transborder flows of personal data and to offer legal protection to health care professionals practising Telehealth across international borders.

International Aid

9.48 The Committee believes that the potential exists for providing humanitarian aid to developing countries in the Asia/Pacific Region. Mr Andrew Davis, from the South Australian Health Commission, suggested that an opportunity exists to help people who work in remote areas, in the region, to be able to access good information and to be supported and educated. Mr Davis also holds the view that South-East Asian countries are becoming more alert to health matters, yet have low numbers of health professionals.[57] Australia, therefore has an opportunity to help those who work in remote areas in the Region.

9.49 The Submission provided by the University of South Australia referred to a training project involving the Faculty of Health and Biomedical Sciences funded by AusAid in Papua New Guinea. The Faculty is a member of a consortium which aims to train Medical Officers, Nursing and Allied Health Personnel. The university believes that the potential exists for the delivery of future training via distance learning technologies.

57 Transcript of Evidence, p. 286.

Recommendation

9.50 The Committee believes that there is potential for the delivery of Australian aid, including humanitarian aid, via Telehealth. This is especially important for its neighbours in South-East Asia and countries in the Pacific. The Committee recommends that the Australian Government:

(a) through AusAid, investigates the delivery of Australian aid, such as education and training, including follow-up training of health care professionals through distance learning methods; and

(b) pursue the delivery of humanitarian aid to developing countries in the Asia Pacific region such as teleconsultations via Telehealth.

The use of data links to provide edical services is opening a fascinating field that can save lives, reduce pressures on hospitals and, perhaps, earn export dollars.[1]

10 Towards a National Approach

Introduction

10.1 Telehealth and Health Informatics are valuable in solving many challenges created by large populations and poor or underserviced rural communities.[2] Consultations conducted via Telehealth can reduce unnecessary travel for both the patient and the doctor. Telehealth enables a GP in a rural practice or in a remote Aboriginal community in Australia to consult with a specialist in a major teaching hospital anywhere in Australia, or in any country in the world in order to diagnose or treat a patient. A bush nurse operating on her or his own in a remote clinic will be able to care for a patient through instructions delivered electronically at a distance.

10.2 In urban areas, the introduction of Telehealth is likely to speed up the process of referrals and to reduce those considered unnecessary. Quality of health care generally is improved, through speedy electronic consultations between a GP in a surgery and a specialist in another location.[3] Telehealth is also beneficial in circumstances where moving a patient may be undesirable. In the US prison system, Telehealth has been found to be cheaper than transporting prisoners to hospital.[4]

10.3 It is widely accepted that the use of telecommunications technologies with their specialised applications will fundamentally change the way health services are delivered both nationally and internationally. Clinicians will be able to conduct on-line research to access current health literature to help in the diagnosis and treatment of their patients whose complete health record will be maintained electronically and carried with them on a smart card.

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1 Banaghan, Margaret, 'Telemedicine Makes a Healthy Start', *Business Review Weekly*, February 12, 1996, p. 52.

2 ibid.

3 Wootton, Richard, 'Telemedicine: a cautious welcome', Information in Practice, *British Medical Journal*, Vol 313, 30 November 1996, p.1376.

4 ibid.

10.4 It will become possible for Telehealth to facilitate the practice of medicine and the delivery of health across international borders. Major teaching hospitals in Australia will be able to consult with a specialist hospital located in any part of the world, as well as to teach groups of students, sitting in a lecture room in a university in Malaysia or Zimbabwe. Telehealth has the potential to deliver Australian humanitarian aid to a remote area in the world where a lone clinician may be working.

10.5 On-line access to health information will lead to a better informed society. Health consumers will be able to increase their knowledge and understanding of threats to their health and the effectiveness of interventions. As a consequence, individuals will take greater responsibility for their health and demand greater involvement in decisions. Telehealth will in future enable health consumers to conduct consultations with their clinicians on-line.[5]

10.6 These changes may also mean acknowledging that many patients will know as much about their condition as their doctor. This will change the traditional compact between the doctor and patient, as individuals demand to be consulted and expect that their practitioner access the latest health information available.

10.7 However, a culture of antipathy to change has been identified as a significant cause of reluctance amongst some levels of health care providers, particularly GPs, to embrace computer technology to assist them to deliver health services.[6] This attitude is due to what Professor Mackinnon described as a professional conservatism.[7] Fear of change is not a phenomenon peculiar to the information age, but a fear of change itself. It is reputed that in a previous age facing change, St Augustine once told Christians to stay away from people who could add or subtract as it was obvious they had 'made a covenant with the Devil'.[8]

10.8 Today, Telehealth and Health Informatics have the potential to make a positive change in the way health care is delivered. In order for these benefits to be achieved the resolution of a number of issues remains. The lack of suitable telecommunications infrastructure in rural and remote areas of Australia is preventing these communities from accessing a similar level of

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5 South Australian Health Commission, Transcript of Evidence, p. 271.

6 National Centre for Epidemiology and Population Health, Sub No 126, Subs Vol 5, p. 1074.

7 Transcript of Evidence, p. 401.

8 Toffler, Alvin and Heidi, *Creating a New Civilization: The Politics of the Third Wave*, Turner Publishing, U.S.A., 1994, p. 35.

Telehealth to that available to their urban counterparts. This has been exacerbated by traditionally excessive charges.[9] As one writer pointed out the "trouble is that for this technology of the 1990s, the phone company charges tariffs based on the technology of the 1960s."[10]

10.9 The development of a nationally integrated data management system supported by uniform national standards for definitions and concepts for electronic data transmission is a prerequisite for cost efficient and accurate data collection and storage. This issue, together with other barriers which are preventing GPs from using Telehealth, such as the lack of remuneration, national registration and medico-legal questions must be addressed before Telehealth can be used effectively across borders.

10.10 The success of Telehealth and Health Informatics is reliant on all levels of health care embracing change and adopting health technology as a means of delivering improved health care. It is anticipated that as clinicians and health professionals become more familiar with computer technologies and become less afraid of them, their resistance to change will be lessened. It has been suggested by one writer that Australia's cautious approach to modern health technologies is likely to work to Australia's benefit. This is because Australia is now in a position to take advantage of highly developed hardware and software capabilities, which could enable it to become a world leader in the application of these health information technologies.[11]

10.11 This Inquiry raised the problem of the fragmented and *ad hoc* approach which has characterised approaches to Telehealth and Health Informatics. The point was made that while a great deal of work had been undertaken in these two areas, such as a number of successful pilot trials, the lack of a national approach has prevented the wide dissemination of information resulting from these trials. Therefore, little is known about how far Telehealth and Health Informatics had progressed within Australia's health system.

Commonwealth-State Funding

10.12 The question of Commonwealth-State funding has been raised as a major inhibitor to the introduction of Telehealth and Health Informatics. As the Committee discovered during the course of the Inquiry, State governments

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9 See Chapter 2.

10 Johnstone, Bob, 'Telemedicine in need of a check-up', *AustralAsian Forum*, 25 May 1996, p. 50.

11 National Centre for Epidemiology and Population Health, Sub No 126, Subs Vol 5, p. 1074.

have been producing strategic plans and installing technologies in their public hospitals.[12] Where a conflict exists between specifically Commonwealth funded issues involving outpatients, there is no incentive to trial Telehealth.[13] Outpatient services are provided by both the Commonwealth and the States.

10.13 One alternative for non-inpatient Telehealth services suggested by Dr Swanson is to provide block funding directly to some of the remote regions, either to the Divisions of General Practice or to the area health authorities.[14]

> *...they could be given a block grant of funding which they could then spend on Telemedicine, maybe with the payments going through the Medicare system. This would give them some control and give them the choice as to what services they wanted to access and what services they thought would provide the most benefit to the people they are looking after. To me that is the other real potential solution to the way ahead.*[15]

10.14 The Committee accepts that hospitals and health units are not in a position to fund and implement entire technological solutions.[16] However, the Committee does not believe the Commonwealth should continue to provide project funding to implement unique applications in an uncoordinated manner as exists at present. Future funding for the agreed upon national Health Informatics system should be provided by combined Commonwealth-State mechanisms.

Centres of Excellence

10.15 If selected major hospitals are prepared to become a Centre of Excellence and deliver Telehealth services to rural and remote centres, the Commonwealth and the State should enter into a joint agreement to fund these services. A fee for service should also be part of the funding arrangement through a specific item in the MBS:

> *You would have to give a special licence to a particular specialist unit in, say, the Royal Adelaide to provide Telemedicine services to remote locations which all would be predefined. You would have to have some sort of other controls on it so that it did not become*

12 See also comments made by the South Australian Health Commission, Transcript of Evidence, p. 266.

13 Transcript of Evidence, p. 267.

14 Transcript of Evidence, p. 268.

15 ibid.

16 South Australian Health Commission, Transcript of Evidence, p. 283.

> *an open slather scheme that could be abused or taken advantage of.*[17]

10.16 A further idea put forward by the South Australian Health Commission is the concept of health villages, which would be possible under Telehealth, which in its modern construct means an integration of technologies. The combination of these technologies would change the way medicine is delivered by moving it into the home environment "...or in a sense of deinstitutionalising care..."[18]

10.17 The Committee is attracted to the concept of 'Centres of Excellence' which would be funded by a combined agreement between the Commonwealth and the States. These centres would be located in one or more major teaching hospitals in each State and Territory, from which Telehealth would be practised. Each centre would be allocated a regional area, including remote locations.

10.18 These Centres of Excellence will continue to operate until such time as telecommunications infrastructure allows the delivery of health care services between two separate locations, regardless of distance. In the meantime, the Committee believes that Commonwealth-State expenditure should be directed at addressing the equity of access problems faced by rural and remote communities, which could be solved by establishing strategically located Centres of Excellence.

10.19 The Committee also sees a role for Centres of Excellence in promoting Australian expertise within the Asia-Pacific Region and beyond. As mentioned in the previous chapter, delivering educational programs out of teaching hospitals by way of video conferencing links could be appropriately carried out from these Centres. Teleconsultations between Australia and hospitals in the Region could also take place from the nominated Centres of Excellence.

10.20 The Committee understands that proposing the establishment of Centres of Excellence and providing them with a mandate for the purposes of Telehealth means they will service overlapping area health service boundaries. This is unlikely, because the Centres of Excellence will be run from the major teaching hospitals in each State and Territory and carry out functions, which in the short term smaller institutions will be unable to perform. Appropriately,

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17 South Australian Health Commission, Transcript of Evidence, p. 268.

18 South Australian Health Commission, Transcript of Evidence, p. 269.

these Centres will be the precursors to what will be in the long term an electronically integrated health care system.

10.21 In some respects, these Centres of Excellence are emerging out of pilot trials being conducted in various States. For example, the Renal Telehealth Network located at Queen Elizabeth Hospital in Adelaide, the TARDIS project at the Royal Brisbane Hospital and the Telepsychiatry project being practised out of Glenside Hospital in South Australia. The Committee believes these and others could be expanded and developed to provide Centres of Excellence.

Recommendation

10.22 To facilitate the provision of Telehealth services to rural and remote areas which are underserviced by health care practitioners, the Committee recommends that a network of major teaching hospitals should be established as Centres of Excellence. The Commonwealth, States and Territories must enter into a joint agreement to fund Telehealth services delivered to the locations under their jurisdiction. A fee for service should also be part of the Medicare funding arrangement through a specific item in the Medicare Benefits Schedule.

National Office for the Information Economy

10.23 Throughout the Inquiry, the Committee was urged to recommend a national approach to all issues associated with Telehealth and Health Informatics and that a national body with inter-sectoral representation formulate a national strategic framework to inform directions. Professor Robert Douglas, Director of NCEPH, expressed the belief that an advisory body which incorporates representation from consumers, health-care providers, academics, industry, government and which will have a "...focus on the future and be able to respond to the changing ability of the system" should be established.[19]

10.24 Professor Douglas warned that:

> *unless that happens, we are going to miss the golden opportunity that exists at the moment of being able to exploit the current state of the art computer technology and the fact that to some extent, we*

19 Professor Robert Douglas, Director, National Centre for Epidemiology and Population Health, Australian National University, Canberra, Transcript of Evidence, p. 1125.

> *are operating in a relatively green field in Australia at the present time with respect to making it work better for us.*[20]

10.25 The Committee agrees with Professor Douglas. However, coordination within Australia's Federal system requires a national body in information technology able to bridge the competing interests across all State and Territory boundaries. The Department of Health and Family Services drew the Committee's attention to the lack of a national mechanism:

> *There are currently no mechanisms for making national advances in health IT. Not only are health areas within states moving along independent paths, state-wide IT developments are to some extent dictating directions for state health. National co-ordination would thus need to extend beyond the health portfolio for resolution of some issues.*[21]

10.26 In addition, the Department pointed out in its Submission that there is a multiplicity of government layers, their agencies, private sector and community interests within Australia and from overseas endeavouring to influence individual components health information management:[22]

> *To date, these endeavours have been driven by a variety of interests, are generally fragmented and not well directed, controlled, nor strategically focused.*[23]

10.27 The Committee has been asked to recommend the establishment of a separate agency which would bring together a mixture of public and private interests. Such an agency would explore and expand on the issues raised in this Report and provide solutions to any barriers likely to inhibit the full deployment of Telehealth and Health Informatics within the Australian health system.

10.28 Many of the issues being canvassed in this Report are also on the AHMAC agenda. The Committee acknowledges the work being undertaken by AHMAC committees, but believes that the issues which require resolution need an expanded organisation which should include a variety of stakeholders from both the public and the private sector.

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20 Transcript of Evidence, p. 1125.

21 Sub No 103, Sub Vol 1, p. 212.

22 ibid, p. 194.

23 ibid.

10.29 A similar argument could be used with respect to the National Health and Medical Research Council. Information technology does not fall under the jurisdiction of this organisation,[24] and it has been emphasised that any organisation needs "multi-representation".[25] The concern of Professor Douglas is that at the present time "everybody is doing their own thing."[26]

10.30 The Committee believes that the appropriate body able to draw representation from the various stakeholders is the newly created National Office for the Information Economy. This Office is likely to be able to draw inter-sectoral representation which would include the technology industry. The Committee is of the view that the deployment of health communications technologies within health systems world wide is inevitable and should be planned for strategically. Therefore, without a national cooperative approach across all interests to inform planning in Australia, Telehealth and Health Informatics are unlikely to be deployed systematically and the potential of these processes will be lost to the Australian community.

10.31 To this end, the Committee believes that the newly created National Office for the Information Economy is an appropriate body to implement or monitor the recommendations made in this Report. One of the main reasons which influenced the Committee to recommend this Office is its three-year life span. In that time, Australia must deploy technology within the health system, or lag behind highly industrialised countries.

10.32 Australia has been using telecommunications technologies to deliver health care for over a century and has been a world leader in developing these processes. The Committee believes that Australia should maintain this momentum into the 21st Century. In this Report, the Committee has sought to address the barriers which are preventing the successful deployment of Telehealth and Health Informatics into the Australian health system. Many of the solutions proposed by the Committee go beyond the health portfolio and require a government body which is able to coordinate inter-sector interests.

Recommendation

10.33 The Committee recommends that the National Office for the Information Economy establish a National Working Group on Telehealth and Health Informatics. The Working Group should remain standing for the three year life span of the Office and include representation from all

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24 Associate Professor Branko Cesnik, Transcript of Evidence, p. 820.

25 Professor Douglas, Transcript of Evidence, p. 1126.

26 Transcript of Evidence, p. 1133.

State and Territory governments, the public and private health sectors, health professional associations, consumer groups, academics, and the telecommunications and technology industry to develop, implement and monitor the recommendations made in this Report.

John Forrest MP
Chairman

30 October 1997

Dissenting Report by Mr Harry Quick MP, Ms Annette Ellis MP, Hon Duncan Kerr MP, Ms Jennifer Macklin MP and Mr Allan Morris MP.

While supporting measures to encourage the increased use of computers in medical practice, the Labor members of the Committee are resolutely opposed to the measures outlined in the recommendation in paragraph 6.32 as this represents a direct attack on bulk-billing.

Current Medicare billing arrangements are designed to encourage bulk-billing and direct payment of non-bulk-billed claims would significantly reduce doctors' incentives to bulk-bill.

Labor Committee members also wish to make clear that the emphasis in seeking to computerise medical practices must be on systems which enhance patient care and medical technology and not primarily on billing systems.

The Labor Committee members therefore recommend that:

(a) those doctors that bulk bill and lodge their claims electronically have their payments processed overnight.

(b) the current system of reimbursement be retained for all other doctors.

Mr Harry Quick MP, (Deputy Chairman)

Ms Annette Ellis MP,

Hon Duncan Kerr MP,

Ms Jennifer Macklin MP

Mr Allan Morris MP

30 October 1997

APPENDIX 1

LIST OF SUBMISSIONS

No.	Name	From	State
1	Dr Stephen Webb	Manangatang Hospital	VIC
2	Dr Peter Schloeffel	Medical Communications Associates Pty Ltd	SA
3	Dr Y Kuang Oon	Docle Systems Pty Ltd	VIC
4	A/Prof Branko Cesnik	Monash University, Victoria	VIC
5	Dr Fiona Hawker	Glenside Hospital	SA
6	Mr W B Dollman	The Queen Elizabeth Hospital	SA
7	Dr John Nelson	Benson Radiology	SA
8	Mr Rufus McLeay	R.A.B McLeay Pty Ltd	SA
9	Mr Alan Mills	AMR Pty Ltd	NSW
10	Mr John Baker	Binary Image Pty Ltd	VIC
11	Mr David Brocklehurst	Reuters Australia Pty Ltd	NSW
12	Ms Marcia Gleeson	Australian Nursing Federation	VIC
13	Mr Gavin Godfrey	GodBar Software	QLD
14	Dr Rob Ferguson	Dr Rob Ferguson	VIC
15	Dr Robert Whiting	Royal Brisbane Hospital	QLD
16	Dr Brian Richards	ACT Division of General Practice	ACT
17	Ms Elizabeth Christie	OPTUS Communications	ACT
18	Mr Ross Wraight	Standards Association of Australia	NSW
19	Dr Andrew Pluta	Brisbane Southside Central Division of General Practice	QLD
20	A/Professor Rosemary Roberts	National Coding Centre	NSW
21	Mr John Otago		WA
22	Dr Paul Andrews	National Ageing Research Institute	VIC
23	Mr John Johnston	Pen Computer Systems Pty Ltd	NSW
24	Mr Mark Douglas Browne	Web Advertiser	QLD

25	Mr Robert Birrer	Gold Coast Division of General Practice Ltd.	QLD
26	Mr Glyn Danter	Digital Equipment Corporation	NSW
27	Mr C R Wills	MIMS Australia	NSW
28	Dr R L Sandland	CSIRO Australia	NSW
29	Mr Morris Rozario	TeleMedic Australia Pty Ltd	NSW
30	Mr Keith Anthonisz	Technology and Innovation Managment Pty Ltd	WA
31	Mr Graeme Simsion	Simsion Bowles and Associates	NSW
32	Ms Debbie Richards	Ipswich and West Moreton Division of General Practice	QLD
33	Dr Jann Marshall	Health Department of Western Australia	WA
34	Mr Paul James	Health Informatics Society (ACT)	ACT
35	Mr Richard Gray	Australian Catholic Health Care Association	ACT
36	Mr Robert Crockett	KODAK Australasia Pty Ltd	VIC
37	Mr Kim Wyman	Melbourne Division of General Practice Inc.	VIC
38	Dr Teng Liaw	The University of Melbourne	VIC
39	Mr Ken Buxton	Australian Computing and Communications Institute Ltd	VIC
40	Dr Patrick Bolton	Central Sydney Area Health Service	NSW
41	Dr Ross Vining	Institute of Clinical Pathology and Medical Research	NSW
42	Mr Terry Lynch	Western Sydney Area Health Service	NSW
43	Mr Len Potapof	Radiation Advisory Council	NSW
44	Dr John Williams	Australian Association of Provincial Radiologists Inc.	QLD
45	Ms Margaret Hansford	Australian Council of the Royal Flying Doctor Service of Australia	NSW
46	Dr Harry Haber	Dr Harry Haber	NSW
47	Dr Pradeep Jayasuriya	Perth South Eastern Division of General Practice	WA

48	Mr Anthony Bibby	Health Information Management Association of Australia	NSW
49	Ms Gillian Moody	Medical Teleconferencing Pty Ltd	SA
50	Dr D B McWilliam	Royal Prince Alfred Hospital	NSW
51	Mr Ian Chalmers	Australian Private Hospitals Association Ltd	ACT
52	Mr Steve Quilliam	National Consultative Group for Private Healthcare EDI	ACT
53	Mr Bruce Kirkham	McDonnell Information Systems	VIC
54	Mr John Mitchell	Telemedicine Australia Pty Ltd	SA
55	Dr Gerard Flaherty	Hopkins Street Clinic Pty Ltd	TAS
56	Professor Malcolm Mackinnon	South Australian Health Commission	SA
57	Mr Stephen Greenwood	The Pharmacy Guild of Australia	ACT
58	Mr John Ainge	Medical Software Industry Association Inc c/- CPR Software	ACT
59	A/Professor L G Cleland	Australian Rheumatology Association	NSW
60	Dr Robert Hills	RX Medical	WA
61	Mr Timothy Bishop	Carers Homelink	NSW
62	Mr David Nash	Telstra Corporation Ltd	ACT
63	Mr Christopher Mitchell	Mater Misericordiae Hospitals	QLD
64	Dr Helena Britt	The University of Sydney	NSW
65	Mr Barry Gardner	Gardner Escott & Co. Chartered Accountants	NSW
66	Mr George Savvides	Sigma Company Limited	VIC
67	Mr Richard Madden	Australian Institute of Health and Welfare	ACT
68	Dr David Filby	National Health Information Management Group	ACT
69	Dr Ronald Grunstein	Royal Prince Alfred Hospital	NSW
70	Mr Stuart Manley	PictureTel Australia Pty Ltd	ACT
71	Commander J L Chapman RAN	Commander J L Chapman RAN	ACT
72	Mr Neville Yeomans	The Royal Australasian College of	NSW

		Physicians	
73	Dr G A Coffey	The Memorial Hospital Inc	SA
74	Dr Peter Adkins	Royal Australian College of General Practitioners	QLD
75	Ms Wendy Swinkels	The University of Newcastle	NSW
76	Professor Michael Kidd	The University of Sydney	NSW
77	Mr Ross Davey	Medical Software Industry Association Inc	VIC
78	Mr Gary Misan	Australian Medicines Handbook Pty Ltd	SA
79	Mr Klaus Veil	Australian HealthNet Services Pty Ltd	NSW
80	Mr Bob Quimby	International Telemedicine Committee	NSW
81	Dr Simon Carlile	The University of Sydney	NSW
82	Dr Taffy Jones	The Royal Australian College of Medical Administrators	VIC
83	Mr Ian Frank	Australian Medical Council Inc.	ACT
84	Mr Mike Gregg	Health Communication Network Ltd.	NSW
85	Dr John Yu	Royal Alexandra Hospital for Children	NSW
86	Dr Alex Disney	The Queen Elizabeth Hospital	SA
87	Mr Jim Birch	North Western Adelaide Health Service	SA
88	Ms June Gibson	Victorian Nurse Executives Association Inc.	VIC
89	Dr Michael Bollen	RACGP & AMA	NSW
90	Dr Bill Coote	Australian Medical Association	ACT
91	Mr John Evered	Health Insurance Commission	ACT
92	Dr Danny Calligeros	Prince of Wales Hospital	NSW
93	Dr Michael Robinson	Drs J J Sullivan, N J Nicolaides & Partners	QLD
94	Mr Brian Stewart	Department of Communications and the Arts	ACT
95	Dr Robert Broadbent	The Royal Australian and New	VIC

		Zealand College of Psychiatrists	
96	Ms Elizabeth Percival	Royal Australian College of Nursing Australia	ACT
97	Dr John Watts	Warburton Hospital	VIC
98	Mr Rupert Northcott	Medical Director Australia Pty Ltd	NSW
99	Mr Roger Wilkins	New South Wales Government	NSW
100	Dr A E Zahra-Newman	JAM Software Pty Ltd	NSW
101	Professor Gopal Gupta	James Cook University of North Queensland	QLD
102	Mr Denis Burke	Northern Territory Government	NT
103	Mr Andrew Podger	Department of Health and Family Services	ACT
104	Dr Janet Rimmer	Australasian Society of Clinical Immunology and Allergy	VIC
105	Mr W G Lawrence	Australian College of Health Service Executives	NSW
106	Mr Lindsay Graham	Australian Association of Pathology Practices Inc	ACT
107	Dr Peter Vine	Australian College of Paediatrics	NSW
108	Mr Peter Osborne	KPMG Information Solutions	VIC
109	Dr Neil Johnston	Department of Veteran's Affairs	ACT
110	Professor Peter Yellowlees	The University of Queensland	QLD
111	Mr John Cameron	Healthsure Pty Ltd	NSW
112	Dr Peter Goss	Working Party of Regional Paediatricians affiliated with the Australian College of Paediatrics	NSW
113	Dr Martin Lum	Liverpool Health Service	NSW
114	The Hon Rob Borbidge MLA	Queensland Premier	QLD
115	Mr David Butt	ACT Department of Health and Community Care	ACT
116	Mr Colin MacLeod	The Royal College of Pathologists of Australasia	NSW
117	Mr Ian Donges	NSW Farmers' Association	NSW
118	Mr Nigel Waters	Human Rights and Equal	NSW

		Opportunity Commission	
119	The Hon Rob Knowles	Victorian Government	VIC
120	Dr George Cerchez	The Division of General Practice Northern Tasmania Inc	TAS
121	Ms Sonya Hender	University of South Australia	SA
122	Dr Tom Doolan	Rural Training Practice Computerisation Project	QLD
123	The Hon Dean Brown MP	South Australian Government	SA
124	Mr David Christie	PCS Health Systems	AZ 85260
125	Dr Ian Cheong	Royal Australian College of General Practitioners	QLD
126	Mr RM Douglas	National Centre for Epidermiology and Population Health	ACT
127	Dr Larry Cromwell	Communications Engineering	VIC
128		National Ageing Research Institute	VIC
129	Dr Peter Goss	Regional Paediatricians Group, Working Party of Regional Paediatricians affiliated with the Australian College of Paediatrics	VIC
130	Ms Kate Moore	Consumers' Health Forum of Australia	ACT

APPENDIX 2

DETAILS OF PUBLIC HEARINGS AND WITNESSES

CANBERRA - 4 SEPTEMBER 1996

Australian Institute of Health and Welfare

Dr Richard Madden, Director and Member of National Health, Information Management Group

Mr Peter White, Head Information Management and Business Services Division

Department of Communications and the Arts

Mr Brian Stewart, Assistant Secretary, Information & Communications Services Branch

Mr Simon Bryant, Senior Officer, Information & Communications Services Branch

Department of Health and Family Services

Dr Ian Heath, First Assistant Secretary, Information Services Division

Mr Alan Whitfield, Assistant Secretary, Information Management Branch

Ms Marion Dunlop, Assistant Secretary, Planning and Evaluation Branch, Office of Aboriginal and Torres Strait Islander Health Services

Dr David Graham, Assistant Secretary, Pharmaceutical Benefits Branch, Health Benefits Division

Ms Jean Gifford, Acting Director, Strategic Development Section, General Practice Branch, Health Benefits Division

Health Communication Network Ltd.

Mr Michael Gregg, Chief Executive,

Mr Christopher Grover, Finance Manager/Company Secretary

Mr Ian Ross, Technology Manager

Health Insurance Commission

Mr David Num, Branch Manager, Corporate Development and Statistics

Ms Jacquelyn Wood, General Manager, Government Programs Division

Mr Gil Buerdlmayer, Manager, Electronic Commerce Strategy Team

Mr Morris Trevethan, Branch Manager, Pharmaceutical Program

Dr Rick Newton, Branch Manager, Professional Services

Individuals

Mr James Chapman

The Pharmacy Guild of Australia

Mr Si Banks, President, NSW Branch and National Councillor

Mr Stephen Greenwood, Executive Director

Dr Michael Tatchell, Director, Health Economics Division

Telstra Corporation Ltd

Mr David Nash, Executive General Manager, Federal Government and ACT State Manager

Mrs Judy Angeli, National Account Executive

Ms Lyn Kennedy, Research Officer

BRISBANE - 20 SEPTEMBER 1996

Brisbane South Side Central Division of General Practice

Dr Andrew Pluta, Chairman

Dr John Aloizos, Executive

Drs J.J Sullivan, N.J Nicolaides and Partners

Dr Bruce Campbell, Partner and Pathologist

Mr Ronald Hodgson, External Consultant

Gold Coast Division of General Practice

Mr Robert Birrer, Executive Director

Dr Hugh Nelson, Chair, Information Technology Management Subcommittee

Mr Ron Hodgson, Consultant, Clinical Data Transfer Project

Ipswich and West Moreton Division of General Practice

Mr Gary Disher, Executive Officer,

Ms Debbie Richards, Dietitian/Project Officer,

Mater Misericordiae Public Hospitals

Mrs Sari McKinnon, Acting Executive Director, Corporate Services

Mr Paul Ferguson, Manager, Information Technology

North Queensland Clinical School

Professor Basil James, Director, Integrated Mental Health Services

Queensland Health

Dr John Youngman, Deputy Director-General, Health Services

Ms Yvonne Packbier, Portfolio Manager
Enabling Portfolio, Information Industry Board

Mr Nicholas Moss, Principal Project Officer, Information Management Branch

Royal Brisbane Hospital

Dr Robert Whiting, Project Director, TARDIS

Dr Leith Hayes, Project Manager, TARDIS

Mr Peter Hogg, Partner Representative, TARDIS

University of Queensland

Professor Peter Yellowlees, Head and Chairperson, Psychiatry Department

ADELAIDE - 14 NOVEMBER 1996

Australian Medicines Handbook Pty Ltd

Mr Gary Misan, Executive Editor

Dr Donald Walker, Database Consultant

Benson Radiology

Dr John Nelson, Deputy Managing Partner

Mr Roy Manning, Technical Manager
Glenside Hospital

Dr Fiona Hawker, Senior Psychiatrist, Director of Telemedicine,
Telemedicine Unit, Rural and Remote Mental Health Services

Mr Stephen Kavanagh, Telemedicine Consultant, Telemedicine Unit, Rural and Remote Mental Health Services

Queen Elizabeth Hospital, North Western Adelaide Health Service

Dr Alexander Disney, Project Director, Renal Telemedicine Network

Mr John Mitchell, Project Manager, Renal Telemedicine Network

Queen Elizabeth Hospital, Woodville South

Mr William Dollman, Director, Pharmacy Networking Project and Manager, Drugs and Poisons Section

South Australian Health Commission

Mr Andrew Davis, Chair, National Telemedicine Committee and Director, Health Industry and Export Development Unit

Mr Keith Kranz, Manager, IT Policy and Planning

Dr Bruce Swanson, Telehealth Adviser, Health Industry and Export Development Unit

Telemedicine Australia Pty Ltd

Mr John Mitchell, Managing Director

University of South Australia

Professor Michael Brittain, Professor of Information Management and Leader, Health Information Research Group

Dr James Warren, Lecturer in Computer and Information Science

ADELAIDE - 15 NOVEMBER 1996

Australian Society of Consultant Physicians in General Medicine

Dr Rufus McLeay, Rural Councillor for South Australia

Health Online

Professor Malcolm Mackinnon, Chief Executive Officer

Medical Communications Associates Pty Ltd

Dr Peter Schloeffel, Director

Medical Teleconferencing Pty Ltd

Dr Tony Moore, Director

SYDNEY - 28 JANUARY 1997

Australian College of Health Service Executives

Mr Warren Westcott, Senior Vice-President, NSW Branch

Dr Gray Southon, Associate Fellow

Australian Medical Association

Dr Harry Nespolon, Director, Health Services and General Practice

Ms Prudence Power, Director, General Practice Policy

National Coding Centre, University of Sydney

Associate Professor Rosemary Roberts, Director

Dr Karen Luxford, Publications Manager

New Children's Hospital Westmead (Royal Alexandra Hospital for Children)

Dr Christopher Seton, Member, Clinical Committee
Australasian Sleep Association and Staff Specialist
David Read National SIDS Council Sleep Laboratory

New South Wales Farmers Association

Mrs Dee Wilkes-Bowes, Director of Rural Affairs

New SouthWales Health Department

Mr Peter Williams, Director, Information Data Services

Royal Australian College of General Practitioners

Dr Reginald Crampton, Acting Secretary General

Dr Peter Adkins, Chairman, National Information Committee

Royal Australasian College of Physicians

Professor Neville Yeomans, Chairperson, Board of Continuing Education

Royal College of Pathologists of Australasia

Associate Professor Katherine McGrath, Chairman
Haematology Discipline Advisory Committee,
Member, Pathology Professional Activities Committee

Dr Alan Lloyd, Member, Education Subcommittee

Royal Prince Alfred Hospital

Professor Ronald Grunstein, Clinical Associate Professor of Medicine,
University of Sydney and Senior Staff Specialist, Sleep Disorders Centre
University of Sydney

Professor Michael Kidd, Professor of General Practice,
Department of General Practice, Central Clinical School

SYDNEY - 29 JANUARY 1997

Australian Rheumatology Association

Associate Professor Leslie Cleland, Chairman
Electronic Communications Subcommittee

Mr Colin McCormack

Commonwealth Scientific and Industrial Research Organisation (CSIRO)

Dr Robert Gill, Senior Principal Research Scientist, Ultrasonics Laboratory
Division of Telecommunications and Industrial Physics

Health Information Management Association of Australia

Mr Anthony Bibby, Honorary President

Human Rights and Equal Opportunity Commission

Mr Nigel Waters, Acting Privacy Commissioner

Medical Director Australia Pty Ltd

Mr Rupert Northcott, Director

MOnet

Dr Danny Calligeros, Director

Royal Flying Doctor Service

Ms Margaret Hansford, National Health Strategy Coordinator, Australian Council

Royal Prince Alfred Hospital

Dr David McWilliam, Director, Department of Intensive Care

Standards Australia

Mr Peter Williams, Chair, IT/14 Health Informatics Committee

Mr Peter Treseder, Projects Manager, IT/14 Health Informatics Committee

Mr Bob Lions, Group Manager, Information and Communications

University of Newcastle

Ms Wendy Swinkels, Health Informatics Coordinator
Faculty of Medicine and Health Sciences

Dr Roderick Neame, Managing Partner, Health Information Consulting
United Kingdom

Mr Paul Cohen, Group Manager, New Zealand Health Information Service
New Zealand Ministry of Health

University of Sydney, Department of General Practice

Dr Helena Britt, Director, Family Medicine Research Unit

Dr Graeme Miller, Medical Director, Family Medicine Research Unit

MELBOURNE - 15 APRIL 1997

Communications Engineering Pty Ltd

Dr Maxwell Alexander, Director

Dr Lawrence Cromwell, Managing Director

Mr John Scott, Principal, Edja Services

CSC Healthcare Systems

Mr Bruce Kirkham, Manager, Marketing

Department of Human Services (Victoria)

Dr Christopher Brook, Acting Director, Acute Health Services Division

Manangatang Hospital

Dr Stephen Webb, Principal General Practitioner

McDonald Street Medical Centre

Dr Robert Ferguson

Melbourne Division of General Practice Inc.

Dr Raymond Martyres, President

Mr Kim Wyman, Executive Director

Dr Michael Daly, Member, Committee of Management

Dr Angela Rutherford, Member

Monash University

Associate Professor Branko Cesnik, Director
Centre of Medical Informatics

National Ageing Research Institute

Professor Robert Helme, Director

Dr Paul Andrews, Director of Information Technology

Royal Australian and New Zealand College of Psychiatrists

Dr Robert Broadbent, Executive Director

Dr Michael Epstein, Honorary Secretary

Royal Australian College of Medical Administrators

Dr Ian Graham, Fellow

Warburton Hospital

Dr John Watts, Director of Medical Services

MELBOURNE - 16 APRIL 1997

Australian Computing and Communications Institute Ltd

Mr Kenneth Buxton, Director

Ms Su Peng Yau, Adviser, Malaysia Project, Multimedia Victoria
Department of State Development

Australian Nursing Federation

Ms Marcia Gleeson, Research and Policy Officer

Mr James Thom, Member

Australasian Society of Clinical Immunology and Allergy

Associate Professor Richard O'Brien, Victorian State Representative

Medical Software Industry Association

Mr Ross Davey, President

Dr John Ainge, Member

Dr Tony Zahra-Newman, Member

North Richmond Community Health Centre

Mr Demos Krouskos, Chief Executive Officer

Dr Siaw-Teng Liaw, Senior Lecturer, Department of Public Health and Community Medicine, University of Melbourne

Dr Christopher Pearce, Information Technology Representative,
Victorian Rural Divisions Coordinating Unit, Essendon and
District Memorial Hospital

Regional Paediatricians Group

Dr Peter Goss, Member, Working Party

Royal College of Nursing Australia

Mr Keith O'Brien, Fellow

Victorian Nurse Executives Association Inc.

Ms Margaret O'Connor, Honorary Treasurer

Miss Lynette Edgar, Administrative Officer

PERTH - 7 MAY 1997

Great Southern Division of General Practice Ltd.

Dr James Lie, Director

Health Department of Western Australia

Dr Jann Marshall, Senior Health Program Consultant, Clinical Services Directorate

Mr Barry Jordan, Coordinator, Telehealth, Commercial Services (IT) Branch

Individuals

Mr John Otago

South Eastern Division of General Practice

Dr Pradeep Jayasuriya, Director

Technology and Innovation Management Pty Ltd.

Mr Keith Anthonisz, Consultant

CANBERRA - 16 MAY 1997

ACT Department of Health and Community Care

Mr Gordon Lee Koo, Executive Director, Financial Management and Contracting

Ms Louise Ali, Departmental Information Officer, Hospital Information Systems

Australian Association of Pathology Practices

Dr Michael Legg, Vice President and Chairman, Informatics Committee

Mr Lindsay Graham, Deputy Chief Executive Officer and Convenor, Informatics Committee

Australian Capital Territory Division of General Practice

Dr Brian Richards, Executive Director

Australian Catholic Health Care Association

Mr Francis Sullivan, Executive Director

Australian Medical Council

Mr Ian Frank, Executive Officer

Professor Ross Kalucy, Deputy President

Dr Angus McIntosh, Member

Consumers' Health Forum of Australia

Ms Hilda Bastian, Chairperson

Ms Kate Moore, Executive Director

Department of Veterans' Affairs

Mr Stephen Neilsen, Director, Information Management Adviser Section

Division of General Practice Northern Tasmania

Dr George Cerchez, Director

Institute of Clinical Pathology and Medical Research

Dr Ross Vining, Deputy Director

National Centre for Epidemiology and Population Health

Professor Robert Douglas, Director

Dr Leonard Smith, Consultant Epidemiologist

Dr Ross Bailie, Fellow

Dr Christopher Kelman, PhD Student

Mr Christopher Mount, PhD Student

National Consultative Group for Private Healthcare Electronic Data Interchange

Mr Chris Williams, Chairman

Mr Stephen Quilliam, Manager, Information Technology Services

Mrs Jennifer Laffey, Electronic Data Interchange Coordinator/Project Manager

Mr Peter McDonald, Senior Research Officer

Optus Communications Pty Ltd

Mr Richard Smith, Manager, Representation and Industry Development

Mr Bruce Tweedie, Project Manager, Corporate and Government Division

Mr Anthony Hudson, Strategic Account Manager

CANBERRA - 6 JUNE 1997

Department of Communications and the Arts

Mr Brian Stewart, Assistant Secretary
Online Industry and Communications Technology Branch

Mr Simon Stewart, Director
Online Industry and Infrastructure Section
Online Industry and Communications Technology Branch

Department of Health and Family Services

Dr Ian Heath, First Assistant Secretary, Information Services Division

Dr Louise Morauta, First Assistant Secretary

Dr Vin McLoughlin, Assistant Secretary, General Practice Branch

Mr Alan Whitfield, Assistant Secretary, Information Management Branch, Information Services Division

Health Insurance Commission

Mr Graham Mynott, Acting General Manager, Government Programs Division

Mr David Num, Manager, Corporate Planning Branch

Telstra Corporation

Mr Aloysius Sorbello, National Manager
Network Deployment Standards, Network and IT Infrastructure

Ms Judy Angeli, Account Executive

Mr Wayne Ferguson, Manager
Number Portability and Issues Investigations

APPENDIX 3

LIST OF PILOT PROJECTS

SOURCE: *Australian Telehealth Services Issues Paper, South Australian Health Commission, October 1996*
(project list revised August 1997)

NOT AVAILABLE IN PDF FORMAT

UPDATED VERSION CAN BE OBTAINED FROM THE ABOVE SOURCE

APPENDIX 4

BIBLIOGRAPHY

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