8. ONLINE SERVICES IN HEALTH

8.1 Overview

Introduction

New visions of health care are emerging which are assisting the uptake of online services. Consumers are demanding more responsive consumer focused care; providers recognise the dynamic nature of health care and seek to be more flexible and responsive to consumers needs, and to improve the quality of care; and governments seek more efficient and effective service delivery.

Governments, particularly at the Federal and State levels, are using on-line services in the anticipation of cost savings, improving the parity of health services, and to improve service delivery. There is also a growing interest in the export potential of telehealth[1] applications and technologies. The introduction of online services is a catalyst for restructure in the health sector.

Applications Identified

Three areas of activity have been identified where the use of online services is rapidly developing. We recognise that there are some limitations with this applications focus and we are examining other ways of differentiating the activities associated with the use of online services in health care.[2] The three key areas are:

♦ Health Information Management.

♦ Remote Consultation and Diagnosis.

♦ Professional Development and Continuing Medical Education.

We distinguish these application areas from the (technical) services used to provide them. There are a range of common services that support these activities including: videoconferencing, the Internet, electronic networks and specific services used for teleradiology and telepathology, generally based on store and forward services. However, most activities are delivered via videoconferencing-based technologies, the majority of which are developed in the United States.

Status

In the past decade, the Commonwealth Government has supported the development of telehealth. This was prompted by advances in information and communication services and a resurgence in telehealth activity overseas. The Department of Health and Family Services has funded numerous projects. The Department of Industry, Science and Tourism, which is particularly interested in the development of a 'telemedicine industry', has conducted research into the telehealth market, and other bodies such as the Health Communications Network have been established. This company was created to exploit the potential of the Internet within the health sector.

In the past few years there has been a push to coordinate activity at a national level and to respond to the requirements and issues that are arising through telehealth activities. The creation of the National

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[1] House of Representatives Standing Committee on Family and Community Affairs (1997), *Health Online: A Report on Information Management and Telemedicine*. AGPS, Canberra. This report uses the term telehealth" to encompass both the practice of medicine and the delivery of health related services". p X11 note 3.

[2] One suggestion is to focus on linkages between consumers, between consumers and providers, and between providers.

Telehealth Committee reporting to the Australian Health Ministers Advisory Council, and the Commonwealth/States Health IT and Electronic Commerce Committee are leading bodies in the area promoting consistency and coordination. Yet overlap and fragmentation remain. Most activity is occurring at the level of State and Territories and is largely fragmented. Given that health is a state jurisdiction, this is not surprising.

State and Territory Activities

Many health service agencies within States and Territories are implementing strategic plans that represent fundamental shifts in the structure and organisation of health care. The use of information technologies are integral and interdependent to this transformation. The development of these systems is likely to take a considerable amount of time and phased implementation of more integrated activity over time is typical of policy in this arena.

All State and Territory Health Departments have made information available via the Internet. Yet very few sites exploit the potential of the technology. Most State Health Department sites are information based with little evidence of interactivity. E-mail contact is generally limited, with e-mail addresses and links available for one or two people only, if at all. Victoria and South Australia are the exceptions, with both state health department sites offering multiple e-mail contacts in service areas and high levels of interactivity. No sites provide transaction capabilities. However, in Western Australia one can download order forms for catalogues and references in languages other than English, then copy and send them to the e-mail address provided.

The Web pages provide links to other health sites, but often these are arbitrarily placed, with a lack of coordination within and between departments, and between the levels of government. Queensland Online is a prototype site which will be developed in late 1998, offering a one stop shop service for all government agencies, for example, health information would be available according to life stages. E-mail and traditional contacts will be available for a range of services.

Telehealth Programs and Sites

There are currently 250 telehealth sites operating via 80 programs, within Australia.[3] Many of these are still in trial or developmental stage, with only around 40 programs fully operational. However, the number of programs represents a significant increase over the past five years and Australia is well placed internationally in terms of the growth of telehealth.[4] Of all the States, Queensland has the most programs and sites available as indicated in the following table.

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[3] Programs refer to the total telehealth service or package that is developed, such as the Northwest Mental Health Service Telepsychiatry Network. A site is a particular location through which the service is delivered, for example seven sites provide services under the banner of the above program.

[4] Tongo, Ash & Mitchell (1996) "Telemedicine Today" , November/December 1996, p.43 in DIST (1998) *Fragmentation to Integration National Scoping Study The Telemedicine Industry in Australia*, Canberra, p.22.

Table 8.1:Telehealth Programs and Sites in Australia*
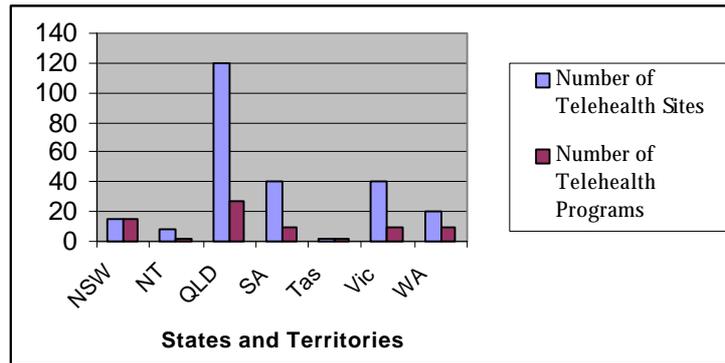
* This does not include all Internet based activity

CIRCIT 1998 Based on analysis of data provided in AHMAC 1998 *Information in National Telehealth Committee on Strategic Evaluation and Research Agenda*

A common approach is to have a hub site in a metropolitan region linked to one or more spoke sites, often in non-metropolitan regions. Approximately sixty six percent of telehealth sites are located in non-metropolitan areas. Given that the disparity between metropolitan and non metropolitan access to health services and professional development is a key driver of telehealth, this is not surprising.

The private sector has limited involvement in telehealth activity. The Prince of Wales Private Hospital in Sydney, is said to be "the first private hospital in Australia designed with the capability for telemedicine services".[5] Most activity has occurred in the public sector particularly within acute care. Community health centres have had little involvement in trial or project development, although activity in this area is increasing. Overall, telehealth remains an immature industry.

Consultation/Review
We have sought engagement with representatives from funding bodies and experts in the field. The degree of ownership of the project affects levels of engagement. In some ways it has been difficult to encourage a sense of ownership with service agency representatives in particular, as the report is clearly seen as CIRCIT work. Service agency staff are often working under a lot of pressures and are 'close to the ground'. They may resist a potentially comparative and critical report. We are therefore seeking to emphasise the developmental rather than comparative approach. We are also trying to convey the sense of mutual value in undertaking this research.

The paucity of monitoring and evaluation of telehealth projects in general limits the availability of data.

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[5]   Health Care of Australia News, http://www.hcoa.com.au/whatsnew.htm

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Ongoing Data Sources and Arrangements

Our initial observations in this area show a shortage of available data on access, use and effective use of online services in the health sector, both within Australia and overseas. Some of the changes underway in health care, may lead to the production of more relevant data, for example the shift towards evidence based care. Yet evidence of enhanced health outcomes are largely anecdotal and there is a shortage of adequate and ongoing evaluations of telehealth programs.[6] One of the key problems is the lack of adequate evaluation frameworks that can measure the human, social and organisational factors involved in telehealth activities.[7]

Common evaluation frameworks would greatly assist analysis and the National Telehealth Committee *Report on Strategic Evaluation and Research Agenda*[8] has made recommendations for the development of an evaluation methodology for telehealth. It is seeking the development of a five year national evaluation and research plan.[9] There is congruence between this framework and the information suggested by this feasibility study.

Literature on the change issues associated with the use of online services in health is proving to be very useful where it is available.

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[6] IOM (1996) Committee on Evaluating Clinical Applications of Telemedicine, *Telemedicine: A Guide to Assessing Telecommunications in Health Care,* National Academy Press in Centre for the Study of Clinical Practice (1997) *Op Cit.*

[7] Centre for the Study of Clinical Practice (1997) *Op Cit.*p.30ff.

[8] AHMAC (1998*) Report to the National Telehealth Committee on Strategic Evaluation and Research Agenda*

[9] AHMAC (1998) *Ibid.*

8.2   Access to Online Services

Distinctions between "access", "use" and "effective use" have been developed, recognising that having access to services does not necessarily mean they are used and using them does not mean they are used effectively: "access" and "use" are considered to be necessary but not sufficient conditions for "effective use". Access to services in the health sector is defined as being physically possible to gain access to equipment enabling service delivery.

Access involves physical proximity to a telehealth service. To obtain data on access it is necessary to know the location of telehealth programs, and corresponding sites, the services they offer and the population of people in the surrounding region. Consideration of service delivery via other channels would aid understanding of access to health services as a whole.

The South Australian Health Commission (SAHC) provides the most comprehensive information on telehealth projects in Australia.[10] As yet, this data does not appear to have been interpreted against population, and service availability. SAHC's survey does however, provide a good approximation of all telehealth services in Australia including those based on videoconferencing technologies, teleradiology and telepathology. There is some information on Internet based services, but it could be enhanced by further data in this area.

The data was originally created in October 1996 and updated in August 1997 and February 1998. Given the growth of telehealth applications, which appears to be doubling every year, it is necessary to regularly update this information. The National Telehealth Committee is proposing an annual survey of telehealth programs and services.

Access information on a population to service ratio could facilitate planning for telehealth services and could potentially assist in the determination of unmet needs. The ABS is planning to undertake surveys of online services in health.

As stated there are around 250 telehealth sites in Australia linked to approximately 80 telehealth programs. The two most common services provided by these programs are telepsychiatry and teleradiology. These services are reducing the gaps in the provision of rural health services, but significant gaps remain. In its 1997 *Study of Telehealth in Rural and Remote Australia*, the Project for Rural Health Communications and Information Technologies (PRHCIT) noted that there were major health service gaps in mental health and psychiatry, allied health services, alcohol and drug services and specialist medical services such as dermatology.[11]

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[10]   South Australian Health Commission (1996) *Australian Telehealth Issues Paper*, SAHC. This list was revised in August 1997 and February 1998.

[11]   PRHCIT (1997) *Telehealth in Rural and Remote Australia, Report of the Project for Rural Health Communications and Information Technologies,* Monash University.

Infrastructure

The infrastructure requirements for telehealth vary according to the service. Videoconferencing based services appear to be effective at an ISDN rate of 128 kbps or equivalent. However, there is argument about needs for higher level bandwidth. According to the PRHCIT report,[12] "the bandwidth at present considered acceptable to provide the resolution (or quality of image) required for clinical diagnosis and therapeutic intervention assistance is 384 kbps. It is very unlikely this level of bandwidth will be generally available to rural and remote communities within the next five years." 384 kbps is one of the most common bandwidths for telehealth services in Canada today and is widely used in the US.

Teleradiology, which relies on the transmission of still images, generally works with lower bandwidth and has operated successfully (at least technically) via POTS and ISDN. Access to infrastructure is therefore less of an issue.

8.3   Use of Online Services

Use is defined as quantification of the actual use or operation of the service, eg. in terms of usage volume or frequency of use.

There is a lack of publicly available usage data of telehealth activities in Australia. It is unclear whether or not program managers are keeping track of use data, however, it does appear that there is some unpublished data in this area. If collected, this data could include volume and frequency information on use, with categories for tracking demographics of users and repeat use. It is important to understand use, in order to evaluate the effectiveness of the program activity, and to understand if it is meeting a need. American surveys have shown that "many programs are seeing very few patients per site at a cost of many thousands of dollars per site".[13]

The American journal Telemedicine today, provides an annual review of telehealth programs in the United States with some international comparison. This survey has some limitation as information is provided by program participants and is not independently verified. However, it does off the best approximation of use data currently available and can be used to compare data on Australian initiatives, where available. Similar activity run by the National telehealth Committee could provide access and use data.

Two Australian initiatives that do provide use data are *The Rural and Remote Mental Health Service. Glenside Hospital* and the *Queen Elizabeth Hospital Renal Dialysis program.* Comparisons with programs listed in *Telemedicine Today* indicate that the *Rural and Remote Mental Health Service* has one of the highest usage rates in the world. It was included in the 1998 Telepsychiatry Survey conducted by *Telemedicine Today,* and was ranked fifth overall, with over 2000 total consultations, at an average of 75 per month. The highest usage data was recorded at the Northern Arizona Regional Behavioural Health in Flagstaff Arizona. This program was established at the end of 1996 and has had a total of

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[12]   PRHCIT (1997) *Ibid.*

[13]   *Telemedicine Today* July /August 1996: 4:4, pp 10-13, p.13.

800 consultation at 140 consultations per month.

The Telepsychiatry Project based in Toronto, Ontario had the highest use level for consumer to practitioner consultations in Canada in 1996 and 1997. *Telemedicine Today* reported 125 consultations over 50 hours in 1996, and for three months in 1997, 25 consultations at 50 minutes. . This is a demonstration project that is expected to be operational in 1998. The main service provided is child psychiatry.

Illustrative Examples

The Rural and Remote Mental Health Service, Glenside Hospital

The Rural and Remote Mental Health Service has been operating for over four years. It has integrated video conferencing into the mainstream delivery of mental health services in South Australia. The main use of the telemedicine unit is remote psychiatric consultations. Telepsychiatry is used to assist primary carer (GP, mental health worker) to support and manage the patient. IT is also used for professional development and administration. Currently there are 26 sites linked by videoconference to Glenside hospital's Telemedicine Unit. These sites are located in community health centres, and public hospitals.

The use of the service does not substitute for face to face services, although evaluations indicate that the videoconferencing sessions are reliable and have a high level of user acceptance.[14]

Queen Elizabeth Hospital Renal Dialysis

John Mitchell and Associates are the project managers of The Queen Elizabeth Hospital Renal Dialysis project, which has been operating since 1994. According to JMA it "is widely regarded as the leading operational telemedicine project in Australia, and we believe it is has one of the highest usage rates in the world. In the three months from July-September 1995 the telemedicine equipment was used 1,150 times, that is about 400 times per month, which places our project among the top few in the world in terms of volume of usage".[15]

8.4   Effective Use

Effective use of online services in health is a measure of the actual or perceived value gained from a particular activity. It is considered to apply to all stakeholder. These constitute:

1.   Users: patients, health practitioners and administrators;

2.   Content Providers: health institutions and government departments and agencies;

3.   Communication Service Providers: carriers and suppliers.

Effective use will be considered in the following sections under each application area.

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[14]   Hawker, F & Kavanagh, S. (1998) *The Evolution of Telepsychiatry in South Australia*, Rural and Remote Mental Health Service of South Australia.

[15]   *Dialysis Telemedicine Project News,* Issue 2, February 1996. http://www/jma.com.au/tqehnews2.htm

Application 1: Health Information Management

Health informatics is defined as the collection and management of health data and information in an integrated way, by means of electronic technology, to improve the effectiveness of health care. It can occur in isolated instances through services that support storage, transmission and access of text based information, but the trend is towards more integrated electronic information environments.

Health informatics can be seen to support the necessary linkages between people, and between people and information.

There are numerous activities being developed in this area including:

♦ data management systems, for example electronic supply chain management, such as the Pharmacy Extranet Gateway (PEG) which uses Internet based transactions between wholesalers and suppliers of pharmaceuticals to retail pharmacies;

♦ electronic communication networks, such as the Health Insurance Claims and Payments Service (HICAPS);

♦ electronic personal health records such as that proposed by the National Centre for Epidemiology and Population Health and recommended in the Health Online report.[16]

Development Status

A national approach for health information management has not been adopted. There is however, some interest in the development of a national electronic patient record system, but many issues need to be resolved before this will eventuate. Privacy is a key area of concern.

Most activity in health informatics is occurring at the level of the State and Territory through the development of strategic plans and policies for the health sector. These strategies and programs represent fundamental shifts in the structure and organisation of healthcare using online services. The South Australian Health Commission has established its *Health 21* project, the Victorian Department of Human Services has developed its *Transforming Business 21 Strategy* and the Northern Territory is developing a *Community Care Information System*. Similar activity is proposed in each State.

There are many difficulties in implementing new models of health care and new information management systems. Key issues for the sector include the fragmentation of health care, the fragmentation of existing technology, the lack of understanding about how to effectively use online services, and the lack of developed strategic plans that marry online services into business plans.

State departments and agencies have also developed Web pages. These are largely information based, with low levels of interactivity and no options for transactions.

Private sector involvement in telehealth is most notable in this application area. The use of supply chain management applications in health is only beginning to emerge. For example the PEG project mentioned above, is still in trial stage. There is also growing support for evidence based medicine, which provides health practitioners with better treatment options based on evidence and experience of practitioners, researchers and academics. The Deloitte & Touche Consulting report

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[16] House of Representatives Standing Committee on Family and Community Affairs (1997), *Health Online: A Report on Information Management and Telemedicine*. AGPS, Canberra.

1998 Global Survey of Chief Information Executives[17] states that only 6.1 percent of health institutions in Australia and overseas were using the Internet for supply chain management.

Table 8.2:   Measures of Effective Use in Health Informatics from Perspective of User

Indicator	Measure	Available Data
Usefulness (meets needs) Quality Timeliness & Trust	Based on demand User satisfaction with quality of information and communication User satisfaction with timeliness of information and communication. Time taken to access service, time taken to find required information User trust in service, communication and reliability of information	
Affordability of service	Cost of service as comparison to alternative access and use User ability to pay	
Ease of Use Accessability of service Ability to use Interface Social and Organisational preparedness to use	Location of services, matching demand and location Incidence of reporting difficulties with use of service, Reason for difficulties Induction, training and management support for service User repeat use of service Preparedness to use over another service option	

Table 8.3:   Measures of Effective Use in Health Informatics from Perspective of Health Providers

Indicator	Measure	Available Data
Improved Quality of Services	Provider satisfaction with quality and timeliness of information and communication Increase in user access to and use of health information Improvements in communication between providers	
Improved Productivity Strategic positioning	Increased revenue and/or decreased costs for existing services Reduction of artificial barriers between providers	
Increase Market Access Compared with Other Channels or as a Combination of Channels	Increase in provider access to and use of reliable, comprehensive and timely information. Preparedness to use over another service option Provider repeat use of service	

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[17]   Deloitte & Touche Consulting (1998) *Global Survey of Chief Information Executives.*

To establish progress towards these measures it may be necessary to combine qualitative and quantitative approaches including interview and observation of stakeholders together with analysis of statistical data.

Illustrative Examples

While it is clear that some telehealth services in Health Information Management are moving towards an approach consistent with effective use, there is no exemplar in the field. However, the approach of the South Australian Health Commission is worthy of a mention.

It has established its Health 21 project which has as its vision "assist the maintenance of community and individual wellness by the improved use of information through the innovative deployment of computing and telecommunications."[18] Its approach encompasses a paradigm shift within health care. However, this strategy is only in developmental stage.

The I2T2 Strategy for Victorian Public Hospitals[19] provides a long term strategy to integrate health care information across the State's public hospital system. It is based on a staggered implementation process. There is significant emphasis on people and processes, on managing change and the introduction of technology.

The strategy seeks to meet the needs of the health industry including providers and users based on improvements in quality, efficiency and accessibility

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[18]   Keith Kranz, South Australia Health Commission, personal comment. (14/4/98)

[19]   Department of Human Services (1996) *Information, Information Technology and Telecommunications Strategy for Victorian Public Hospitals*, Melbourne.

Application 2: Remote Consultation and Diagnosis

Remote consultation and diagnosis assists the delivery of specialist health care services, particularly to non metropolitan areas where populations are underserved. Remote consultation and diagnosis can occur at a remote site using online services to provide synchronous (real time) or asynchronous (delayed) face to face interactivity. This can occur between consumers and practitioners for consultation and/or diagnosis. It can also occur between practitioners to assist with consumer management, discharge planning or for a second opinion, etc.

These activities are generally supported via videoconferencing technologies.

Consultation and diagnosis can also be assisted through electronic linkages for the transmission of visual information such as high quality body tissue and organ images to a practitioner at a remote site. This information will be used for analysis, diagnosis and second opinions. These activities use specialist diagnostic imaging technologies generally based on store and forward services specific to the health arena, for example telepathology.

Development Status

Applications in remote clinical consultation and diagnosis have proven to be popular areas of experimentation and trials, with extensive developments occurring in some States and Territories. There also appears to be more operational activity in this area. However, it is difficult to disaggregate information on specific applications as many operational programs encompass more than one activity area for example, telepsychiatry utilises videoconferencing services to conduct a range of activities including professional development and clinical consultations. The use of telehealth programs across application areas and health arenas is producing effective results, according to one evaluation.[20]

Remote Person to Person Activities using Videoconferencing

There are a range of service areas where remote face to face activities are being implemented including oncology, rehabilitation, neonatology, pre-admissions, discharge planning and psychiatry. Telepsychiatry is the most prolific service activity and appears to be working quite successfully in those services where evaluation has been built into program design.[21]

Leading examples include the South Australian Telepsychiatry Project and the Queensland Telemedicine Network.

Remote Person to Information linkages: Diagnostic Imaging Activities

There are various medical specialties incorporating the use of diagnostic imaging into the delivery of health care, for example teleradiology, telepathology and teledermatology. Real time interactive systems are available, although the preference is for the less expensive store and forward services. These services transmit static images to a remote location for analysis.

Teleradiology provides the remote transmission of CT, ultrasound and x-ray images from one institution (generally a hospital) to another via telecommunications networks. Special equipment including digital scanners, software and computers are required to collect, store and transmit the image. For many rural consumers this allows them to visit

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[20] Centre for the Study of Clinical Practice (1997) *Op Cit.*

[21] *Ibid.* Hawke, F. and Kavanagh, S. (1998) *The Evolution of Telepsychiatry in South Australia,* Rural and Remote Mental Health Services of South Australia.

the GP at the local hospital or medical centre, rather than having to travel to a large regional centre for diagnosis and assessment. Teleradiology programs are underway in most States and Territories. DIST notes that there are 150 teleradiology sites in Australia.[22] However, this figure conflicts with that documented in the SAHC information previously referred to.

Effective Use

Table 8.4:   Measures of Effective Use in Remote Consultation and Diagnosis from User Perspective

Indicator	Measure	Available Data
Usefulness (meets needs) Quality	Based on demand Peer support of service User satisfaction with quality of care and communication User satisfaction with quality of health outcome	Health Department of Western Australia's wide area network for rural and remote communities is to be based on demand and community consultation. See Centre for the Study of Clinical Practice (1997). [23] Trott (1996)[24]
Timeliness & Trust	User satisfaction with timeliness of care and communication User trust in service, care and communications	References from the Rural and Metal Health Service of South Australia.[25]
Affordability of service	Cost of service as compared to alternative access User ability to pay Inclusion in Medicare Benefits Scheme	
Ease of Use Accessability of service Ability to use Interface	Location of services, matching demand and location Incidence of reporting difficulties with use of service, Reasons for difficulties	Mitchell J and Dr Alex Disney AusTelemed Conference, Sydney, 2-3 March 1998 'Insights from the three-year longitudinal study of renal telemedicine'
Social and Organisational preparedness to use	User repeat use of service Preparedness to use over another service option Appropriate organisational response including skilling, timetabling and resourcing	As above

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[22] DIST (1998) *Fragmentation to Integration: National Scoping Study, The Telemedicine Industry in Australia,* DIST, Canberra.

[23] Centre for the Study of Clinical Practice (1997) *Op Cit.*

[24] Trott (1996) Telepsychiatry and Primary Care. Personal Computer Videoconferencing in the Delivery of Mental Health Care to Geographically Distant/isolated Communities. Report of the Queensland Northern Regional Health Authority Telemental Health Project, *IT Conference*, Brisbane 1996,

[25] Hawke, F. and Kavanagh, S. (1998) *Op Cit,* Yellowlees P & Kavanagh S., The Use of Telemedicine in Mental Health Services Provision, *Australian Psychiatry* 1994:2 pp.286-270, Clark and Hafner, "Telepsychiatry in South Australia" *Australian Psychiatry*, 1997, 5:3 pp124-126

Table 8.5:   Measures of Effective Use in Remote Consultation and Diagnosis from Perspective of Health Providers

Indicator	Measure	Available Data
Improved Quality of Services Improved accessibility and range of service	User satisfaction with quality and timeliness of care and communication Increase in user access to and use of health services in metropolitan and non-metropolitan regions.	References from the Rural and Metal Health Service of South Australia.[26] Mitchell & Disney 1998 *Op Cit*. Mitchell, J (1997) An Evaluation of the Queen Elizabeth Hospital Renal Telemedicine Network 1996-97.
Improved Productivity Strategic positioning	Increased revenue and/or decreased costs for existing services Extension of service delivery into new areas	Centre for the Study of Clinical Practice (1997) McIntosh S (1996) in Health Online Submission[27]
Increase Market Access Compared with Other Channels or as a Combination of Channels	Location of services- matching demand and location Increase in user access to and use of telehealth services in metropolitan and non-metropolitan regions. Preparedness to use over another service option User repeat use of service,	

Illustrative Examples

The **Rural and Remote Mental Health Service of South Australia**, is based at the Glenside Hospital in Adelaide. Extensive evaluations and reviews of their service have been undertaken providing vital feedback on consumer and referrer satisfaction (generally a case manager or GP), on diagnostic reliability, possible interventions and other areas. Their evaluations indicate a "high level of acceptance to telepsychiatry by clinicians, patients and mental health workers".[28] There is very little comparable literature published in this area.

The **Telemedical Applications for Remote Distribution Systems (TARDIS)** program in Queensland is a trial program linking intensive care ward staff at three hospitals. The Royal Brisbane, Nambour and Maryborough hospitals. It is envisaged that the system will be available for the practitioner to practitioner consultations and to be used in deciding upon patients transfers, for professional development, administration and links between patients and families.

Although still in the early stages, there has been on-going evaluation of user needs, and program planning and design. Consultation with staff has involved 55 in depth interviews, 13 meetings and an education session. Evaluators have sought to gain information on work practice, communications, current concerns and issues, and participants thoughts

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[26]   Hawke, F. and Kavanagh, S. (1998) *Op Cit,* Yellowlees P & Kavanagh S., The Use of Telemedicine in Mental Health Services Provision, *Australian Psychiatry* 1994:2 pp.286-270, Clark and Hafner, "Telepsychiatry in South Australia" *Australian Psychiatry*, 1997, 5:3 pp124-126

[27]   McIntosh S (1996) Submission to the Inquiry into Health Information Management and Telemedicine in the House of Representatives Standing Committee on Family and Community Affairs Volume 3:pp 700-710 in Centre for the Study of Clinical Practice (1997) *Op Cit.*

[28]   Hawke, F. and Kavanagh, S. (1998) *The Evolution of Telepsychiatry in South Australia,* Rural and Remote Mental Health Services of South Australia.

on the potential of telemedicine.

It is expected that use will be monitored through a booking system, evaluation sheets and informal chats after each session. Data will also be collected on what activity is being undertaken, using which services, the duration of activity and any problems or benefits of using them.[29]

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[29] Kennedy, L (1997) *Intensive Care on the EBN. A Report on Progress of the TARDIS Project*, Telstra Research Laboratories, April 1997.

Application 3: Professional Development and Continuing Education

Professional development using online services supports person to person linkages and person to information linkages for educational and training purposes. The information may be in the form of text, voice or image.

Development Status

Within the health arena there is an overall shortage of adequate professional development for rural practitioners. Interaction with peers, access to training and appropriate resources are all limited. The professional isolation that results from this means that there are real problems with the recruitment, retention and training of rural health practitioners. Although conferences and training are available, in practice there are many barriers preventing rural practitioners from attending. These include the distance required to attend services, the increased cost of the services, the time loss, lack of funds for replacement staff and dislocation from family and friends. Providers too have difficulty identifying valuable course that will meet the diverse needs of their staff, and cannot always afford the cost of losing them to training.

Professional development is occurring in isolated instances and as part of other application services, such as in telepsychiatry, neonatology, oncology and other health arenas s. Rural Health Training Units in various States and Territories are offering online courses and resources, to rural health practitioners as part of a multi-channel approach to professional development and continuing medical education. For example, the Rural Health Training Units in Queensland offer videoconferencing based programs at approximately 45..sites as well as videos, audioconferencing, text based resources, and face to face channels.

Effective Use

Table 8.6: Measures of Effective Use in Professional Development for Health Practitioners

Indicator	Measure	Available Data
Usefulness (meets needs) Quality Timeliness & Trust	Based on demand, Peer support of service User satisfaction with quality of communication and breadth of content Reduction in personal isolation User satisfaction with timeliness of communication i.e classes and conferences, hours of availability and access User trust in service and communications	PRHCIT (1997) *Op Cit*
Affordability of service	Cost of service as comparison to alternative access User satisfaction with cost of service User support provided- time for study, leave etc	

Indicator	Measure	Available Data
Ease of Use Accessability of service Ability to use Interface Social and Organisational preparedness to use	Location of services- matching demand and location Incidence of reporting difficulties with use of service, Reason for difficulties Timetable for receipt of service, organisational support including leave and replacement staff. User repeat use of service Preparedness to use over another service option	

Table 8.7:   Measures of Effective Use in Professional Development from Perspective of Health Providers

Indicator	Measure	Available Data
Improved Quality of Services Improved accessibility and range of service	User satisfaction with quality and timeliness of communication and learning Increase in user access to and use of professional development in metropolitan and non-metropolitan regions.	
Improved Productivity Strategic positioning	Increased revenue and/or decreased costs for existing services Increase workforce recruitment and retention	
Increase Market Access Compared with Other Channels or as a Combination of Channels	Location of services, matching demand and location Increase in user access to and use of professional development in metropolitan and non-metropolitan regions. Preparedness to use over another service option User repeat use of service,	

Illustrative Examples

The Yangulla Centre Rural Health Training Unit was established in August, 1992. It is located in Rockhampton, Central Queensland. In collaboration with the Royal Australian College of General Practitioners Training Program (RACGP - TP) it provides vocational training for rural general practice in the Central Queensland/Wide Bay/Gympie areas. The mission statement of the Yangulla Centre is: "working with rural and remote health professionals, through education and training partnerships, to promote and maintain the health of rural communities."[30] Training is conducted via a range of channels including audioconferences workshops, evidence based practice, videoconferences and lectures. A Rural Information Network (RIN) has also been established and this provides support and training to rural and remote health professionals.

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[30]   http://www.medeserv.com.au/rhtut/open/y_overview.htm

8.5 Change Issues

We have considered it important to understand the change or development issues which need to be addressed in order to reach appropriate levels of access, use and effective use. We seek to identify these, their status and how progress on them can be monitored. Refer to Table 8.8.

Key changes issues are:

♦ Understanding needs;

♦ Evaluation;

♦ Organisational capability;

♦ Awareness;

♦ Technical Concerns;

♦ Infrastructure; and

♦ Policy and Regulatory.

Table 8.8:   Change Issues in the Health Sector

Issue	Applicable Applications	Nature of Issue	Status	Desirable Outcomes
Understanding Needs Understanding User Needs	All application areas	Consumers are not being adequately consulted about their health needs. Unsure if current telehealth applications match user requirements and priorities for health services. Failure to consider also health practitioners needs. User views not incorporated into the design of services with ensuing design faults. User awareness of online options	Issues are gaining recognition and have been articulated by some researchers and telehealth consultations. However, the issues are not adequately recognised nor addressed in project developments.	National telehealth organisations should provide leadership on this issue. The National Telehealth Committee (NTHC)is proposing to develop a telehealth kit and these issues should be included as a core components. Project developers take into consideration consumers and practitioners needs, throughout the life of the project. Such consideration should involve qualitative analysis.
Evaluation Development of evaluation methods consistent with human, social and organisational issues.	All application areas	Paucity of documented evaluations limits our ability to learn from past successes and failures, and to fully appreciate costs and benefits. Current evaluation methods are inadequate and done on an ad-hoc basis. Unnecessary project developments and overall inefficiencies	These issues are recognised in the literature. AHMAC identified it as a priority issue and the NTHC has completed its first report which recommends six key activities including the "development of a five year national evaluation and research plan." The Health Online Report also recommends a major commitment to evaluation, led by NOIE and the Commonwealth Department of Health and Family Services.	The implementation of NTHC five year action plan is desirable, provided that their model is adequate.[31] Consumer input is integral to all evaluations. Evaluations should be on-going throughout the life of project and should explore user responses in depth, including dissatisfaction with aspects of the service (qualitative analysis including interview and observation).

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[31] National Telehealth Committee (1998) Op Cit. The NTHC recommended that "AHMAC support the development of a five year national evaluation and research plan which outlines specific evaluation and research projects/programs to be pursued, appropriate management arrangements, funding requirements and potential project/program funders/sponsors."

Issue	Applicable Applications	Nature of Issue	Status	Desirable Outcomes
Organisational Capability Management of multiple service delivery channels, with the necessary background systems and support	All applications	The introduction of new service channels, and new approaches to health care, require considerable organisational change, with implications for all staff and the organisation as a whole. Without sufficient planning and management of change there will not be sufficient take-up. Workforce implications and resource requirements including: consultation, induction, training, timetabling and user support are necessary. Management of multiple service delivery channels. Inter-organisational networking issues.	There is some evidence that change issues are being addressed within programs. However there are also instances where this has not occurred. Moreover the paucity of evaluation data makes it difficult to make conclusions.	Projects analyse workforce capability and associated human resourcing issues such as consultation, induction, training and user support. Consideration of other change issues is also necessary for the organisation, for example, while the issue of privacy may require legal and policy change, it also requires organisational change, such as the provision of private spaces.
Awareness Awareness of online services generally including how to use and integrate into health activities and change issues	All applications	Awareness of : • online services generally; • particular application areas; • applicability of service cost and benefits; • how to use services; • how to integrate them into health activity (as both a consumer and provider); and • change issues associated with their use	Awareness of online services is increasing under government sponsored programs. However, health care is rarely the focus of such activities. Growing acceptance that practitioners are aware of services, but not aware of cost, and how to integrate into health activity. Consumer awareness may not be as high, particularly within certain populations and particular applications.	

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Issue	Applicable Applications	Nature of Issue	Status	Desirable Outcomes
Technical concerns Appropriateness and useability of equipment	All applications	Incompatible systems limit the ability to exchange information and communication between different systems. Requires the development of protocols and technical standards including quality, safety and technical consistency.	National Telehealth Committee is working on these issues through specific standards committee. Standards Australia has released the Australian adoption of the Health Level 7 data transmission standard, that provides an agreed upon method for transmitting health information over electronic networks.	Aim to provide a consistent yet flexible technical environment in which reliable and adequate communication can occur between all required systems. Aim to have a set of guidelines and operational protocols enabling users to use the service, and to understand all processes that should be followed, including for example technical support.
Infrastructure Network and terminal availability Infrastructure availability	All applications	The health system is lagging behind other sectors in its access and use of infrastructure. Non-metropolitan areas require better infrastructure. Lack of ISDN or equivalent bandwidth is limiting operation of telehealth services.	ISDN available to 96% of the population in 1998. Access to 384 kbps is uncertain.	384Kbps bandwidth availability across Australia
Policy and Regulatory *Privacy of consumer health information*	All applications	Consumer concerns over privacy of information and right to control own health information. Balancing this with legitimate access requirements of health, research and other organisations.	Not recognised as a legitimate concern in Health Online. Privacy Act 1988 covers only public sector. Consideration by Privacy Commission of legislation and privacy principals.	Some form of protection of consumers rights that includes consultation with consumers, review of infringement, and redress.

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Issue	Applicable Applications	Nature of Issue	Status	Desirable Outcomes
Funding Models *Reimbursement for remote telehealth services*	Remote clinical consultation & diagnosis	Without reimbursement for services, practitioners are unlikely to utilise telehealth applications, hence the low involvement of private practitioners. Reimbursement of all telehealth services likely to see large increase in health costs.	Issue of reimbursement through Medicare Benefits Scheme is gaining recognition, but as yet telehealth services are not included in the Medicare Benefits Scheme. Recommendation for two different models put forward by Health Online and NTHC.	
Liability	Remote clinical consultation and diagnosis	Current uncertainty about who is responsible for consumers when using telehealth service		Certainty on liability issues.
Registration of Practitioners	Remote clinical consultation and diagnosis	Lack of national registration of doctors hinders cross border telehealth services		National registration scheme of doctors.

22