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Two case studies of telehealth technologies used for the delivery of professional development for health, education and welfare professionals in remote mining towns

*Mitchell, J.G., **Robinson, P.J., **McEvoy, M.,**Gates, J.

*John Mitchell & Associates, Sydney

** Women's and Children's Hospital, Adelaide

Summary

The benefits of using telehealth technologies for the provision of professional development for staff in remote locations were discussed in a number of previous studies. This report provides in-depth data about the appropriateness, effectiveness and value of such professional development via telehealth for health, education and welfare personnel. The evidence for this report is drawn from two case study locations: Roxby Downs and Coober Pedy, in outback South Australia. Both are mining towns but each town has a unique profile in terms of the mental needs in their communities. Over the period 1998-99, the country professional staff in the two locations participated in structured videoconferencing seminars that addressed critical topics in mental health. The videoconferencing sessions were sometimes used to discuss specific patient cases from each of the participating sites. It is important to note that the mental health topics addressed at the seminars were chosen in response to surveys of the needs of the participants. Another special feature of the professional development network was that each remote town was also supported via videoconferencing by a nominated office of the Child and Adolescent Mental Health Service (CAMHS), Division of Mental Health at the Women's and Children's Hospital. Roxby Downs was supported by the suburban CAMHS office at Port Adelaide and Coober Pedy was serviced by the CAMHS office in the industrial town of Port Pirie. This customised support was a key to the success of the mental health professional development network.

Introduction

In Australia, health providers located in remote areas have limited access to peer support and advice (Report of the PHRCIT, 1996, p.20). This peer support is beneficial in two ways: it facilitates professional networking and it makes available expertise that cannot be accessed in other ways (Mitchell et al, 2000). The isolation of remote health providers extends beyond the issue of geographical separation. Inadequacies in telecommunications infrastructure increase remote health providers' perceptions of isolation as it is difficult for them to access information electronically — for example, via the Internet — as well as accessing the necessary human resources (Report of the PHRCIT, 1996, p.25).

Telehealth technologies and the wide availability of a digital transmission service in Australia can reduce the extent to which remote health providers are isolated, enabling them to access professional development previously unavailable (Mitchell et al, 2000). Telehealth has the potential to provide remote health providers with enhanced levels of support and, therefore, to improve staff recruitment and retention rates in remote areas (Report of the PHRCIT, 1996, p.102; Mitchell et al, 2000).

This paper discusses the use of telehealth technologies specifically for the delivery of training and development services for country professional staff in two remote mining towns in South Australia — Roxby Downs and Coober Pedy — over a two-year period, 1998-1999. The professional development activity was specifically funded through a grant from the Commonwealth Government's Rural Health Support, Education and Training program (RHSET). The services were provided by Child and Adolescent Mental Health Services (CAMHS), Division of Mental Health, from the Women's and Children's Hospital (WCH) in Adelaide, South Australia. The telehealth technologies used were videoconferencing, telephone, videotapes, the Internet and printed material. The technologies were supplemented by an annual visit to the mining towns by staff from CAMHS.

The CAMHS telehealth network began operating in 1998, prior to the RHSET project, and offers a full range of telehealth applications, including direct clinical consultations that involve psychiatrists and other health professionals. A feature of the CAMHS telehealth network is that professionals provide consultations to rural and remote areas from a range of CAMHS Offices both in metropolitan and country areas, not just from the WCH at North Adelaide. The majority of telehealth clinical consultations provided by the WCH at North Adelaide are conducted by child and adolescent psychiatrists. However, the clinicians conducting the majority of the telehealth consultations for the RHSET project were drawn from the various CAMHS community and country offices and from a range of disciplines including clinical psychology, mental health nursing and social work.

Prior to the start of each set of videoconferencing sessions, the topics addressed at the sessions were agreed with the participants. Typical topics include Autism and Aspergers; self-harming behaviours; clinical implications of Attachment; experiencing grief; and clinical management of depressed adolescents. Feedback from the participants showed that the videoconferencing technology was not considered an impediment to communication. In fact, the technology was viewed favourably as the component that enabled the professional development program to proceed. This positive attitude to the technology developed in spite of the fact that the technology occasionally malfunctioned and despite the fact that the technology at one of the two mining towns provided inferior audio and video signals.

Each session normally consisted of a welcome and introductions, a presentation followed by questions and administrative arrangements for the next session. Many sessions were videotaped and copies distributed to each site, for those personnel not able to attend the live session and as reinforcement for those who did attend. The Internet was used as a minor component of the project, mostly to provide participants with links to other readings.

The RHSET telehealth project is a response by the Division of Mental Health to the issue raised in the Burdekin Report (1993) that health professionals in isolated communities do not receive appropriate professional support (Robinson et al, 1999). A

submission was therefore made to RHSET to fund a project which was also supported by the then South Australian Health Commission and the Territory Health Services to develop a program which addressed the professional isolation of staff by building a professional development network for rural professionals working with child and adolescent mental health problems.

These two case studies adds depth to broader findings in the literature; for instance, by Gelber and Alexander (1999) who report on the use of videoconferencing equipment by the Child and Adolescent Mental Health Service in Victoria since April 1995, the first regular telehealth service of its kind for child and adolescent mental health in Australia. The in-depth case study approach also adds to the general findings of D'Souza (2000) who reports that the South Australian telepsychiatry network set up a pilot educational programme to meet the educational, training and professional development needs of rural mental health practitioners. One difference between the network described by D'Souza (2000) and the CAMHS network is that much of the professional development and peer support in the CAMHS network was delivered from the CAMHS office in one country town, Port Pirie, to the isolated mining town of Coober Pedy.

Methods

The case study approach was the main method used for this evaluation. Case study research methodology has received considerable academic support in recent years, particularly as it caters for the study of innovations and the building of theories (Eisenhardt, 1998). Case study methodology also enables the development of generalisations and the addressing of how and why questions (Yin, 1994).

The case study material was gained from the use of formal and informal interviews, secondary publications related to the two case studies and an analysis of a log of uses of the CAMHS videoconferencing equipment. Over a two-year period, the evaluator John Mitchell conducted a total of nine interviews with key personnel at the remote sites and with CAMHS staff. The structured interviews included questions on the three objectives for the project, regarding the establishment of professional development networks, the accessibility to services provided by CAMHS and the effectiveness of telehealth. The interviewees at the remote site included the two personnel who coordinated the videoconferencing sessions: a school counselor at Roxby Downs and community health nurse at Coober Pedy. The interviewees within CAMHS included the project manager, a psychiatrist who provided videoconferencing seminars for the remote sites and two other CAMHS staff responsible for providing support for the two mining towns.

In addition to these structured interviews, CAMHS staff visited the two towns annually, for on-site discussions about the project. CAMHS staff also conducted videoconferencing sessions with the remote professionals, and regularly reviewed the professional development program.

Information for the case studies was also gained from secondary publications related to the two case studies. These sources included formal summaries of the health services provided at each location; demographic data obtained from local councils; and summaries of CAMHS reports on the two sites.

The log of uses of the CAMHS videoconferencing equipment was maintained by the

project manager and provided detailed information about every videoconferencing session involving Roxby Downs and Coober Pedy. The log recorded who attended each videoconferencing session at each site; the health discipline of each participant; the session topic; and the date and duration of the session.

Case Study: Roxby Downs

From 1998-1999 telehealth facilities were used to link the Western Office of CAMHS, at Port Adelaide, with the fast-growing mining town of Roxby Downs, 540 km from Adelaide. As a result of the relationship established with the school counsellor and community nurses at Roxby Downs during the RHSET CAMHS Telehealth project in 1998, a regular and structured videoconferencing communication was implemented in 1999, linking on at least a monthly basis to link to Roxby Downs. Additionally, two CAMHS staff members visited Roxby Downs in May 1999, for face-to-face discussions.

Mental health profile

The town of Roxby Downs was established in the 1980s particularly to provide accommodation for employees at the uranium mine. A large mining company is the main employer and the town attracts people who are willing to live in an isolated area in return for highly paid employment. Roxby Downs is one of Australia's fastest growing population centres, and currently there are just over 4,000 residents with an average age of 28 years. The town has the highest birthrate of any town in South Australia and the Roxby Downs Health Service hospital was opened in 1998.

This rapid population growth stretches the available community resources and can affect mental health in the community. During their visit in May 1999, CAMHS staff conducted a mental health needs assessment in conjunction with Roxby Downs Area School staff and senior students. To provide an insight into factors influencing mental health in Roxby Downs, some summary points from that needs assessment are set out in Table 1.

Table 1: Summary points from a mental health needs assessment of Roxby Downs, 1999

Feature	Characteristics
1. Families	Many parents living in Roxby Downs are pursuing short term financial goals. This can effect their orientation to broader family functioning and commitment to the wider community including the school. Children in such families are effected by this focus: for example, reduced contact with parents because of work commitments or increased responsibilities such as caring for younger siblings. Many families do not have the support of extended family or long term friendship networks.
2. School	The school has undergone enormous growth in 1998/99 placing pressure on both physical resources such as yard space and human resources such as the development of more elaborate management structures. As in most remote locations, staff turnover is relatively high. This has implications at many levels such as the orientation of new staff, mechanisms for continuity of school practices and culture and the integration of 'new' and 'old' staff.
3. Employer	The town's existence is primarily a result of Western Mining Company's (WMC) mining activity, hence WMC'S policies and procedures, such as shift rosters, have a huge impact on the community and the school.

Table 1 indicates that the transitional nature of the population in Roxby Downs has considerable impact on the mental health aspects of the town. For instance, many people only stay for a short time, therefore friendships are curtailed and social and family support networks are limited.

This changing population also affects the school. During their May 1999 needs assessment activity, CAMHS staff interviewed teaching personnel at the Roxby Downs Area School, and found that the rapid growth of school and the fact that teachers only stay for an average of four years made it difficult for the school to develop traditions. It was difficult to gain parent participation at the school, when parents worked long shifts and, in a high percentage of families, both parents worked. Some stress was created by the lack of job options locally for young people finishing school. The rapid growth of the town is putting constant pressure on the availability of health and other community resources.

The following table provides a sample of the specific mental health issues arising in the primary and secondary school population at Roxby Downs, as identified by CAMHS and school staff.

Table 2: Sample of issues impacting on mental health of school children in Roxby Downs, as identified by CAMHS and Roxby Area School staff in 1999

Primary School mental health issues	Secondary School mental health issues
<ul style="list-style-type: none"> • harassment and bullying • dealing with change • anger management • students with special needs • effect of parents' shift work: shift work/school hours mismatch • tiredness: long days-before & after school care • predominantly young families • no available grandparents: grief and loss • older children caring for younger • economic goals strong family focus • proactive school planning • kids with adult duties e.g. meals preparation child care • confined living: e.g. caravan park • large amounts of disposable cash • some suicidal thought due to hopelessness • peer conflict: one school with no options 	<ul style="list-style-type: none"> • stress of study and home work load • coping skills • insufficient pastoral care • time management for distance education • care issues such as parent availability • drug use • care issues - older children minding young ones • performance pressure from parents • unemployment for a few school leavers • different school systems across Australia affect children who are mobile • play space

- parents' history of poor of school experience

Roxby Downs Area School is actively providing a range of programs in an attempt to meet the many challenges implicit in the table above. These programs include: behaviour management; boys talk; boys and relationships; stop think do; reading recovery; protective behaviours; club activities; and pastoral care.

Description of telehealth services provided

The telehealth services provided by CAMHS for Roxby Downs included the provision of formal seminars and case studies by videoconferencing, monthly videoconferencing links from Roxby Downs to Port Adelaide and the circulation of videotapes of the formal seminars. In the regular links to Port Adelaide, a social worker and, on occasion, psychologist, provided professional development opportunities for the school counsellor and community nurses at Roxby Downs, by discussing a range of Roxby Downs mental health cases, including the following:

- primary school children anxious about death
- a small primary school boy suffering from gender confusion
- a boy exhibiting oppositional defiance disorder
- children affected by grief and loss, after moving from one community to another and struggling to gain acceptance in the new environment
- children from families that had moved from overseas, with no extended family in Australia
- children with Attention Deficit Hyperactivity Disorder.

Modifications to services

Challenges faced by the CAMHS staff in providing support via telehealth for the Roxby Downs personnel include:

- the advice available at CAMHS needed to be tailored to suit the Roxby Downs context
- some support staff at Roxby Downs Area School and Community Health have changed, making it difficult to develop the relationship with CAMHS staff.

Value of the telehealth network

The main participants in the telehealth network from Roxby Downs are the school counsellor and community nurses. In formal interviews in 1998 and 1999 the school counsellor revealed that she values the professional network provided by the CAMHS RHSET project, particularly the ability to talk directly with the CAMHS Western Office staff at Port Adelaide, including the School Liaison Officer. She particularly appreciated the opportunity to talk with mental health professionals within CAMHS about a 1999 case involving grief and loss. She finds the videoconferencing facility

enables her to 'see the body language and gestures of the person at the other end' and hence to establish good rapport. The school counsellor feels that she is unable to take full advantage of the telehealth network due to the lack of time, teaching commitments and resources.

Case Study: Coober Pedy

Coober Pedy is a remote opal-mining town, 860km from Adelaide in the far north of South Australia, on the edge of the Simpson Desert. Despite this isolation, the health staff at Coober Pedy were the most frequent participants in the RHSET CAMHS Telehealth project in 1999.

Common mental health issues in the Coober Pedy area include youth depression, attention deficit hyperactivity disorder, family disharmony, early psychosis and substance abuse issues. Many of these issues were addressed in seminars provided in the 1998-99 CAMHS telehealth project. CAMHS also provided direct videoconferencing links to Coober Pedy from the Northern Country Regional Office at Port Pirie. These two features of the professional development program may explain the very strong support for the network by the Coober Pedy health staff.

The town of Coober Pedy can swell to 4,500 at the height of the tourist season and the region serviced by the Hospital encompasses Mintabie, Marla, Oodnadatta, William Creek and surrounding pastoral stations, has a population estimated at 6,000 people. Coober Pedy is a very multicultural town comprising 48 different nationalities and has an Aboriginal population of around 500. The Aboriginal population changes regularly due to the number of people travelling to and from the Pitjantjatjara lands. Coober Pedy is now facing an aging population, as essential services such as water, electricity and transport become available and reliable, and some older residents are electing to stay in Coober Pedy to retire.

Mental health profile

The hospital at Coober Pedy is classified as minimum volume and has 20 acute beds, an operating theatre, delivery suite and a busy casualty and X-ray facility. The Community Health Centre supports a range of activities including Community Nurses, Domiciliary Care, Women's Health, Occupational Therapist, Aboriginal Aged Care and meals program. The Hospital is supported by only one local General Practitioner, allied health services are provided from Port Augusta (439km away) and Whyalla (615km), and visiting specialists travel to Coober Pedy from private practices based in Adelaide (754km).

The mental health issues affecting young people in Coober Pedy have been raised at both local and statewide forums for many years. Domestic violence and substance abuse are significant concerns within the community and have a detrimental effect on family functioning and on young people during their crucial developmental years. Problems identified include aggressive behaviour, dealing with change, safety issues, poor problem solving skills, poor self esteem, anxiety and adjustment disorders.

It is well documented that indigenous communities are at greater risk of mental health problems such as suicidal tendencies and self harm. Indigenous young people living in remote areas like Roxby Downs can experience significantly different levels and forms of stress. The social context, the place of social stresses and issues of identity impact on

their mental health. Indigenous mental health issues identified in Coober Pedy include depression, anxiety, truancy, anti-social behaviours and substance abuse problems.

The CAMHS Northern Country Services, with its manager based 528km away in the industrial town of Port Pirie, has maintained contact with Coober Pedy since 1997 and the use of telehealth facilities has extended the previous relationship. Challenges facing the Northern Country Division in servicing Coober Pedy include the lack of funding for providing remote services and the difficulties of delivering a mental health service over a vast distance. To commence the telehealth project in 1998, a formal visit was made to Coober Pedy by staff from CAMHS.

Interviews revealed that health staff in country towns do not automatically accept innovations such as telehealth as a replacement for a face-to-face service. Some remote communities also have expressed some disillusionment with the levels of service offered in the past and are sceptical about new offerings. Coober Pedy proved an exception to this approach in 1999, when its staff attended every videoconferencing session offered as part of the CAMHS Telehealth project.

Description of telehealth services provided

Health staff at Coober Pedy participated in all the fourteen videoconferencing seminars provided from Adelaide during 1999 and in the following six videoconferencing sessions conducted by CAMHS from Port Pirie. The types of topics addressed in the links to Port Pirie included sexual orientation, stealing, sibling rivalry, aggression in young children and truanting.

Table 3: Telehealth links from Port Pirie to Coober Pedy, 1999

Date,	length	Port Pirie Participants	Coober Pedy Participants	Professional Development Topics/Cases
23/3/99	120 mins	*4, *2	*4, *4, *4,*4, *2, *9	structure of meetings confidentiality pro-formas meeting times
29/4/99	60 mins	*4, *2	*4, *4, *2	structure of meetings confidentiality
4/5/99	60 mins	*4	*4	psychosis sexual orientation stealing
11/5/99	60 mins	*4	*4	sibling rivalry aggression in young children behaviour management
10/6/99	90 mins	*4	*2	truanting child neglect and trust

Date,	length	Port Pirie Participants	Coober Pedy Participants	Professional Development Topics/Cases
				impact of DV on children
4/8/99	30 mins	*4	*5	stealing no stealing contracts

KEY *2 Social Worker, *4 Nurse, *5 Teacher, *9 Other

In addition to the videoconferencing sessions, the Regional Director visited Coober Pedy in September 1999 with a child psychiatrist from CAMHS for inter-agency meetings. The psychiatrist is one of the regular presenters of professional development sessions on the telehealth network and his visit was considered very valuable by the Coober Pedy health staff. A direct result of the visit was the provision of a clinical consultation on 25 November 1999, with the Regional Director in Port Pirie linked to Coober Pedy, to assess a teenager from Oodnadatta.

In March 2000, a three-site videoconferencing was held, involving CAMHS's sites in Enfield in Adelaide and at Port Augusta linked to Coober Pedy. The session focused on developmental mental health issues for girls aged 11-13. Participants at Coober Pedy included the Community Health nurse, the school counsellor, a class teacher and a Family and Youth Services worker.

Value of the network

The Regional Director of CAMHS Northern Country Services believes that the strengths of telehealth for health staff in towns such as Coober Pedy are as follows: it enables staff to access professional development and to stay in their own communities; it saves on travel time and costs; it increases access and equity; and it helps remote sites feel more connected to a health professionals network. She now receives many more telephone calls from Coober Pedy than in the past. An informal but important benefit of telehealth for her is that it assists with the development of an understanding of the work of health staff in remote areas:

One of the biggest advantages of telehealth is getting to know the real issues in remote towns, not just clinical issues, such as what is it like to live and work in Coober Pedy.

The Regional Director emphasises that a telehealth service to Coober Pedy enables visiting clinicians to have videoconferencing contact with their patients in Coober Pedy in between visits, hence fostering an ongoing relationship. She also believes that a telehealth provides equity for people in a remote area, who miss out on the benefits of living in the capital city, Adelaide, or in large towns.

Health professionals from Coober Pedy who attended telehealth seminars included a Family and Youth Services social worker, Child and Youth Health nurse, Community Health nurse, teacher and school counsellor. The Coober Pedy Community Health Nurse provided leadership at Coober Pedy in relation to the CAMHS telehealth project. She is based at the Community Health Centre and focuses on Women's Health issues. In the following interview notes, she discusses some of the highlights of the project during 1999.

Figure 2: Notes from an interview with Coober Pedy community health nurse

“Highlights of the telehealth seminars in 1999 included sessions on pharmacology, behaviour disorders and using the narrative approach working with adolescent males. A lot of us have been here for five years, and the information in the seminars allows us to be up-to-date. Telehealth provides us with training within a busy work day.

Adelaide is 9 hours drive each way. To fly to Adelaide requires a minimum absence from Coober Pedy of 2 nights; a 2.5 hour flight each way; and a cost of \$500. Hence, the telehealth link to CAMHS is very useful.

Benefits of the telehealth professional development program included being able to consult with experts in the field, through practical, hands-on, question and answer sessions and the knowledge that you are getting top opinions. We gained up-to-date knowledge from the child psychiatrist, as never before.

There were spin offs from the telehealth sessions. For example, lots of health staff in Coober Pedy, Alice Springs and Darwin are sole practitioners and we developed a comradeship with them.”

Coober Pedy was the outstanding site in the 1999 RHSET CAMHS Telehealth project, with staff attending all the formal videoconferencing sessions provided from Adelaide and seven sessions linked to Port Pirie. This positive response indicates that the Telehealth network addressed the needs of the Coober Pedy staff, demonstrating the benefit of an audio-visual link to remote locations.

Discussion

The case studies of Roxby Downs and Coober Pedy provide detailed information about the range of mental health issues facing these towns and the value of using telehealth technologies for the professional development of the remote health staff. Feedback from participants showed that clinicians feel less isolated when they used the technology to interface with other clinicians. The project alleviated the professional isolation that is a significant obstacle in getting clinicians to live and work in remote areas.

A key to the success of the telehealth links to these mining towns is that the needs of the remote professionals determined the topics for the formal videoconferencing seminars. Additionally, the patient cases discussed at the seminars were derived from the remote towns. The success of the telehealth network was also ensured because of the provision of a more personalised link between the staff at Port Adelaide and Roxby Downs and between Port Pirie and Coober Pedy.

To repeat in other locations the success of the CAMHS telehealth network, a number of features of this network would need to be reproduced. Firstly, the CAMHS telehealth network is underpinned by a keen appreciation of the specific professional development needs of staff in remote locations. Face-to-face visits were conducted by the CAMHS staff to the communities to set up the programme, a needs analysis was conducted before the program of seminars commenced and other surveys were issued during the project. The telehealth links were layered atop an existing CAMHS network of practitioners, offices and liaison which extends into the country and values the country perspective and works in partnership with the remote communities.

Secondly, to reproduce the CAMHS style of telehealth network in other communities, adequate project management is required. Considerable care and effort by a project manager is required to coordinate telehealth services for a range of different remote locations. Each telehealth videoconferencing session needs to be prepared for and managed thoroughly, particularly when more than two sites are involved. For instance, printed materials may need to be distributed to the remote sites beforehand, the session videotaped and then the videotape circulated after the session. Presenters need support preparing their session, possibly including assistance with PowerPoint slides and how to use the videoconferencing equipment for optimum impact.

Thirdly, to reproduce the CAMHS telehealth network in other settings, the professional development can be accompanied by other services, such as clinical support and peer networking. In the CAMHS telehealth network, the clinical needs of the remote rural professionals are met through other contact with CAMHS personnel outside of the professional development sessions. A professional from a remote site might introduce a client case during a professional development session, and it might emerge that the client needed assessment. In these situations, CAMHS staff would arrange to consult over the client after the session.

While difficulties such as funding restrictions may limit the speed of implementation of telehealth facilities in remote areas, its potential usefulness for professional development is now established (Mitchell et al, 2000). It is to be hoped that thoroughly prepared and supported professional development sessions, based on the clearly determined needs of the remote-site practitioners and involving the effective use of technologies, will become a normal service in the health sector in future. This is not an argument to eliminate entirely the need for remote health providers to have direct contact with their urban-based colleagues but, rather, to allow them to have more frequent exposure to otherwise difficult-to-access resources, through the use of telehealth technologies. In the longer term, the delivery of professional development using telehealth technologies promises substantial benefits for remote health providers, health consumers and the community at large.

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A section of the Women's and Children's website at www.wch.sa.gov.au/dmh/projects/rhset.html provides more information about the project.