Networking North Queensland: an e-Health Revolution in the Bush

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BACKGROUND

The lack of telecommunications infrastructure has been a major impediment to the extension of telehealth in North Queensland, particularly in the Gulf and Cape York. In 1998 the Queensland Telemedicine Network consulted with community groups, non-government organisations and government departments regarding the need for improved telecommunications infrastructure in North Queensland and how this could be addressed through funding via Networking the Nation (NTN). As a result of these consultations, Networking North Queensland (NNQ) was developed as a collaborative project involving a number of health service providers including Queensland Ambulance Service, Blue Care, the Divisions of General Practice and Queensland Health.

Networking North Queensland was a two year project that aimed to improve the health outcomes of people living in rural and remote North Queensland, by increasing access to improved telecommunications infrastructure. Upgraded data lines (up to 128 kb) were installed in 58 communities, along with PCs and modems to connect over 300 users to the Internet. Videoconferencing facilities were also installed in 21 communities.

In addition to this new and enhanced infrastructure, the outcomes of the project have also included:

♦ reduction in social and financial costs associated with travel to a regional centre to obtain health and other services;
♦ increased opportunities for distance education, including education and support for isolated health professionals; and
♦ increased access to health services in rural and remote communities.

A major focus of the project was the implementation of five innovative e-health pilot projects targeting improved management and enhanced outcomes in a range of priority clinical/service areas. Each project was formulated to meet a locally identified need. The projects were designed to be illustrative of the range of e-health activities that could be made possible by improved communications. It was anticipated they would serve as models for telehealth in other geographically remote and underserved parts of Australia.
Subproject 1: E-health technologies supporting primary health care

To date, much of the activity in e-health, particularly in the telehealth arena, has focused on health care at the tertiary level. The aim of this pilot project was to evaluate a range of activities that could support the delivery of primary health care utilising the new telecommunications infrastructure provided as a result of the project. While numerous examples of primary health care activities emerged, three key areas of activity are described here.

Tablelands education program

An education program to support rural and remote health care professionals in areas of primary clinical care, delivered via videoconference, was established in the Tablelands, a district centred around Atherton and west to Croydon. Each session was facilitated by a health service provider from one of the communities involved in the project. Topics covered included mental health (depression), diabetes, immunisation, palliative care, Indigenous health and cardiac rehabilitation. Benefits to emerge from this program, in addition to the provision of up-to-date primary clinical care information and skills development, included the opportunity to network with other district team members. All of the sessions were well received, with participants becoming more comfortable with videoconferencing over time.

Patient education via videoconference

Consumer education in the areas of cardiac rehabilitation and diabetes, designed to assist in the recovery and day-to-day management of their condition, is readily accessible to consumers living in metropolitan areas. Consumers of health services living in rural and remote Australia, however, have had limited access to such programs. In partnership with numerous health service providers across a broad region, the project piloted a diabetes patient education session via videoconference.

The pilot linked two videoconferencing sites, Townsville (presenting site) and Mt Isa (remote site). A diverse group participated in the session, including:

- Indigenous patients;
- medical officer;
- Indigenous health workers; and
- allied health professionals.

Of particular interest to the project team were the satisfaction levels reported by Indigenous patients and health workers. Whilst several participants had had concerns about the acceptance of such a model of delivery in the remote communities in the district, overall the Indigenous participants rated their “comfort” levels as more than satisfactory. This result is consistent with a number of other studies (Lessing 1999, Trott 1996, Toyne & Granites 1995) indicating that Aboriginal and Torres Strait Islander people are generally comfortable with videoconferencing.
“Health on the Internet” email list
As a result of the telecommunications infrastructure installed, in a very short time there were more than 300 new email users in the health network in North Queensland. Subsequently NNQ developed a “Health on the Internet” email list to provide new users with an introduction to health information available on the world wide web (WWW). Reputable health sites on the web were forwarded to the list on a weekly basis and feedback/discussion encouraged between participants. A combination of websites suggested by special theme weeks, (eg cancer, diabetes, cardiac rehabilitation) and the North Queensland Rural Health Training Unit website library (www.nqrhtu.org.au) were sent to people on the list.

Subproject 2: Videoconferencing to support remote communities
This project aimed to explore the range of uses to which videoconferencing could be put, particularly in the remote communities in the Gulf and Tablelands districts. Videoconferencing was employed for a range of purposes, a number of which are outlined below.

Family support
Indigenous communities in the Gulf held meetings to discuss issues of concern (primarily health concerns about other family members) with family members great distances away, eg Doomadgee and Mornington Island, two communities more than 500 kms apart, separated by both land and sea in the Gulf of Carpentaria.

Correctional services and legal aid
In the early stages of the project, the NNQ team were involved in technology demonstrations in Hopevale and Aurukun organised by Balkanu and the Cape York Digital Network, where links to family members in prison were conducted. The impact of such meetings was extraordinary and the project has continued to advocate for similar contacts to be made where the new facilities have been installed. The project team has also worked closely with the Women’s Justice Network, another NTN funded project, and has encouraged the use of the new equipment for legal aid consultations.

Business
Demonstrations and community forums generated a great deal of interest from local businesses and government agencies in the communities visited. Job interviews, meetings and training have been the main areas of use to date by businesses. Participants in the community demonstrations who could see the potential in using videoconferencing included geologists, local councillors, service station/road house owners, graziers and property owners, as well as a range of State and Commonwealth government workers from Q-Gap, Centrelink, Queensland Police and various child care agencies.

Education
Numerous school groups were involved in the community demonstrations, and one of the units was placed in a primary school in the Daintree. The project team also supported several links with parents in remote communities to their children (or
children’s teachers/carers) at boarding schools in Townsville, Cairns and Charters Towers.

Health and community care
Organisations such as the Alzheimer’s Association, Home and Community Care (HACC), Queensland Council of Carers, Aged Care Assessment Team, and the Mobile Independent Living Centre utilised the new infrastructure. Of particular interest to some of these organisations was the training of volunteers, support workers and/or carers in remote communities. Support groups also met and received input from their counterparts in metropolitan areas.

Subproject 3: Innisfail Online
The Innisfail Online pilot project developed a health and community information website for the Innisfail community and surrounding districts. Each organisation participating in the project was provided with their own home page linked to the Innisfail Online website. The advantage of the site for participants was the ease with which the website could be accessed and altered to suit the agency’s needs. Diary dates, advertising and health promotion could easily be done from the organisations’ own computer or at the local library or Internet cafe.

Additionally, the project provided:
♦ website development and training for community-based organisations; and
♦ access to the health and community information website through the installation of Internet kiosks that enable and encourage access to the community website.

Subproject 4: Outreach Services Online
The primary aim of this telehealth pilot project was to provide a fast, reliable data service enabling outreach services and remote health centres to access complete and up-to-date patient information when and where required. FROGS (Far North Regional Obstetric and Gynaecological Service), one of several outreach services based at Cairns Base Hospital, was chosen for the pilot. The upgraded data communications resulting from NNQ, meant the specialists were able to “plug” into the Queensland Health WAN at most of the remote communities serviced. This resulted in support to the specialists by allowing timely access to patient data when on outreach visits, (eg pathology results, operation schedules etc). Four laptop computers were also acquired for each of the specialists to enable maximum efficiency of the service when in the remote locations.

Subproject 5: Self-care, home health care and health promotion
The primary aim of this project was to improve chronic disease management through electronic data sharing between the patient, their local health care provider and the specialist. The project intended to look at the use of self-monitoring devices and remote monitoring of cardiac patients. Unfortunately the timing was not right for this subproject. While there were some elements at the ready (eg the self-monitoring devices and human resources), others were either too late or too early. A positive outcome however emerged through the involvement of the project team, in a much larger cardiac project that is emerging in North Queensland, a component of which will
be trialling telecare and self-monitoring of cardiac patients in their own homes using e-health technologies. A further positive outcome has been the project team’s input/expertise into other potential home care/telecare projects in the North.

**OTHER E-HEALTH PROJECTS THAT EMERGED**

As NNQ progressed, a number of other subprojects were implemented and evaluated. Two of these are described below.

**E-medisafe**

The Divisions of General Practice have been major participants in the NNQ project from the outset. The Far North Queensland Rural Division of General Practice, FNQRDGP were particularly interested in participating in a pilot project known as “E-medisafe” in conjunction with improving their telecommunications. The aim of the pilot was to provide secure electronic communications for referrals between health service providers in the Tablelands and surrounding districts. The project enabled GPs and specialists to receive encrypted and digitally signed emails from their desktops. Participants in the project received a smart card with a digital certificate, a smart card reader, listing in the electronic health directory, electronic referral templates, training and implementation support.

**Cape York remote communities calendar of visits**

This project was developed to promote better co-ordination of visits to health centres in remote communities in the Cape York District. Utilising the new technology installed in the Cape communities, online calendars were used by each of the health centres to schedule visits by outreach services and other health care personnel. Key co-ordinators in district offices and outreach teams were given access to these calendars on their own computers, providing immediate access to community schedules, and thereby reducing the number of telephone calls and overlapping visits.

**LESSONS LEARNT**

**Infrastructure**

Lessons learnt in relation to the both the infrastructure and its roll-out across such a vast area and broad range of stakeholders were numerous. Some of the main ones are as follows.

- **Weather:** first and foremost, the principal consideration in the north with the installations of infrastructure, particularly communities in the Gulf and Cape, is the weather. It would seem that no amount of planning allows for the complications that occur as a result of the vagaries of the weather. The wet season in these parts of Australia is both unpredictable and relentless. Lesson learnt … be prepared for anything!

- **User-friendly technology:** the entire project team, including all key stakeholders, worked hard to ensure that telecommunications infrastructure being utilised was “user-friendly”, both technically and administratively. A simple example here … in
the communities where the cabling for videoconferencing was colour-coded and well labelled, the staff many fewer technical problems and calls to the “help desk”.

- **Timely support**: The availability of technical and administrative support at the remote sites at the time of installation was imperative, videoconferencing, email and Internet were new to participants. The availability of project staff to follow-up and advocate on behalf of sites who were having difficulties value-added to the rollout of infrastructure. It became clear to project staff along the way, that follow-up on the small issues needed to be pursued. If not, the issue sat in the “too hard basket” of an IT help desk queue (or never even got that far!)

- **Accessibility**: equipment must be easily accessible for both health workers and consumers to use whenever they have the time, need or inclination. Videoconferencing equipment and computers used for Internet and email access should be in the most accessible locations in the health facilities with the least number of “hoops” to jump through to be able to use it. At the same time, the privacy and confidentiality of health consumers must be preserved.

### Training

The provision of appropriate and timely training was, not unexpectedly, found to be essential to the acceptance and full utilisation of the new technologies. Resistance to change proved to be one of the factors in the non-utilisation or acceptance of the new equipment. Training played a crucial part in assisting reluctant participants deal with the issues associated with the change/s. It was these participants, initially the most resistant, who became the strongest supporters and users of the technology.

Evaluations indicated that training was the most critical component to the success of any of the videoconference sessions conducted. This was true, particularly in the case of education programs presented, both for the presenters and the participants. The more training beforehand in the use of the technology resulted in well-facilitated and more interactive sessions.

All stakeholders acknowledged that health service providers must continue to receive the support and training required to optimise the use of the technology. This is especially so in rural and remote areas where training needs to be delivered on an ongoing basis due to high levels of staff turnover and numbers of relieving staff.

### Collaboration

The project developed a number of unique partnerships with other health service providers from which much was achieved. Collaboration with organisations, such as Blue Care, Queensland Ambulance Service, Royal Flying Doctor Service, the Divisions of General Practice and the Mount Isa Centre for Rural and Remote Health, at the project level fostered further communication and collaboration at a community level. Partnerships also emerged in communities involved in the e-health pilot projects, whereby resources are being shared and expertise passed on within the communities.

Collaboration in the delivery of training across the organisations involved in the project was critical to its success. A further “spin-off” from collaboration in the training arena, was the highlighting of opportunities to improve IT&T support to the rural and remote.
communities involved by working together. It was seen as crucial by all stakeholders that health workers continued to receive the support required to optimise the use of the technology.

“e” for e-health, “e” for empowerment

Community involvement and community access, particularly in relation to the e-health pilot projects was an integral component of the NNQ project. Community members were also encouraged to participate in the training. This contributed to community capacity building, and was evidenced by the willingness and eagerness of members to participate in, make use of and get involved in using the videoconferencing resources to pursue their own business or interests.

Numerous examples emerged throughout the project of participants going from strength to strength with just a small amount of “know-how” on the technologies made available. Directors of Nursing in remote communities who had hitherto had little or no contact with email, Internet or videoconferencing were empowered simply by having access to a means of communication their counterparts in metropolitan areas have taken for granted for many years. Others who participated in the community forums could see the potential and opportunities made available by the improved access to communication.

CONCLUSION

As a result of the project as a whole, clients of health services involved in the NNQ project have increased access to medical, specialist, allied health and primary health care services in rural and remote communities. Access to reliable, up-to-date health care information via intranet and Internet services has been made available to health service providers and has clearly demonstrated benefits for rural and remote clients and patients. The e-health pilot projects demonstrated a range of new and innovative ways to both use and share technologies across the health care continuum. Training, integral to the project at each step was shown to be essential, while the resources developed and fed back into the system will remain as an ongoing support for years to come. Indeed, the project demonstrated what a small team working together across a vast region can achieve — supporting organisations in rural and remote areas with 1960s technology in their move toward the 21st century.

REFERENCES

Lessing, K. Telehealth as a means of improving access to mental health services for geographically remote and underserved populations, (Unpublished masters thesis), University of Queensland, 1999.


Toyne, P & Granites, R.J. Mind in cyberspace, feet on the ground: utilising new and existing communications technology for health service delivery to Aboriginal people in remote areas. 3rd National Rural Health Conference, Mt Beauty, February 2000.

Trott, P. The Queensland Northern Regional Health Authority Telemental Health Project, Journal of Telemedicine and Telecare. 1996; Vol 2, Suppl.1 98–104.


AUTHORS

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