

MANAGING SUICIDES VIA VIDEOCONFERENCING IN A REMOTE NORTHERN COMMUNITY IN CANADA

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ABSTRACT

Introduction. Telehealth in remote communities has been reported to be cost-effective for emergency medicine and possibly for psychiatry.

Methods. The cost of sending a patient out of a remote community for suicide assessment was compared with the cost of maintenance and on-line charges of videoconference. The cost comparison was used to determine the potential savings to the provincial government. User satisfaction was assessed through qualitative questionnaires.

Results. The use of videoconferencing for mental health assessment for 71 patients in a remote northern community saved the Government of Newfoundland and Labrador \$140,088 in 2003. Patients and health professionals were satisfied with mental health assessment via videoconference.

Conclusion. The provision of mental health assessments for patients in a remote community in Labrador, Canada by videoconference was effective and saved money. (*Int J Circumpolar Health* 2004;63(4):422-428)

Keywords: telehealth, suicides, northern

INTRODUCTION

This article describes a telepsychiatry telehealth project in Northern Labrador that has completed its pilot phase and has proven to be sustainable with telepsychiatry.

Telehealth projects are increasing all over the world and there have been several reports of its cost-effectiveness. It has great potential benefits for people living in circumpolar regions because of the geographic distance to access health services that are not provided locally. Telehealth has the potential to bring health services closer to home (1)

World-wide there are many pilot telehealth projects but they have to be cost-effective to be sustainable beyond the pilot phase (2-4). Much of the telemedicine activity so far has been in the form of pilot projects with funding from government or other sources. The number of self-sustaining, commercial applications of telemedicine is still very small. Telemedicine undoubtedly yields cost savings in certain circumstances, but few service providers have found a way to make a profit or recover the cost of providing the service (6). A telemedicine project in a remote prison in North Carolina, USA, used mainly for dermatology, neurology and gastroenterology consultations, where the cost of transporting inmates was estimated at US \$700 per inmate, was found to be cost-effective (6). A telemedicine link in Scotland between the casualty department of a remote community hospital and the accident and emergency department of a large urban hospital was comprised of teleradiology and videoconferencing. With 120 teleconsultations in one year between the community hospital and the specialist trauma centre, this service reported an estimated annual cost saving of £65,000 (7). The Telemedical Emergency Neurosurgical Network (TENN) in Australia was developed to establish community-level access to neurosurgical critical care services for an underserved urban population. After the first 35 months of operation, in addition to confirming clinical efficacy and cost-effectiveness, TENN resulted in the actual saving of life, prevention of permanent disability and a net saving of \$561,774 mainly from reduced air transportation (8). In northern Ontario, the initial and projected examination of the health costs suggested that telehealth for cardiology consults would effectively reduce overall health care spending while decreasing travel expenses for patients (9).

In Scotland, a pilot tele-oncology in a rural district general hospital in Scotland was well accepted by staff and patients and the recommendation was for further cost-effectiveness studies (10). In rural Vermont, USA the

use of a real-time video telemedicine was reported as having great potential for vascular surgeons, but cost-effectiveness studies may be needed prior to its widespread adoption (11). A systematic review of the English literature by P Whitten et al in 2000 concluded that there was no good evidence that telemedicine was a cost effective means of delivering health care (12). Agency for Healthcare Research and Quality in the USA indicated that a large number of gaps remain in both efficacy and effectiveness research concerning access, satisfaction, quality of care, cost, and cost-effectiveness of telemedicine applications (13). Roine R et al reviewed the literature and in 2001 reported that telepsychiatry was one of the applications where there was convincing evidence of effectiveness, but the evidence for cost-effectiveness was still lacking (14). Strategis of Industry Canada in 2004 stated that the research literature suggested that telehealth has the potential to improve health services delivery while maintaining patient health outcomes, but that its cost-effectiveness and implementability have yet to be clearly demonstrated (15). A study on telepsychiatry in rural South Australia demonstrated that many patients with psychiatric problems could be effectively managed in their local country hospitals with good outcomes (16). Brown FW in 1998 suggested that telepsychiatric applications can be cost effective, but needed evaluation (17). In a review of telepsychiatry literature, D. M. Hilty et al in 2004 concluded that telepsychiatry was effective but more research was needed to quantify the predictors of satisfaction and cost outcomes (18).

This evaluation of the mental health assessment application of telehealth for a remote community in Labrador will add to the literature on cost-effectiveness of telepsychiatry for remote communities.

METHODS

The remote, northern community of Nain has a population of 1,150. A physician visits the community for 5 days, on average every three weeks. Access to the community is by plane. Nain is an hour and 15 minutes by Twin Otter aircraft from the secondary care health center in Goose Bay. When a physician is not in the community, referrals for suicide assessment by a physician are made by videoconference. The nurse and/or counsellors in the community participate in the assessment.

The videoconference telehealth system was set up as part of a pilot project for Industry Canada. The health services sector is one of the users

of the system. Other users include the justice department, schools, college, businesses and individuals. The operator charges the user for the time.

Before videoconferencing became available, and when there was no physician in the community, patients requiring physician assessment for suicide were flown to the secondary health care facility. The Royal Canadian Mounted Police (RCMP) escort patients.

For the 2003 calendar year, cost analysis of all mental health assessments was done based on the cost of transferring patients including the cost of RCMP escort. This was compared with the cost of operating the videoconference and the counsellor/nurse time. The physician cost is assumed to be the same for both videoconference and in-person consult.

The author assessed the satisfaction of patients, nurses, mental health workers and physicians with video-consultation through a qualitative questionnaire.

RESULTS

Cost in Canadian \$ for transferring one patient for mental health assessment:

Cost of return air travel for patient and escort	\$1173.00
Cost for RCMP escort for 2 days	\$400.00
Cost for meal expenses for RCMP for 2 days	\$83.00
Cost for accommodation for RCMP for one night	\$89.00
Total	\$1745.00

Cost in Canadian \$ for videoconference mental health assessment:

Booking fee	\$25.00
On line charge for one hour	\$125.00
Cost for nurse/counsellor for one hour	\$32.00
Cost for telehealth coordinator for 15 minutes	\$5.00
Capital cost attributed	\$19.36*
Total	\$206.36

* The replacement cost for the telehealth equipment and software in both locations is \$12,000. In 2003, there were 71 mental health assessments, 35 non-mental health assessment and 18 non-health applications. 57.2% of the telehealth hours were used for mental health assessment and the amount of the capital cost attributed to mental health assessment was

\$6864. The equipment and software is expected to be replaced every five years and the capital cost per year attributed to videoconference mental health assessment is \$1372.80. For each of the 71 videoconference mental health assessments, the capital cost attributed is \$19.36.

Of the 71 patients seen by videoconference, three patients were sent to the secondary care hospital for further assessment and treatment. This meant that the cost of three hours of videoconference was incurred unnecessarily for these three patients.

The Government of Newfoundland and Labrador funds healthcare and policing. Videoconference mental health assessment saved the Government in 2003, Canadian \$104,088.44**

** $[(1745 - 206.36) \times (71 - 3)] \text{ minus } [206.36 \times 3] = 104088.44$

The unemployment rate in the community is 68%. The loss of income for patients if they have to travel to the secondary care hospital was not assessed.

Users' satisfaction was assessed through a qualitative questionnaire. With videoconsultation the presence of the local nurse/counsellor during the mental health assessment allowed for the remote physician and the local health provider to collaborate in the management of the patient. Satisfaction with this model of care was high for patients mainly because patients who were determined to be safe following videoconsultation could be released immediately from the local police lock-up. Because of the collaborative consultations, patients were immediately linked with and could be followed up by local mental health workers. This process was rated highly by doctors, mental health workers, nurses and patients. The only exception was with locum physicians who reported a low comfort level with video-consults.

In 2003 there were 2 instances when there were technical problems relating to inability to connect. These were corrected within the same day. Other technical issues related to not being able to control the remote camera. This occurred in 5 of the 71 video-consults. The local site had control of the camera and the physician had to direct the nurse/counsellor for zooming or changing direction of the camera. Changes in the camera were not required except during initial set-up. In all these instances, the videoconferences were completed in less than one hour and

there were no additional charges. The average time for a videoconference mental health assessment was 25 minutes

During this period none of the patients successfully completed suicide. In the previous year there were seven deaths from suicide. The decrease in death from suicide could not be attributed to the easier access to physician consults with videoconference. There were other changes in the community that likely contributed to the decline in successful suicide attempts. Processes that were ongoing included the community consultation process by elders of the community and the implementation of a local suicide hotline.

DISCUSSION

There is already good evidence in the literature that telepsychiatry is effective (13-17). However, there is little evidence in the literature that telepsychiatry is cost-effective (11-14,17). Our findings showed that videoconferencing for mental health assessment for a remote community with a high burden of suicide saved money. The cost benefit accrued mainly from air travel savings for patients and escorts who no longer had to travel to a distant secondary care facility. The presence of savings to the government is evident even after taking into account the capital and support cost. We found telehealth effective in mental health assessment. Patients and health providers were satisfied with the use of telehealth for mental health assessments. There was no completed suicide during the year of this study.

The one-hour video-consult per patient allotted in this study was more than adequate. Our current practice is to book one-half hour per patient because the one-hour videoconference was never fully utilized.

CONCLUSIONS

Provision of mental health assessments for patients in a remote community in Labrador, Canada, by videoconference, saved money and was effective. The saving was mainly from the cost of travel. With similar high costs for patients to travel to distant health facilities in most circumpolar regions, video-consultation can be cost-effective. Savings can be directed to other mental health programs.

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