RESPONDING TO MENTAL HEALTH EMERGENCIES: IMPLEMENTATION OF AN INNOVATIVE TELEHEALTH SERVICE IN RURAL AND REMOTE NEW SOUTH WALES, AUSTRALIA

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Introduction: Mental health is a national priority in Australia, and the need is greatest where access to specialist care is poorest, in the rural and remote regions of the nation. The Mental Health Emergency Care–Rural Access Project (MHEC) was developed to provide 24-hour access to mental health specialists in rural and remote New South Wales using video conferencing equipment.

Method: An evaluation of the service activity of MHEC using a concurrent mixed methods approach.

Results: Use of the service increased from a low base to around 60 video assessments per month at the end of the study period. Use of video assessments was greatest in the remote zone (30.7 video assessments/10,000 population/year). The number of people referred to a mental health inpatient unit declined (50 fewer patients, representing a decrease from 73% to 52% of all admissions between 2008 and 2009). Both patients and providers found the service helpful. Most patients (81%) stated that they would recommend or use the service again.

Discussion: This service is well positioned to have an increasing effect on emergency nursing and patient outcomes, as well as potentially on transportations. Continued use of MHEC suggests that video conference technology is acceptable and offers responsive specialist emergency mental health care to rural and remote communities.

Key words: Mental health; Emergency; Rural; Remote; Telemedicine; Australia

Around 10% of all ED presentations are for mental health conditions.1 Despite this situation, health practitioners in emergency departments feel ill-equipped to manage patients with mental health problems.1-2

When mental health patients present in crisis to a small rural emergency department, responding to the emergency is made more difficult if staff (usually nurses) cannot access specialist mental health practitioners for advice and input. Workforce shortages further limit the availability of specialist support in many rural and remote communities.3

In rural and remote Australia, the decision about whether to manage mental health patients locally or trans-
fer them out of their community to a mental health inpa-
tient unit (MHIPU) has significant implications for the
patient, family, and caregivers, as well as for emergency ser-
vices. While a decision to transfer is often governed by con-
cerns for patient safety, it also is influenced by local clinical
capacity and clinician confidence. The decision also may be
affected by negative attitudes toward mental health care.4
Together these factors may increase the number of poten-
tially avoidable patient transfers.

This concern was highlighted in a service audit of patients
presenting to an MHIPU in Western New South Wales in
2006 (personal communication, Martyn Patfield, MA,
MBBS, FRANZCP). The audit found that some presenta-
tions associated with mental health problems that developed
acutely could have been better dealt with through community
management and did not require admission to an MHIPU.
The need for change was further reinforced by evidence that
ey early intervention in the management of mental health emer-
gencies can reduce patient distress and that care provided
locally can benefit many mental health clients.5

Access to and the provision of specialist emergency
mental health care for rural and remote communities is
“limited by distance, expense, transport, and difficulty of
recruiting health professionals to these areas.”6 Telehealth
is being used internationally for health care, including mental health, and can deliver efficient triage, assessment, and treatment planning. Such a service offers access to patients and providers “without spending hours in transit” and may be effective for follow-up consultations.

This article reports on a formative evaluation of the Mental Health Emergency Care–Rural Access Project (MHEC), a service designed to improve access to emergency mental health assessment and care in the western region of New South Wales, Australia.

Service Design

The project was informed by a review of remote access service delivery models. An extensive consultation took place over 12 months with stakeholders (e.g., police, ambulance, general practitioners, ED nurses, Aboriginal and community representatives) and included site visits and town meetings.

The aim of the service was to improve access, safety, and service coordination by supporting generalist staff in rural and remote locations with timely delivery of expert mental health assessment and advice on request and to enhance the skills of the local workforce in dealing with mental health emergencies.

The new service was managed by a team of mental health nurses and psychiatrists working from the primary MHIPU and incorporated staff and resources from an existing 24-hour telephone triage, information, and support service. The MHEC team provided around-the-clock consultation and support to rural and remote emergency departments throughout the Greater Western Area Health Service (GWAHS), an administrative unit of the New South Wales Health System that services 287,481 people and has developed a 55% of the state.15-16

Telehealth links were established to remote sites using a network of video conferencing facilities based in emergency departments, either by using existing equipment or providing new, purpose-built, high-speed, portable equipment. Video assessment was offered if the remote site had video-conferencing facilities, there were no patient-based contraindications, and an urgent mental health assessment was required. Clinical governance was administered through GWAHS and the quality improvement plan for the service included a psychiatrist-led review of each case managed by the MHEC team. Use of the service was promoted by educating ED staff about the new service, the technology, and the management of mental health emergencies.

Evaluation Methods

A concurrent mixed method approach with a triangulation design was used and examined the same questions with quantitative and qualitative methods. A researcher was located with the MHEC team to become familiar with the service and its activity and to monitor the quality and completeness of routinely collected data.

Activity data were collected on each 1800 (freecall) telephone call triaged by the MHEC team for an emergency mental health assessment. These data included the type of caller (health professional, emergency service provider, community member); patient details (date of birth, gender, indigenous status); geographical location of call (township/local government area); the location of the caller (emergency department, other health care facility, community setting); provisional diagnosis (behavioral categories); patient referral (video assessment, hospitalised, transferred to MHIPU, outpatient referral, other); and assessing clinician (MH nurse, psychiatrist).

For the purposes of the evaluation, the MHEC service area was divided into 3 zones based on population density and distance from the primary MHIPU at Orange: Inner Rural Zone (within 2 hours of the primary MHIPU), Outer Rural Zone (2-4 hours away), and Remote Zone (more than 4 hours travel from the primary MHIPU) (Figure 1).

Semi-structured interviews with 20 ED staff from across the health area were conducted at baseline (face-to-face) and 6 months (by telephone). Questions focused on the accessibility and acceptability of the service. We also surveyed 31 patients (50% of those selected for interview) who consented to a brief telephone-administered questionnaire and interview within 72 hours of a video assessment. Patients were asked to rate their experience with video assessment using a 5-point Likert scale and were questioned about the value and acceptability of this service (Table 1).

Quantitative data were analysed using Excel. We compared activity data from 2008 and 2009 (two 10-month periods). Statistical significance for categorical data was determined using two-tailed χ² statistical tests (P < .05).

<table>
<thead>
<tr>
<th>Question 1: Was the service prompt and timely to your needs?</th>
<th>Question 2: What do you think of the care you received?</th>
<th>Question 3: Did the care seem to be well organised between service providers (doctor, team, transport)?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Was it useful/helpful?</td>
<td>Was it useful/helpful?</td>
<td>Was it useful/helpful?</td>
</tr>
<tr>
<td>Did the care seem to be well organised between service providers (doctor, team, transport)?</td>
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</tbody>
</table>

TABLE 1

Patient satisfaction questions

During a telephone survey conducted within 72 hours of a video assessment, patients were asked to grade their experience of the service on a scale of 1 to 5, with 1 = no, not at all to 5 = yes, very much so.
We used the z score (Poisson distribution) to compare usage rates of video assessment between different geographical zones. Thematic analysis was used for the provider and patient interviews and examples were chosen to strengthen that understanding. Ethics approval for the study was received from the Greater Western Area Health Service Human Research Ethics Committee.

Results

The MHEC team completed 3800 emergency mental health assessments between March 2008 and October 2009 (190/month), 558 (14.7%) of which were referred for a video assessment. Use of this service varied across the health area. Although the number of telephone assessments was significantly lower in the remote zone (58 assessments/10,000 population/year; z score 7.65, P < .000 and z score 8.43, P < .000, respectively), the use of video assessments by health services was greatest on a population basis in the remote zone, after centres with an MHIPU were excluded (30.7 video assessments/10,000/year for the remote zone compared with 23 and 17 assessments/10,000/year for the outer rural and inner rural zones (z score 4.34, P < .000, and 1.83, P = .0036, respectively) (Table 2).

With a consistent demand for emergency mental health assessments during the study period, the number of video assessments increased 6-fold from an initial 3-month rolling average of 10 to 60 assessments per month over 20 months (Figure 2).

Equal numbers of male and female patients received an emergency mental health assessment (Table 3). Threat of self-harm or suicide (43%) was the most common behavioural presentation, followed by psychotic/bizarre behaviour (22%) and anxiety and/or depression (21%). People categorised as exhibiting psychotic or bizarre behaviour were more likely to be referred for video assessment initially. However, during the second 10 months of operation, as use of the technology become more commonplace, the relative increase in referral rate for this group of patients lagged behind other behavioural presentations. Thus while the absolute number of people with psychotic or bizarre behaviour referred for video assessment increased by 55% from 2008 to 2009 (44 to 68), the proportion declined from 27% to 17% of all video assessments ($\chi^2_{4df} = 15.6, P < .005$).

The proportion of patients admitted to a hospital after emergency mental health assessment increased from 35% to 43% between 2008 and 2009 ($\chi^2_{2df} = 27.4, P < .000$). Over the same time period 50 fewer patients were admitted to an MHIPU—a decline in the MHIPU referral rate from 73% and 52% of all admissions in 2008 and 2009, respectively ($\chi^2_{2df} = 72.8, P < .000$) (Table 3).

Overall, patients referred for video assessment were more likely to be admitted to a hospital than those assessed by telephone only (47% vs 38%) ($\chi^2_{2df} = 18.3, P < .000$). However, if admitted, they were less likely to be referred to an MHIPU (45% vs 65%) ($\chi^2_{2df} = 35.5, P < .000$); that is, they were more likely to be cared for in the local hospital. The video assessments were conducted

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TABLE 2

Emergency mental health assessments (telephone and video) in the Greater Western Area Health Service, MHEC-RAP team, 20 months, March 2008–October 2009

<table>
<thead>
<tr>
<th>Zone</th>
<th>Inner rural</th>
<th>Outer rural</th>
<th>Remote</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>202,006</td>
<td>37,350</td>
<td>48,125</td>
</tr>
<tr>
<td>(excluding centres with MHIPUs)</td>
<td>(92,980)</td>
<td>(37,350)</td>
<td>(28,764)</td>
</tr>
<tr>
<td>Communities</td>
<td>36</td>
<td>19</td>
<td>18</td>
</tr>
<tr>
<td>(No. with VC equipment)</td>
<td>(10)</td>
<td>(10)</td>
<td>(14)</td>
</tr>
<tr>
<td>Emergency assessments</td>
<td>3190</td>
<td>687</td>
<td>467</td>
</tr>
<tr>
<td>(usage ratea)</td>
<td>(94.7)</td>
<td>(110.4)</td>
<td>(58.2)</td>
</tr>
<tr>
<td>Video consultations</td>
<td>266</td>
<td>143</td>
<td>149</td>
</tr>
<tr>
<td>(usage rateb)</td>
<td>(7.9)</td>
<td>(23.0)</td>
<td>(18.6)</td>
</tr>
<tr>
<td>(excluding centres with MHIPUsb)</td>
<td>(17.2)</td>
<td>(23.0)</td>
<td>(30.7)</td>
</tr>
</tbody>
</table>

MHEC-RAP, Mental Health Emergency Care–Rural Access Project; MHIPU, mental health inpatient unit; VC, video conferencing.

aUsage rate = number/10,000 population/year.
bExcludes 2 remote zone and 111 inner rural zone video consultations initiated from population centres with MHIPUs.
by psychiatrists 40% of the time and specially trained mental health nurses in 60% of cases.

Approximately 1 in 5 patients assessed by videoconference and managed as an outpatient had a second video assessment within 5 days of the initial assessment (16 patients in 2008 and 38 patients in 2009). Only 6 of these patients (11%) were admitted to a hospital after the second consultation.

Feedback from patients assessed by video conferencing was generally positive. Of 31 patients surveyed, 25 (81%) agreed or strongly agreed that the service was responsive to their needs (mean score 4.1), 28 (90%) agreed that care was well organised between their location and the other site (mean score 4.42), and 25 (81%) said they would consent to use the service again or recommend it to someone for use. Patients also reflected on the acceptability of the service in terms of its convenience, immediacy, and ease of access from their community:

“[It was] easy to use; [I] didn’t have to go far. It’s a good thing if [I] can see a doctor faster.” –Patient 11

“[It was] good to talk to someone straight away rather than wait till the next day … it’s easier to talk to someone than nobody.” –Patient 24

“Easier than talking on the phone because you could actually see who you’re talking to.” –Patient 37

“It was useful because otherwise I have to go away; it’s a wonderful service because I didn’t want to [go away to hospital] and I got to stay with my family.” –Patient 41

ED staff also reported on the acceptability of the service, saying that it was convenient to use, clinically helpful, and becoming part of usual practice:

“Basically it’s been successful…over the night we’ve managed to use it and discharge two people.” –Health Provider Da

“Good bits are that it is quite convenient, it’s simple to use, …and the patients don’t find the screen distracting at all.” –Health Provider Oa
“It’s now a part of our management plan in mental health situations.” – Health Provider Wc

“We’ve been using it heaps and sometimes the girls have just sort of rung in to get some advice…it’s an extra service instead of having nothing.” – Health Provider Wd

**Discussion**

The MHEC service was successful in improving emergency mental health care provision in western New South Wales, Australia. It provided support to ED and other generalist health staff in rural and remote locations with expert and timely mental health assessment and advice on request. This goal was achieved through the development of an integrated emergency mental health assessment and video consultation service.

It took approximately 2 years for the enhanced service to become established from a low base to approximately 60 video assessments per month, and there is scope for further growth. This development was supported by the ongoing education and training of ED staff and an expanding network of high-quality video equipment in rural locations. The service had an impact on clinical decisions and a perceived reduction in the number of patients transported from their communities to an MHIPU during the study period. As referrals for video assessment increased, proportionately more patients who otherwise may have been transferred were managed locally.

While not initially part of the service design, a number of follow-up video assessments were arranged for patients managed in the community, providing further support for patients and rural clinicians through improved access to expert advice. Interviews with ED staff and patients confirmed their acceptance and satisfaction with the service. It was also interesting to note that video assessments were accessed relatively more frequently on a population basis in the more remote communities where health staff experience professional isolation and ongoing workforce shortages.

**TABLE 3**

**Summary of emergency mental health assessments conducted by the MHEC-RAP team, March 2008 - October 2009**

<table>
<thead>
<tr>
<th></th>
<th>Telephone assessment no. (%)</th>
<th>Video consultation no. (%)</th>
<th>Total no. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2008</td>
<td>2009</td>
<td>Total</td>
</tr>
<tr>
<td>Total Consultations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>1984</td>
<td>1823</td>
<td>3807</td>
</tr>
<tr>
<td>Average/mo</td>
<td>198</td>
<td>182</td>
<td>190</td>
</tr>
<tr>
<td>Patient sex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1008</td>
<td>937</td>
<td>1945</td>
</tr>
<tr>
<td>Female</td>
<td>974</td>
<td>886</td>
<td>1860</td>
</tr>
<tr>
<td>Behavioural presentation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aggression</td>
<td>142</td>
<td>117</td>
<td>259</td>
</tr>
<tr>
<td>Threat harm/suicide</td>
<td>854</td>
<td>772</td>
<td>1626</td>
</tr>
<tr>
<td>Psychotic, bizarre</td>
<td>405</td>
<td>396</td>
<td>801</td>
</tr>
<tr>
<td>Anxiety, depression</td>
<td>434</td>
<td>379</td>
<td>813</td>
</tr>
<tr>
<td>Other</td>
<td>149</td>
<td>159</td>
<td>308</td>
</tr>
<tr>
<td>Patient referral</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outpatient</td>
<td>1305</td>
<td>1058</td>
<td>2363</td>
</tr>
<tr>
<td>Inpatient</td>
<td>679</td>
<td>765</td>
<td>1444</td>
</tr>
<tr>
<td>MH inpatient unit</td>
<td>519</td>
<td>412</td>
<td>931</td>
</tr>
<tr>
<td>General hospital</td>
<td>160</td>
<td>353</td>
<td>513</td>
</tr>
<tr>
<td>Assessing clinician</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psychiatrist</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Mental health nurse</td>
<td>1984</td>
<td>1823</td>
<td>3807</td>
</tr>
</tbody>
</table>

MH, Mental health; MHEC-RAP, Mental Health Emergency Care–Rural Access Project.
LIMITATIONS
The evaluation was designed to examine service processes and measure effects, not to assess patient outcomes. Although the evaluation did not include an external comparison group, we did compare the impact of the service on hospitalization rates across 2 time periods during the implementation phase. A detailed analysis of the costs and benefits of the new service is planned, including an examination of hospitalisations during the implementation phase and a before/after study of patients transported from outlying communities to an MHIPU to determine the appropriateness of these clinical decisions.

IMPLICATIONS FOR EMERGENCY NURSES
Access to mental health specialists during a mental health emergency presentation is only a straightforward video conference or telephone call away, allowing for prompt and expert care for the patient. The video conferencing equipment was designed to be readily available, uncomplicated, and easy to use. MHEC offers access to mental health specialists 24 hours a day, 365 days a year, and it organizes safe care for mental health patients through service coordination and liaison with the various emergency service agencies. Once ED practitioners became aware of the service, they made use of the opportunities for specialist consultations and advice and provided more responsive mental health emergency care for their communities.

Conclusion
The MHEC service was developed in response to community concerns about poor access to emergency mental health care. While rural residents accept that they may need to travel for health care that cannot be provided locally, the opportunity to develop novel solutions to problems that are not amenable to conventional approaches can result in improved access to services delivered locally through use of new technologies. MHEC is an example of a novel solution to an otherwise intractable problem of providing adequate and timely emergency mental health care to rural and remote communities.

Acknowledgements
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REFERENCES