Successful provision of emergency mental health care to rural and remote New South Wales: an evaluation of the Mental Health Emergency Care–Rural Access Program

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Abstract

   Objective.   To evaluate a rural emergency telepsychiatry program, the Mental Health Emergency Care–Rural Access Program (MHEC-RAP), which aims to improve access to emergency mental health care for communities throughout western New South Wales (NSW).

   Methods.   A descriptive analysis of service activity data from the introduction of the MHEC-RAP in 2008 to 2011 using Chi-squared tests and linear regression modelling to assess change and trends over time.

   Result.   There were 55 959 calls to the MHEC-RAP, 9678 (17%) of these calls initiated an MHEC-RAP service (~2500 each year). The use of video assessment increased over 18 months, then levelled off to an average of 65 each month. Health care provider use increased from 54% to 75% of all contacts, and 49% of MHEC-RAP patients were triaged 'urgent'. Most (71%) were referred from the MHEC-RAP for outpatient care with a local provider. The proportion of MHEC-RAP patients admitted to hospital initially increased by 12%, then declined over the next 2 years by 7% (by 28% for admissions to a mental health inpatient unit (MHIPU)).

   Conclusion.   The MHEC-RAP is well established. It has achieved acceptable levels of service activity and continues to be as used as intended. Further research is required to confirm how the MHEC-RAP works in terms of process and capacity, how it has changed access to mental health care and to document its costs and benefits.

What is known about the topic?   Rural and remote communities have poorer access to and use of mental health services. Telehealth care is a reliable and accepted means for providing non-urgent mental health care.

What does this paper add?   The MHEC-RAP is a practical and transferable solution to providing specialist emergency mental health care, and support for local providers, in rural and remote areas via telehealth. There is a possible impact upon the problem of recruiting and retaining a mental health workforce in rural and remote areas.

What are the implications for practitioners?   Providing reliable remote access to specialist mental health assessment and advice while supporting providers in rural communities can result in better outcomes for patients and services alike.

Introduction

Although there is little difference in the prevalence of mental health problems across urban and rural populations in Australia, rural and remote communities have poorer access to and use of mental health specialists and services, associated with poorer mental health outcomes, including higher suicide rates and Kessler Psychological Distress Scale (K-10) scores.[1–5] Providing appropriate and timely acute care for mental health problems can have significant implications for the patient, their family, local providers, emergency services and the health service.

   The provision of specialist mental health care in rural and remote regions is hindered by geographic isolation and ongoing

workforce shortages.[6] General practitioners (GPs) and emergency departments are the usual providers of emergency mental health care in such settings.[1,7,8] Responding to emergency presentations demands considerable dedication from local clinicians, who may lack specific mental health training, confidence or time to care for mental health patients.[8–10]

The management of mental health emergencies in communities without ready access to specialist expertise can result in the unnecessary transfer of some patients out of their community to a mental health inpatient unit and, for others, a delay in referral and/or diagnosis due to local providers underestimating the seriousness or extent of the condition.[8,11,12] Timely intervention and locally provided care for such emergencies can reduce patient distress and benefit client outcomes.[8]

In 2005, NSW Health funded rural health services to develop and implement projects that would increase community access to emergency mental health care and improve patient outcomes. In response, the former Greater Western Area Health Service (now the Western NSW and Far West Local Health Districts) established the Mental Health Emergency Care–Rural Access Program (MHEC-RAP), a telehealth program that provides access to mental health specialists 24 h a day, 7 days a week.[13–15]

The use of telehealth is not new to mental health and MHEC-RAP is not the first telehealth emergency mental health care model to be developed in Australia.[16–18] Telepsychiatry has been proven to be reliable and acceptable to both patients and providers for non-urgent care and has great potential for emergency care.[19–24] The initial evaluation of the MHEC-RAP during the establishment phase concluded that the program was helpful for both providers and patients.[25,26]

The present study is part of a further evaluation and was designed to document longer-term changes in service use, identify gaps in services use and inform further service development. This article examines patterns of program service use from the introduction of the MHEC-RAP in 2008 to 2011.

Service design

The MHEC-RAP is a dedicated rural emergency telepsychiatry program that aims to improve access to emergency mental health care for communities throughout western New South Wales (NSW), with a resident population of approximately 300 000, of whom 9% are Indigenous.[13,27] The MHEC-RAP provides 24-h access to specialists, offering assistance to health providers and emergency triage and mental health assessment for patients throughout western NSW.

The MHEC-RAP team is based at the Bloomfield Mental Health Campus in Orange, NSW. The team includes mental health nurses and psychiatrists; there are always two or three nurses on duty and a psychiatrist or Registrar is available on-call when they are not on site. The team is also supported by a full-time Nursing Unit Manager, a Clinical Nurse Consultant and an Administration Officer. Members of the MHEC-RAP team have knowledge about the communities throughout the region, their local services and resources in order to provide contextually appropriate advice and referrals.

Health information and specialist assistance provided by the MHEC-RAP team is available via the free call State Mental Health Telephone Assistance Line (SMHTAL; 1800 011 511).

New Internet protocol video assessment links and equipment have been added to an existing integrated services digital network telehealth system to connect the MHEC-RAP with local health care facilities in the outlying communities.

The MHEC-RAP nurses answer the free call line and assess every presentation. Most callers to the MHEC-RAP are offered information or advice. For the remainder, the call proceeds to a formal emergency telephone triage and, in some instances, includes a video assessment. At the completion of each triage and/or assessment, the MHEC-RAP coordinates the transfer of care for each patient to be either managed locally as an inpatient or outpatient or to be transported, usually out of their community, to a mental health inpatient unit (MHIPU). The triage, assessment and transfer of care activities make up the unique MHEC-RAP service (Fig. 1).

Methods

Routinely collected data were extracted from the MHEC-RAP datasets that recorded telephone calls, emergency triages and video assessments between February 2008 and December 2011. This study was given ethics approval by the Greater Western Human Research Ethics Committee (LNR/11/GWAHS/59).

For every MHEC-RAP service activity (emergency triage and video assessment), a standard NSW Health mental health form is completed and items from the forms are entered into Microsoft Excel (2007, Microsoft Inc. Redmond, WA, USA) spreadsheets that create the MHEC-RAP service datasets. Data from the spreadsheets were merged to create one MHEC-RAP service dataset for the analysis. Data were reviewed for consistency (spelling), missing values and out of range values. Multiple contacts for the same patient were sorted by medical record number (MRN) and date of contact and assessed for consistency. For multiple contacts with inconsistent demographic data, the majority response for that patient was entered for each contact. Missing values were coded as Unknown (UKN).
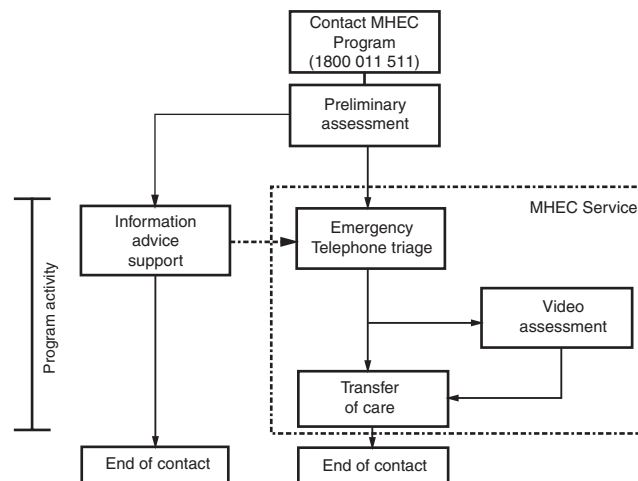

Fig. 1. The Mental Health Emergency Care–Rural Access Program (MHEC-RAP). The dashed line indicates a possible path through the MHEC-RAP activities; the boxed activities create the unique MHEC-RAP service.

Caller, patient presentation, referral and urgency responses were categorised in consultation with the MHEC-RAP Nurse Unit Manager. Linked triage and video assessments were established through matched MRN and date of contact.

The following data items were extracted for analysis: MRN, service type (triage or triage and assessment activity), date of contact, caller category, patient presentation category, referral category, urgency response category, patient gender and age group, and Indigenous status.

Data were analysed with Microsoft Excel and SPSS (IBM, SPSS Inc. Statistics 19, 2010, Armonnk, NY, USA) using Chi squared tests to determine changes in numbers over time using adjusted values for 2008 (numbers presented for 2008 were prorated because the service commenced in February; the actual numbers were based on 45 weeks of activity and have been scaled by a factor of 1.15). Linear regression was used to determine the trend in activity where months were numbered 0 to 45 from March 2008. A two-part linear regression model with change point at 18 months was used to assess the possible trend in use for video assessments. The 95% level of significance was used for all analyses.

Results

Overall use of the MHEC-RAP

Over the study period there were 55 959 calls to the MHEC-RAP; 9678 (17%) of these calls initiated a MHEC-RAP service (7456 emergency triage only and 2222 triage and assessment). Approximately 2500 MHEC-RAP services were delivered each year and most patients (73%) received an MHEC-RAP service only once during the 4 years (Table 1).

Trend in MHEC-RAP service activities

The mean number of emergency telephone triages per month was 208 (range 141–305). There was no evidence to suggest that the use of this activity changed during the study period (triage regression: $y = 0.339x + 199.5$, $R^2 = 0.019$, $F_{1,44} = 0.843$,

$P = 0.363$), whereas the use of video assessments increased over the 4 years. There was an initial adoption phase during the first 18 months (regression: $y = 1.62x + 4.50$, $R^2 = 0.60$, $F_{1,16} = 23.68$, $P < 0.001$), followed by a levelling off to an average of 65 assessments per month (regression: $y = -0.57x + 84$, $R^2 = 0.11$, $F_{1,26} = 3.3$, $P = 0.08$; Fig. 2).

Users of MHEC-RAP services

Throughout the study period, 67% of callers using MHEC-RAP services were health care providers. The profile of MHEC-RAP service users changed over the 4 years, with provider use increasing from 54% to 75% of all contacts, whereas the number of lay people (family, friends or patients) making direct use of the service decreased in both absolute and relative terms from 36% to 20% ($\chi^2_{\text{d.f. } 6} = 311.6$, $P < 0.001$; Table 2).

The increase in health providers using MHEC-RAP services was due to hospitals ($\chi^2_{\text{d.f. } 9} = 301.6$, $P < 0.001$). Hospital use doubled over 4 years, from 742 to 1495 calls per year, to become the predominant user of the MHEC-RAP. Use remained relatively stable for community mental health teams, declined for emergency services and decreased by 60% for GPs (Table 2).

Characteristics of MHEC-RAP service patients

Although the services were used for patients of all ages, the largest number of patients (44%) was aged 25–44 years. The only age group to show substantial growth in numbers was the 0–17-year-old group, which increased from 177 (adjusted) in 2008 to 400 in 2011 ($\chi^2_{\text{d.f. } 3} = 92.16$, $P < 0.001$); in contrast, the 65+ year age group decreased by approximately 30% ($\chi^2_{\text{d.f. } 3} = 19.96$, $P < 0.001$) in latter years. Fourteen per cent of MHEC-RAP patients were reported to be Indigenous (Table 2).

The most common presenting problem was 'harm self or others/suicide' (45%), followed by 'anxiety/mood' (22%) and 'bizarre/psychotic behaviour' (18%). There was no major change in the relative frequency of these presentations over the 4 years (Table 2). Almost half the patients were referred for 'urgent'

Table 1.   Mental Health Emergency Care–Rural Access Program (MHEC-RAP) and service use by year (2008–2011)

UKN, unknown

	2008 (adjusted)[A]	2009	2010	2011	Year UKN	TOTAL
Use of MHEC-RAP						
Total incoming calls	13 662 (15 712)	16 684	13 744	11 869		55 959
Use of MHEC-RAP service						
Triage only	1968 (2262)	1900	1689	1849	50	7456
Triage and assessment	163 (189)	541	831	682	5	2222
Total MHEC-RAP service activity	2131 (2451)	2441	2520	2531	55	9678
Frequency of use (by patient)						
No. MHEC-RAP services						
1	1047 (1204)	1367	1443	1566	50	4334
2	238 (274)	236	249	239		952
3	59 (68)	76	73	59		330
4	31 (36)	25	23	21		160
5+	28 (32)	24	31	27		195
Unknown	120 (138)	126	67	49	5	367
Total no. patients[B]	1403 (1613)	1728	1819	1912		5971

[A]Data for 2008 are based on 45 weeks of activity, with the numbers in parentheses estimating annual occurrence.
[B]Excludes 367 MHEC-RAP services where the patient medical record number was missing, so frequency of use is unknown.
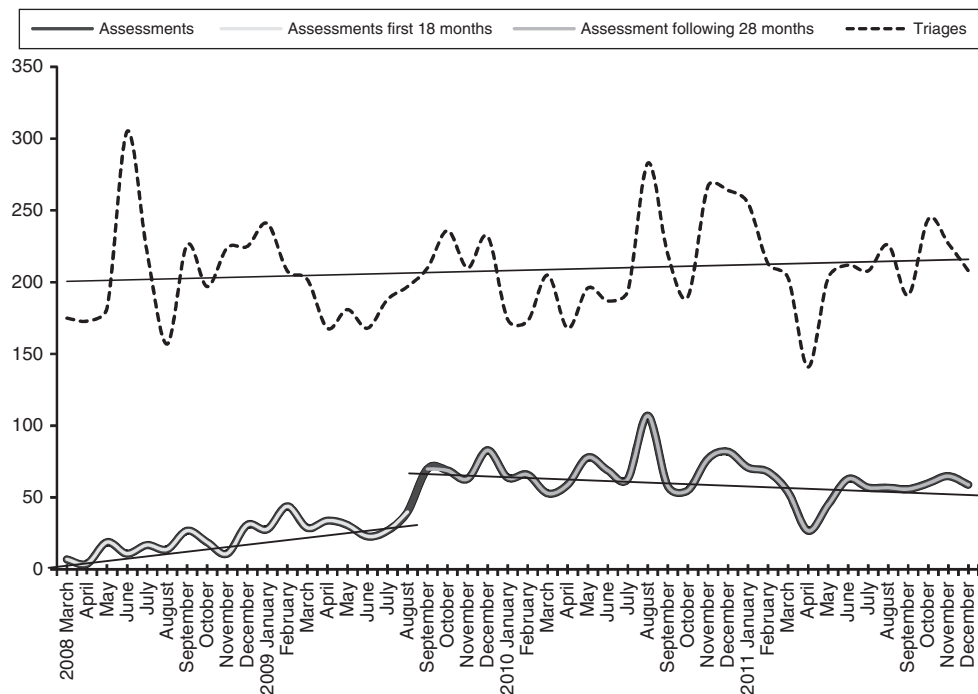
Fig. 2. Actual activity and linear regression trends of the Mental Health Emergency Care–Rural Access Program service activities from 1 March 2008 to 31 December 2011. (Triage activity is the top dashed line, Assessment activity is expressed in the bottom solid lines.)

follow-up (49%), with the proportion of patients in this category increasing from 37% to 54% over the 4 years ($\chi^2_{\text{d.f. }3} = 130.2$, $P < 0.001$; Table 2).

Transfer of care from MHEC-RAP services

Most patients (71%) were referred from the MHEC-RAP for outpatient care with a local provider. The number of MHEC-RAP patients admitted to hospital increased by 55% after the first year of operation. The admission rate then declined over the next 2 years due to a 28% reduction in the number of admissions to an MHIPU ($\chi^2_{\text{d.f. }6} = 114$, $P < 0.001$; Table 2).

Discussion

The MHEC-RAP is an innovative program that uses technology to provide specialist emergency mental health care to rural and remote communities when such care is not available locally. The present study confirms that the MHEC-RAP is well established and used across western NSW. The new services resulted in an increase in both the availability and use of emergency specialist mental health care by rural and remote communities.

The consistent emergency telephone triage activity from the outset suggests that the MHEC-RAP was able to rapidly achieve acceptable levels of use due to the service connecting with a pre-existing free call information service. In contrast, there was a clear adoption phase for the video assessment activity of approximately 18 months. This aligns with the diffusion of innovation theory because both the MHEC-RAP team and service users took time to adapt to and accept the service.[28]

There were other notable trends during the first 4 years of operation that characterise the performance of the MHEC-RAP. The most significant of these was the large increase in MHEC-RAP services accessed by providers in NSW hospitals during the second and third years. Early promotion efforts in hospitals throughout the region would have also influenced the uptake and use of the MHEC-RAP. This was counterbalanced by a decline in the number of lay people and GPs using the service. The decline in use by GPs and lay people was unexpected and requires further investigation to determine whether issues such as acceptability or usefulness of the service were factors, or whether it was related to ongoing awareness and service promotion strategy.

The MHEC-RAP has continued to be used as it was intended, dealing with emergency presentations for patients in crisis rather than for the ongoing management of mental health problems. Its primary function is to assess patients with emergency mental health problems. The MHEC-RAP remained focused on patients with an urgent or semi-urgent problem, accounting for approximately 80% of all cases, and most patients (73%) were assessed by the MHEC-RAP team only once during the review period. Common presentations to the MHEC-RAP included suicide or harm to self or others, anxiety or mood disorders, and bizarre or psychotic behaviour, which align with the known presentations of mental health conditions more generally.[29–31]

The MHEC-RAP was established to provide services to all patients in crisis without restriction, so it was interesting to note that the MHEC-RAP team were increasingly providing care for patients aged under 18 years and those who identify as Indigenous. The growing number of services provided to these patients

Table 2.   Mental Health Emergency Care–Rural Access Program (MHEC-RAP) service characteristics by year (2008–2011)

Data are numbers with percentages given in parentheses. 'Emergency service' encompasses the police and/or ambulance; 'lay persons', refers to self, family or friend. CMHT, community mental health team; GP, general practitioner, MHIPU, Mental Health Inpatient Unit.

	2008[A]	2009	2010	2011	Year Unknown	Total[B]
Callers to the MHEC-RAP						
Health providers	1312 (54%)	1604 (66%)	1828 (73%)	1894 (75%)	33	6500 (67%)
Hospital	742 (30%)	1114 (46%)	1412 (56%)	1495 (59%)	25	4691 (49%)
CMHT	197 (8%)	221 (9%)	221 (9%)	212 (8%)	3	828 (9%)
GP or doctor	276 (11%)	184 (8%)	135 (5%)	109 (4%)	5	673 (7%)
Emergency services	98 (4%)	85 (3%)	60 (2%)	78 (3%)		308 (3%)
Lay persons	874 (36%)	713 (29%)	576 (23%)	519 (20%)	15	2583 (27%)
Unknown	265 (11%)	124 (5%)	116 (5%)	118 (5%)	7	595 (6%)
Presentations to the MHEC-RAP						
Harm or suicidal	1094 (45%)	1053 (43%)	1179 (47%)	1125 (45%)	22	4330 (45%)
Anxiety or mood disordered	491 (20%)	521 (21%)	565 (22%)	569 (22%)	13	2095 (22%)
Bizarre or psychotic behaviour	357 (15%)	498 (20%)	438 (17%)	468 (18%)	12	1726 (18%)
Other or unknown	374 (15%)	147 (6%)	150 (6%)	201 (8%)	5	828 (9%)
Aggression	108 (4%)	145 (6%)	122 (5%)	108 (4%)	2	471 (5%)
Drug and alcohol	28 (1%)	77 (3%)	66 (3%)	60 (2%)	1	228 (2%)
Urgency response						
Urgent	902 (37%)	1139 (47%)	1390 (55%)	1366 (54%)	25	4704 (49%)
Within 2 days	864 (35%)	795 (33%)	628 (25%)	668 (26%)	9	2851 (29%)
Not urgent	258 (11%)	189 (8%)	201 (8%)	232 (9%)	11	857 (9%)
No action	86 (4%)	87 (4%)	92 (4%)	115 (5%)	4	373 (4%)
Unknown	342 (14%)	231 (9%)	209 (8%)	150 (6%)	6	893 (9%)
Transfer of care						
Outpatient	1856 (76%)	1602 (66%)	1717 (68%)	1858 (74%)	42	6833 (71%)
General hospital	122 (5%)	225 (9%)	220 (9%)	221 (9%)	3	775 (8%)
MHIPU	403 (16%)	589 (24%)	555 (22%)	423 (17%)	10	1927 (20%)
Unknown	70 (3%)	25 (1%)	28 (1%)	29 (1%)		143 (1%)
Patient characteristics						
Sex						
Female	1218 (50%)	1175 (48%)	1215 (48%)	1250 (49%)	27	4726 (49%)
Male	1225 (50%)	1247 (51%)	1294 (51%)	1275 (50%)	28	4909 (51%)
Unknown	8 (<1%)	19 (1%)	11 (<1%)	6 (<1%)	0	43 (<1%)
Age group (years)						
0–17	177 (7%)	275 (11%)	342 (14%)	400 (16%)	8	1179 (12%)
18–24	377 (15%)	390 (16%)	414 (16%)	385 (15%)	8	1525 (16%)
25–44	1136 (46%)	1061 (43%)	1061 (42%)	1101 (43%)	23	4234 (44%)
45–64	552 (23%)	513 (21%)	563 (22%)	511 (20%)	7	2074 (21%)
65+	159 (6%)	168 (7%)	112 (4%)	111 (4%)	6	535 (6%)
Unknown	49 (2%)	34 (1%)	28 (1%)	23 (1%)	3	131 (1%)
Indigenous status						
Indigenous	263 (11%)	311 (13%)	376 (15%)	403 (16%)	5	1324 (14%)
Not Indigenous	514 (21%)	1408 (58%)	1455 (58%)	1458 (58%)	28	4796 (50%)
Not identified	1673 (68%)	722 (30%)	689 (27%)	670 (26%)	22	3558 (37%)
Total	2451	2441	2520	2531	55	9678

[A]Numbers presented for 2008 are an estimate of annual use, with actual numbers adjusted by 1.15 (see text for details).
[B]Overall totals are not adjusted.

may be sufficient for the team to engage in youth-focused and culturally sensitive training opportunities, enhancing their knowledge and skills to provide appropriate referrals and care.

One objective of the program is to limit the unnecessary transportation of some patients out of their community to an MHIPU, an issue that has been reported in the literature and noted by local providers before the service being implemented.[8,11,12] Without access to comparative data on the same population before the MHEC-RAP was implemented, or concurrently from an adjacent region, it is difficult to draw definitive conclusions about the impact of the service on hospitalisation rates and the transportation of patients out of their community. However, the change in the transfer of care outcomes for MHEC-RAP patients suggests the service response has evolved over time. Initially, over the first 2 years, as providers in hospitals used the MHEC-RAP more often and the number of patients requiring urgent or semi-urgent referral increased, the number and proportion of MHEC-RAP patients admitted to hospital also increased. Then, by the fourth year, there were significantly fewer hospital admissions overall. There was no change in the clinical characteristics of patients, as determined by presenting problem or urgency classification, to explain this trend, nor did the increasing number

of 0–17 year olds influence the hospitalisation rates. It is likely this trend reflects a shift in a greater reliance on local providers and resources to manage patients in the community or at the local hospital with the support of the MHEC-RAP, thereby reducing the need for patients to be transferred out of their community to receive care. These findings align with the premise that providing reliable, remote access to specialist mental health assessment and advice while supporting providers in rural communities will result in better outcomes for patients and services alike. It is acknowledged that some patient transfers may be necessary for reasons other than clinical considerations; therefore, decisions and recommendations are guided by the Mental Health Act 2007.[32]

The analysis of activity data presented in the present study is only part of the MHEC-RAP evaluation. Further research is underway to investigate issues of use and acceptability of the service, to document how the MHEC-RAP has developed as a service, and how it has changed access to mental health emergency care. Another component of the evaluation will focus on the costs and benefits of the MHEC-RAP by examining inter-hospital transfers and critical incidents.

The MHEC-RAP is a sustainable service model that could be implemented in other settings. Although it is not the only model for remote access to emergency mental health care to be trialled in Australia, the MHEC-RAP is the first that combines a dedicated and regionally based specialist team with 24-h availability and access through telepsychiatry for all patients and providers in rural and remote communities. Previously, South Australia (SA) had introduced a dedicated 24-h telephone service from a metropolitan centre to seven rural communities offering triage and coordination of care for emergency psychiatric cases, psychiatric video assessment and specialist advice for patients and carers.[16] (The SA service has since evolved and is still providing emergency mental health care, although there is no published information available.) Western Australia provides an after-hours support service for rural areas that operates in association with a 24-h mental health emergency telephone service in metropolitan areas. A recent evaluation recommended improving the service, including strengthening rural capacity for emergency care with its own 24-h contact line for providers.[18]

The MHEC-RAP offers a practical solution to providing emergency mental health care, and support for local providers, in rural and remote communities. Its use is currently limited to the assessment and support for mental health emergencies, but options to extend the program, such as providing specialist support for ongoing care of mental health patients, are currently being introduced and trialled. The attributes of the MHEC-RAP model may also impact upon the problem of recruiting and retaining a health workforce in rural and remote areas through a regionally based team that offers support to local providers in numerous communities at once.

Limitations

This component of the MHEC-RAP evaluation is based on activity data without access to comparative data or population-wide information on the phenomena under investigation. As such, the attribution of, or explanation for, changes in service activity and patient management remain speculative and will need to be examined in other components of the program evaluation. Furthermore, the evaluation is not able to take account of local service innovations and reforms introduced over the same time period. Another significant limitation is the absence of a recorded time of day in the dataset.

Conclusion

The evaluation confirms that the MHEC-RAP is well established and used across western NSW. The MHEC-RAP has achieved acceptable levels of service activity and continues to be as used as intended, dealing with rural or remote emergency presentations of patients in crisis. Further research is required to confirm how the MHEC-RAP works (process and capacity), how it has changed access to mental health care and to document its costs and benefits.

Competing interests

RR is the Director of Mental Health and Drug and Alcohol Services–Western NSW Local Health District; however, RR was not involved in the collection or analysis of the data presented herein. There is no other known conflict of interest.

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