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Evaluation of a nurse practitioner-led extended hours mental health liaison nurse service based in the emergency department

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Abstract

Objective. To evaluate a nurse practitioner (NP)-led extended hours mental health liaison nurse (MHLN) service based in the emergency department (ED) of an inner city teaching hospital in Sydney and to explicate a model of care that is transferable across a broad range of ED settings, both in metropolitan and rural contexts.

Methods. This mixed-methods evaluation encompassed descriptive data on ED mental health presentations, quantifying waiting times for MHLN involvement and interviews with MHLN team members at the commencement of the evaluation and 12 months later. Interviews were also conducted with a snapshot of ED patients, and a sample of ED and psychiatry staff.

Results. The expanded MHLN service was rapidly incorporated into the ED structure, enthusiastically endorsed by ED patients and highly valued by staff and the organisation. The MHLN team saw 55% of referred patients within the first hour of arrival (frequently before medical assessment), thereby initiating and expediting co-ordination of care at an early stage of the ED process.

Conclusions. An NP-led extended hours MHLN team based in the ED provides prompt and effective access to specialised mental health care for people with 'undifferentiated health problems', and removes a significant workload from nursing and medical staff. Embedding the NP-led MHLN service within the ED structure was pivotal to the success and sustainability of this model of care.

What is known about the topic? Mental health liaison nurse (MHLN) services have existed in emergency departments (EDs) in Australia and internationally for many years. However, there is great variation in the way these services are structured and no standardised model of care has been explicated.

What does this paper add? Findings from this evaluation indicate that a nurse practitioner-led extended hours MHLN service integrated within the ED team structure provides prompt access to specialised mental health care to people with undifferentiated health problems, and removes a significant workload from ED nursing and medical staff.

What are the implications for practitioners? Mental health nurse-led service provision based in the ED is a safe, flexible and effective method of enhancing access to health care that is adaptable to broad range of settings. ED ownership of this model of care is pivotal to the successful implementation and sustainability of MHLN services.

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Introduction

The emergency department (ED) is increasingly perceived as a point of access to services for individuals in varying states of mental ill health. This is due to the mainstreaming of mental health services with general healthcare and is perhaps a reflection of a growing awareness and willingness of people to seek mental health care. For example, a New South Wales (NSW) study found that the growth rate for mental health presentations since

1999 was more than double the overall rate for ED presentations generally. Mental health patients now represent a greater proportion of all presentations than in previous years, a finding that has important implications for resource allocation and workforce training.[1] The Fourth Australian National Mental Health Plan (2009–14) recognised the need to develop innovative models of care that are able to intervene early and provide integrated services to ensure that generalist settings have support and access to specialist services when needed. General hospital staff must have access to support for nursing, medical and allied health staff to facilitate enhanced care for people with physical illness complicated by psychological, emotional and behavioural problems. Consideration of how to use the skills and talents of the current workforce to best advantage, including the greater use of mental health nurse practitioners (MHNP) was recommended.[2]

The ED-based mental health liaison nurse (MHLN) role entails the provision of direct clinical care for people with mental and other health problems amenable to MHLN intervention, and also supports ED staff.[3] Evaluations of MHLN services conducted in Australia and internationally have demonstrated a range of positive outcomes for both patients and the ED.[4] In Australia, the added value associated with establishing MHNP positions based on the MHLN model is emerging.[5–9] However, there is great variation in the way MHLN services are configured and how they operate within the ED context, such as team structure, reporting mechanisms, referral and follow-up processes. Therefore, a more standardised model of MHLN service delivery that best meets the needs of the ED and the public is required.

This Health Workforce Australia-funded study was part of a larger national evaluation project exploring the expanded scope of practice for nurses in EDs. The present study involved the evaluation a nurse practitioner (NP)-led extended hours MHLN service based in the ED of the Royal Prince Alfred Hospital (RPAH) in Sydney, NSW. The service comprises a MHNP as the clinical lead to three full-time equivalent MHLN positions (employed as Clinical Nurse Specialists Grade 2) that cover the ED for 16 h a day, 7 days a week (0730–2200 hours). The aim of the NP-led MHLN team is to expedite access to specialist mental health assessment and therapeutic intervention and support ED staff in coordination of care, discharge and follow-up. The MHLN team is integrated within the ED structure and has a complementary relationship with the consultation–liaison (and after hours) psychiatry service. As clinical lead to the MHLN team, the NP provides mentorship on the MHLN role and ongoing support. The NP also fosters professional development opportunities for MHLN team members in practice, education and research. Clinically, the NP acts as a resource for discussion, consultation and referral for patients presenting to the ED as part of routine discharge and follow-up planning processes.

The RPAH context

The RPAH is an inner city teaching hospital affiliated with the University of Sydney and the ED is a major trauma centre that manages over 70 000 presentations per year. A MHNP position has been embedded within the ED team for many years and was developed following a successful pilot.[10] Subsequent evaluations of the service provided by the MHNP at RPAH, including surveys of both ED staff and patients, identified reduced waiting times, therapeutic engagement and enhanced coordination of care as the main benefits of the role.[11,12]

The MHNP role at RPAH has continued to evolve through the establishment of a structured and formalised ED-based outpatient service. The MHNP outpatient service provides an in-house referral service for ED staff and aims to provide prompt and brief follow-up. Establishing the MHNP outpatient service involved an initial scoping study[13] followed by a model refinement phase[14] before formal evaluation.[7–9]

The specific aims for this project were to:

- evaluate a NP-led extended-hours ED-based MLHN team that provides timely access to mental health assessment, therapeutic engagement and enhanced coordination of care; and
- articulate a model for an ED-based MHLN service provision that is transferable across a range of ED settings.

Methodology and methods

This evaluation employed a mixed-methods design. Mixed-methods research accepts that all methods have inherent biases and limitations, and that by mixing both quantitative and qualitative methods, a fuller picture and deeper understanding can be obtained.[15] The World Health Organization[16] also affirms that controlled experimental designs are an inadequate means of generating evidence of effectiveness in healthcare program research. Instead, the World Health Organization recommend that consensus on effectiveness should be based on methodological triangulation that leads to a converging interpretation of different kinds of evidence. Realistic evaluation[17] (the methodology applied to this project) draws on a range of methods in order to understand how individuals respond to an intervention or program. Interest in the contemporary evaluation field is less fixated simply with measurement and data, but more so with illuminating the process of successful program implementation, the inquiry into how complex programs work and distilling what it is about a given context that explains the effectiveness of a particular program. Moreover, healthcare programs demonstrate benefits not only for program participants but also for staff and the organisation.[18]

Data collection

Data collection encompassed descriptive data on patients gathered over the study period, the time of presentation (day and hour), waiting times from arrival to MHLN involvement, referrals made, total time spent in ED, discharge or outcome, and follow-up arrangements. These data were collected from September 2012 to September 2013 using the Firstnet patient tracking system (Cerner Corporation, Kansas City, MO, USA).

Individual MHLN team members were interviewed in the early stages of this new service and again towards completion of the evaluation to explore observations, challenges and barriers, as well as to assess changes in knowledge, confidence and educational needs over the duration of the project.

Telephone interviews were conducted with a snapshot of ED patients. Participants for the interviews were recruited over a 3-month period from May to July 2013. MHLN team members recorded the name and telephone number of patients considered able to provide an account of their experience with the service.

The project lead (TW) then contacted individuals within 72 h following ED discharge to seek consent over the telephone. If the patient was amenable to being contacted at a later date by a research assistant, an information sheet and copy of the interview schedule was mailed to the potential interview participant. The semi-structured interview consisted of nine statements. Participants were asked to rate their experience with the MHLN in response to the statements about aspects of the service. These statements were scored on a Likert Scale from 1 to 4, with 1 being most positive.

At the completion of the evaluation period, face-to-face interviews were conducted with a purposive sample of ED nursing, medical and psychiatry staff. Similar to the patient interviews, this survey consisted of eight statements pertaining to the MHLN team and its apparent impact on ED service provision. All interviews were recorded digitally and also collected qualitative data that will be reported elsewhere.

Ethical considerations

The study was approved by the Sydney Local Health District Human Research Ethics Committee. All participants were provided with an information sheet that explained the nature of the study, and emphasised that participation was voluntary and that anonymity would be protected. All data were de-identified before analysis.

Results

Recurrent funding for the MHLN service was secured early in the evaluation when the immediate benefits of the service were recognised by clinicians and the health service executive. The MHLN team (including the MHNP) recorded a total of 1923 (51% male) occasions of service over the evaluation period. The mean age of patients seen was 37 years. The youngest was 12 years old and the oldest was 84 years old. The workload was highest between 1000 hours and 1800 hours. The daily workload was reasonably constant, although Mondays and Tuesdays were associated with the highest number of referrals, and Saturday the lowest. The types of mental health-related presentations varied and were not related to psychiatric diagnoses. Fig. 1 shows that the most frequent type of presentation to the ED was 'undifferentiated mental health problem' followed by suicidal ideation and self-harm. These categories are based on the presenting problem assigned at triage. 'Undifferentiated mental health problem' encompasses several triage labels from the Firstnet system such as; 'MH [mental health] – mental health problem', 'MH – behavioural disturbance', 'MH – hallucinations', 'MH – altered mental status', 'mental health' and 'mental health issues'.

Waiting times for MHLN involvement

Waiting time data collected over the evaluation period confirm that the MHLN team responded promptly to referral. From the total sample of ED patients ($n = 1923$), 45% of presentations were seen in less than 1 h after arrival in the ED and a total of 63% were seen in less than 2 h after arrival. Removing all patients ($n = 403$) who arrived outside MHLN team working hours (i.e. between 2200 and 0730 hours) provides a more accurate indication of response times. In Fig. 2, 55% of mental

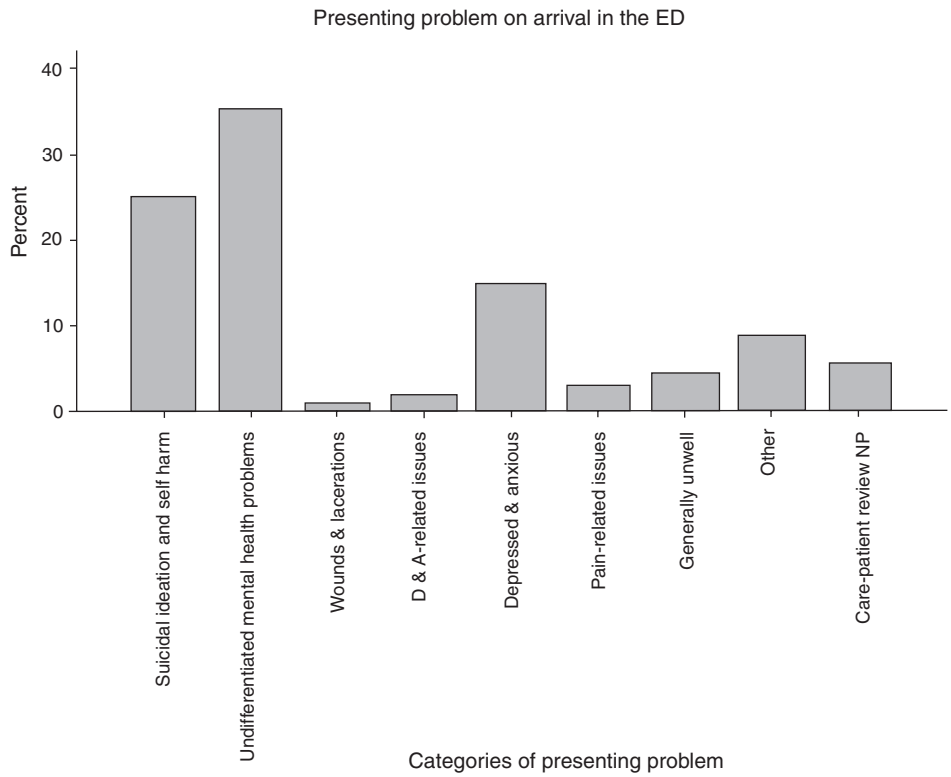

Fig. 1. Presenting problem on arrival in the emergency department.

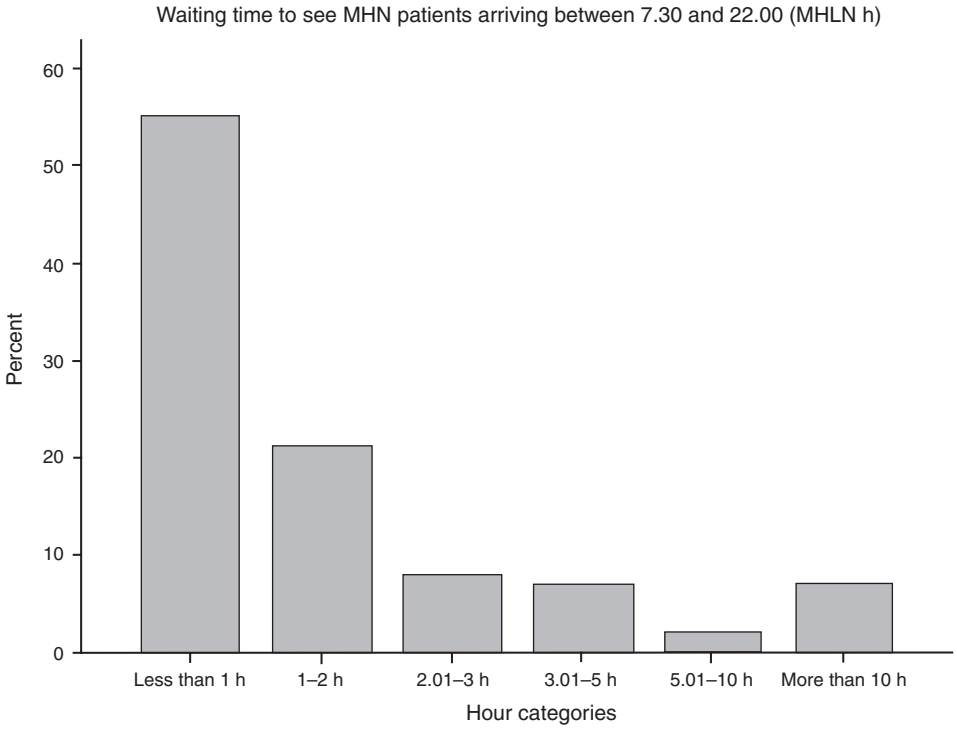

Fig. 2. Waiting time to see mental health liaison nurse (MHLN) for patients arriving between 0730 and 2200 (MHLN hours).

health presentations arriving within MHLN team hours were seen in less than 1 h and a total of 75% were seen in less than 2 h of ED presentation. Importantly, the need for MHLN involvement was not always evident at triage. In many instances, MHLN team referral occurred following medical assessment and investigations. Heavy intoxication with alcohol and other substances, or over-sedation from overdose, for example, may also have accounted for a delay in referral to the MHLN team.

Referral from the ED

Approximately 70% of presentations were formally referred upon discharge from the ED. The majority of referrals were made to mental health or drug and alcohol services in the community (37%). Twenty-seven percent of presentations were referred to a general practice or medical practice. Fig. 3 indicates that 30% of patients were not formally referred. However as part of routine practice, patients are provided with contact details for relevant services in their area and encouraged to return to the ED at any stage if required.

Disposition

Fifty-five percent of patients were treated in the ED and formally discharged. A very low number of people ($n = 7$) did not wait to see a medical officer after being seen by a MHLN. Thirty percent of presentations were admitted over the evaluation period, either under psychiatry or other speciality such as the drug health or toxicology service. Just over 10% of patients 'left at own risk' after being seen by a MHLN and ED medical officer.

Patient outcomes and experience

The project lead made contact with 47 patients; of these, 39 consented to being contacted by a research assistant for a follow-up telephone interview. A total of 14 individuals were successfully interviewed (36%) and their responses to the interview statements are presented in Table 1.

Staff perspectives

A purposive sample of staff members ($n = 23$) were interviewed for their perspectives on the MHLN service and how the service impacted on their work practices. The interview sample included ED medical officers ($n = 7$), ED nurses ($n = 12$) and psychiatry registrars ($n = 4$). Support for the MHLN service was considerably high (see Table 2). Almost all responses were in the top or second-highest category of support.

MHLN team interviews

Individual MHLN team members were interviewed as they commenced their new positions and again at 12 months. Within the first 6 months, one MHLN resigned and the replacement was also interviewed, giving $n = 5$ for the first round of interviews and $n = 4$ for the second. At the commencement of the evaluation, MHLNs identified the weight of expectation that the service would ameliorate the pressures around patient flow and bed availability. It was evident from the initial interviews that the MHLNs were challenged by the autonomy of the role. However, it was also acknowledged that the role enhanced individual clinical practice and there was a view that the MHLN team had impacted positively on ED service provision.

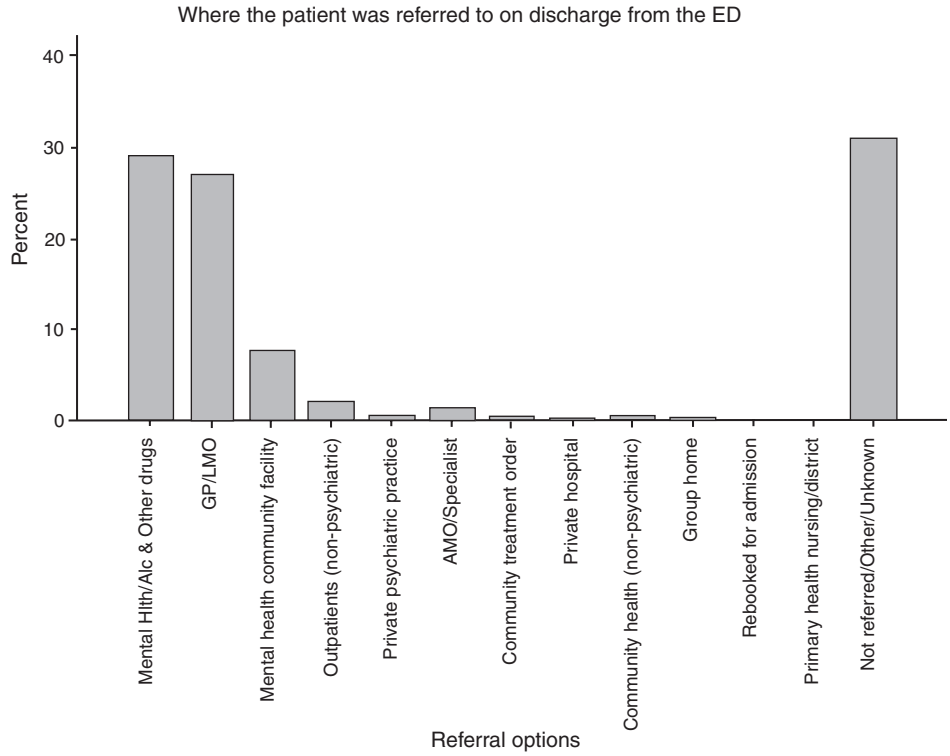

Fig. 3. Where the patient was referred to on discharge from the emergency department.

Table 1. Frequency, mean and s. d. for responses from each of the interview statements for emergency department (ED) patients ($n = 14$)
MHLN, mental health liaison nurse

Question	Responses					
	To a considerable extent = 1	To a moderate extent = 2	To a slight extent = 3	Not at all = 4	Mean	s.d.
1. The specialist MHLN saw me promptly and helped me to streamline my care through the ED	30.8%	53.8%	7.7%	7.7%	1.85	0.86
2. I felt that my concerns were listened to and understood by the specialist MHLN	61.5%	7.7%	23.1%	7.7%	1.71	1.07
3. The specialist MHLN included me in decisions made about my care and follow-up	61.5%	7.7%	23.1%	7.7%	1.71	1.07
4. The manner in which follow-up was coordinated from the ED was positive and well organised.	53.8%	23.1%	0.0%	23.1%	1.86	1.23
5. The intervention, information and support provided by the specialist MHLN assisted in meeting my health needs.	38.5%	30.8%	23.1%	7.7%	1.93	1.0
6. The specialist MHLN was competent and professional in their role.	84.6%	15.4%	0.0%	0.0%	1.14	0.36
7. It was beneficial to have the specialist MHLN involved in my care.	61.5%	23.1%	15.4%	0.0%	1.50	0.78
8. I would recommend that this service be available in other similar ED settings.	84.6%	15.4%	0.0%	0.0%	1.14	0.36
9. Overall, I was satisfied with the care I received from the specialist MHLN in emergency.	69.2%	7.7%	15.4%	7.7%	1.57	1.01

At the completion of the evaluation, the MHLNs recognised that referred patients were complex and frequently challenged by a combination of mental and physical health concerns, alcohol and substance misuse issues and psycho-social problems. Any psychiatric diagnosis attributed to the person was of limited relevance to the presentation. The *pro forma* documentation required by the mental health service was also viewed as incompatible with the clinical setting and the types of presentations seen in the ED. MHLNs were confronted by negative views of some staff towards this patient group but also perceived an opportunity to raise mental health awareness through the educational component of their role.

The MHLNs also felt that they helped to reduce the number of patients who left without being seen by responding promptly to referral, conducting an early assessment, and providing therapeutic support and reassurance that a doctor would see them. The MHLNs also became familiar with people who presented frequently, which assisted in more consistent management and timely disposition. Finally, the MHLNs considered that the service enhanced communication with mental health services and resources in the community.

Discussion

It is significant that recurrent funding for the MHLN service was secured early in the evaluation period. This emphasises that the benefits of the new service were rapidly recognised by the organisation. Interviewed staff and patients also clearly valued the MHLN team and were confident with the specialist knowledge and skills of individual team members. Overall, the MHLN role was highly regarded and there was consensus that this model would be beneficial to other ED settings.

The central attribute of the MHLN team described here is the integration of the service within the ED structure. This allowed for MHLN involvement close to the point of triage, often before medical assessment, and thereby initiating and expediting co-ordination of care at an early stage of the ED process. It also fostered a close working relationship with ED staff that provided support and education, and removed a substantial workload from the ED team.

Patient flow and bed access in the ED are issues of great interest internationally. However, realistically, the MHLN service is able to only exert some influence over these issues, as bed access, in particular, is determined by numerous factors outside the ED. In NSW, for example, there are 13 psychiatric emergency centres (PECs) attached to EDs. The aim of PECs was to assist in relieving the burden on EDs and improve patient flow. However, concerns have been expressed that PECs are costly to set up and run, and that they create the impression of a segregated system of healthcare[4]. This issue was highlighted in the Mental Health Council of Australia's landmark *Not for Service* report, which asserted that an emphasis on building PECs in EDs might lead to a 're-segregation' of persons with mental health problems.[19] Moreover, despite the high costs involved, PECs have not been subject to any evaluation or rigorous health service research.[20] An external review of PECs commissioned by the NSW Government[21] established that PECs have had no impact on improving access to acute mental health beds or reducing the length of stay for mental health patients in EDs. Hospitals that have PECs have a higher rate of mental health presentations and higher rates of mental health admissions than hospitals without PECs. The main benefit of PECs identified in

Table 2. Frequency, mean and s.d. for responses from each of the interview statements for emergency department (ED) and psychiatry staff ($n = 23$)
MHLN, mental health liaison nurse

Question	Response					
	To a considerable extent = 1	To a moderate extent = 2	To a slight extent = 3	Not at all = 4	Mean	s.d.
1. The specialist MHLN service provides prompt assessment, therapeutic intervention and enhanced coordination of care	73%	26%	0%	0%	1.26	0.45
2. I was confident in referring patients to the specialist MHLN service	87%	8.7%	4.3%	0%	1.09	0.29
3. The specialist MHLN service is beneficial to me in my role in the ED	82.6%	17.4%	0%	0%	1.17	0.39
4. I felt that ED patients were receptive and satisfied with the intervention provided by the specialist MHLN service	65.2%	30.4%	4.3%	0%	1.39	0.58
5. Overall, I was satisfied with the intervention provided by the specialist MHLN service	91.3%	4.3%	4.3%	0%	1.13	0.46
6. The specialist MHLN service improves ED service provision, especially after hours and on weekends	69.6%	26.1%	4.3%	0%	1.27	0.46
7. The intervention provided by the specialist MHLN service is of a high standard	73.9%	26.1%	0%	0%	1.26	0.45
8. I would recommend a service like this service be implemented in similar clinical settings	87%	8.7%	4.3%	0%	1.17	0.49

Box 1. Middle range theories for emergency department (ED)-based mental health liaison nurse (MHLN) services

- Early and ongoing consultation with key stakeholders is pivotal to successful implementation and sustainability of MHLN services.
- The MHLN service is based in the ED and is considered part of the ED team.
- A senior nurse such as a nurse practitioner or nurse consultant is designated as clinical lead to a team of nurse specialists.
- The MHLN team is typically involved as close to the point of triage as possible, often prior to medical assessment.
- The MHLN team is receptive to seeing a range of 'undifferentiated mental health problems' rather than limiting service provision to specific presentations or diagnostic categories.
- The MHLN role is not simply about assessment. There is an important therapeutic benefit in the service provided.
- Care coordination and referral are keys aspects of MHLN services.
- The MHLN team works collaboratively with other related teams such as psychiatry, social work and drug health services.
- The MHLN team provides a system of follow-up (via telephone or outpatient care) and referral to other specialty services.
- The MHLN role supports ED nursing and medical staff through a close clinical relationship, and through education and mental health promotion.

the review was the availability of specialist mental health nurses to support ED staff in the assessment and management of mental health-related presentations. Clearly, access to mental health nursing support can be achieved without a PEC and at a fraction of the cost. PECs are also limited in their transferability to a majority of hospitals, as they are only suited to ED settings with high presentation rates.[22]

The MHLN's role is not simply about assessment. There is a therapeutic component to the role that is valued by patients and staff, and the liaison and care coordination between disciplines and services inherent in the role enhances communication and follow-up. There are issues that will require clarification and refinement. The *pro forma* documentation used by the mental health service is considered incompatible and time consuming in the ED context, and there is currently no cover available for staff shortages due to leave or resignations.

A key task in realistic evaluation is to identify middle-range theories, which are generated from a synthesis of the research findings. Middle-range theories are practical, rudimentary statements that help to explain the success of a particular program and also provide 'transferable lessons' for policy makers and practitioners considering implementing similar programs.[23] Box 1 presents the middle-range theories that the research team consider to be fundamental to the successful establishment of MHLN services within the ED.

Limitations

This study was conducted at one site. The sample of interviewed patients and staff was relatively small. Moreover, the ED patients that were successfully interviewed were perhaps more likely to be those individuals with positive experiences of the MHLN service. The evaluation was conducted on a service that had only just commenced operation. Subsequent evaluations of the MHLN service, once it is more established, would be useful, as would evaluations of MHLN services in other ED settings based on this model.

Conclusions

Findings from this evaluation indicate that a NP-led extended hours MHLN team based in the ED provides prompt and effective access to specialised mental health care to people with undifferentiated health problems, and removes a significant workload from ED nursing and medical staff. An established MHNP role in the present setting assisted in implementing the expanded service, as did a deliberate process of consultation with key stakeholders. Integrating the MHLN team within the overall ED structure allowed for greater availability and closer working relationships with ED staff. We contend that this model of nurse-led mental health care is suitable for a broad range of ED settings from inner city to metropolitan and rural contexts.

Competing interests

None declared.

Author contributions

TW and KW designed the study. ND, CB and LA all contributed to data collection and data analysis.TW prepared the original draft. ND, CB, LA and KW all reviewed and revised the manuscript before submission. The authors report no competing interests.

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