ORIGINAL ARTICLE

A paradigm shift in the nature of care provision in emergency departments

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Objectives: Access block to acute hospital inpatient beds has pressured emergency departments (EDs) to develop strategies to facilitate the management of patients in the community (new services) and to streamline ED care (facilitative initiatives). The aim of this study was to determine the nature and extent of those strategies introduced into the 17 public hospital EDs in Melbourne, Australia, since 1998.
Methods: This was a cross sectional survey of ED directors and/or nurse unit managers undertaken in November and December, 2002. Face to face or telephone interviews were conducted using a researcher administered questionnaire.
Results: All 17 EDs participated. A total of 15 strategies had been introduced into 15 (88.2%) EDs. New services included care coordination teams (12 ED, 70.6%), short stay units (10, 58.8%), psychiatric services (10, 58.8%), chest pain units (7, 41.2%), pharmacy services (3, 17.7%), sexual assault service (1, 5.9%), and hospital in the home within the ED (1, 5.9%). Facilitative initiatives included nurse initiated management (12, 70.6%), fast track processes (10, 58.8%), multidisciplinary triage (4, 23.5%), disposition nurses/communication clerks (3, 17.7%), and day treatment clinics (2, 11.8%).
Conclusions: Melbourne's EDs have adapted rapidly to external pressures of access block and increasing patient numbers. Many traditional inpatient services have now been incorporated into the EDs. These EDs now provide a different and expanded paradigm of care.

Between 1998 until 2002, total attendances at emergency departments (EDs) in the State of Victoria, Australia, increased by 18.3%.[1] This increase, accompanied by decreased access to inpatient beds, has frequently resulted in departmental congestion and protracted waiting times for patients requiring inpatient beds.[2] These effects have been particularly pronounced in Victoria's largest city, Melbourne. In 1999, this pressure was heightened when the winter demand period of some Melbourne hospitals, occurred outside the usual season. This ''extended'' winter period became even less manageable when historically successful adjustments to elective admissions, to accommodate emergency demand peaks, became ineffectual.[3]

During the winter of 2000, the number of major Melbourne metropolitan EDs that required ''ambulance bypass'' and the number of ED patients who waited >12 hours for an inpatient bed increased by more than 50%. In November 2000, the Victorian government established the Patient Management Task Force to review the state's health services and make recommendations for their improvement. The task force recommended improving access to emergency services, re-engineering the internal hospital processes that drive patient flows between acute and sub-acute services, and maximising community and home based alternatives to inpatient care.[3–5]

There is increasing evidence that the nature of service provision and patient management in EDs has changed considerably in recent years. Many changes have resulted from government initiatives while others have been at the discretion of individual EDs and in response to local requirements. This study aimed to determine the nature and extent of changes implemented across Melbourne's EDs. It also aimed to describe the apparent changing paradigm of ED care and the role of the ED as an interface between community and acute hospital inpatient care.

METHODS

This project comprised a descriptive cross sectional survey of directors and/or nurse unit managers of all public hospital EDs in Melbourne, during November and December 2002. As a quality assurance exercise, the human research and ethics committee of the Royal Melbourne Hospital deemed the study to be exempt from full ethics committee review.

Face to face or telephone interviews were conducted by one of the authors (DB). A researcher administered questionnaire was specifically designed for the study and was trialled and revised before use. It consisted of a series of tick box and open-ended questions developed in a focus group of emergency physicians and research staff. Data were collected on the types of service provision developments introduced within the previous five years, their nature, purpose, perceived impact, and details of formal evaluations that may have been undertaken.

For the purposes of this report, a new service is defined as a new concept or service facility not previously available in the ED. A facilitative initiative is defined as a process designed to make ED more efficient in time and/or resources. Definitions of individual services and initiatives are provided in tables 1 and 2, respectively. All data are reported descriptively.

RESULTS

All 17 metropolitan Melbourne EDs participated (100% participation rate). At the time of the survey, these EDs served a population of 3.5 million people and averaged 37 648 patient attendances per year (range 15 000–58 000).

Table 3 describes the seven new services that have been introduced. Care coordination teams (CCTs) have been

Abbreviations: ED, emergency department; CCT, care coordination team; SSU, short stay unit; CPU, chest pain unit; ECATT, emergency crisis and treatment team; HITH, hospital in the home

Table 1 Definitions of new services

Care coordination team	Allied health and/or nursing personnel whose role is to identify patients at risk, especially the elderly, and plan for their safe and effective discharge into the community.
Short stay (observation) unit	Units for the short term care of ED patients who require observation, meet the admission policy, and whose length of hospital stay is deemed to be limited (that is, 24–48 hours). The units are usually situated adjacent to the main area of the ED.
Psychiatric services	Psychiatrically trained nurses within, or associated with, EDs who are dedicated to the management of patients presenting with psychiatric emergencies.
Chest pain unit	Dedicated monitored beds within or adjacent to the ED for the purpose of evaluating patients with chest pain and determining their disposition.
Clinical pharmacy service	Pharmacists dedicated to providing a clinical pharmacy service to ED staff and patients.
Sexual assault services	Services within the ED with forensic facilities exclusively for the management of patients whose presentation results from sexual assault.
Hospital in the home	The provision of treatment by healthcare professionals to patients in their own home for a limited period, for conditions that would otherwise require hospitalisation[6]

Table 2 Definitions of facilitative initiatives

Nurse initiated management	The nurse initiated management of low acuity patients meeting well defined criteria.
Fast track	Processes that increase ED throughput by creating specialised facilities designed to: (1) expedite the care of patients who are not acutely ill or; (2) divert, or expedite the care of patients who meet particular clinical criteria through the ED[6]
Multidisciplinary triage	The management of triage by both a nurse and a senior doctor.
Disposition nurse/ communication clerk	Clerical personnel who specialise in organising the transfer of patients to other facilities. Roles include booking beds and ambulances, liaising with health professionals, and completing paperwork.
Day treatment centre	Dedicated area separate from, but part of, the ED for managing less acutely ill ambulatory patients whose presentation has been pre-planned.

introduced into most EDs. However, their compositions range from a single person to a multidisciplinary team of eight. Eleven (92%) CCTs include an occupational therapist, a social worker and a registered nurse (aged care, emergency, community nursing, or discharge planning specialist), eight (75%) include a physiotherapist, one (8%) has a dietitian, and one (8%) has a drug and alcohol worker. An evaluation of the service of one CCT has been published.[7]

Short stay units (SSUs) have been introduced into more than half of the EDs although space limitations have precluded introduction at some others. The definition of ''short stay'' varied. Five (45%) EDs define a short stay as <24 hours, four (36%) as <48 hours, and one (9%) as 48–72 hours. One hospital uses its transit lounge as a SSU for recovery of ED patients who require minor surgery. Fewer than half of the EDs have a chest pain unit (CPU). These are usually situated immediately adjacent to the ED or may comprise a proportion of the SSU beds.

Psychiatric services have been gradually introduced into over half of the ED. However, the hours of operation vary. Seven (70%) operate 24 hours a day and are comprised of an emergency crisis and treatment team (ECATT) only, or a combination of ECATT and a psychiatric registrar. The remaining three (30%) EDs have restricted hours of operation. One service is offered from 0800 to 2200 on weekdays only, and another is available on an ''on call'' basis only as part of a government funded project investigating suicide and self harm.

An assortment of other new services has been established. Three (18%) EDs have either one or two pharmacists dedicated to providing a clinical pharmacy service up to 12 hours per day. These services have evolved from traditional supply services and offer patient assessment, liaison with community pharmacy services and GPs, input into the immediate patient management, and staff and patient education.

Only one (6%) ED has a dedicated sexual assault service complete with facilities for forensic examination. However, this service is managed independently of the ED. Currently this facility is used about nine times per month.

Traditionally, hospital in the home (HITH) has been physically separated from ED. However, one (6%) suburban ED has incorporated its hospital's HITH into its ED. This hospital now has 40% of its HITH referrals being referred directly from the ED, the highest HITH referral rate in the state. Another variation on HITH is that two (12%) EDs have established ED hostels for low acuity patients. Although geographically separate from the ED, extended care of these patients is maintained after discharge from the ED. These hostels are considered to be effective in reducing inpatient admissions.

Table 4 describes five facilitative initiatives that have been introduced. Almost three quarters of the EDs have introduced nurse initiated management since 2001. Many of the tasks undertaken include intravenous cannulation, prescription of analgesia, plastering, and investigation ordering. In some EDs, management is begun while the patient is still in the waiting room. One ED commented that nurse initiated management improves teamwork between doctors and nurses.

''Fast track'' usually entails the expeditious management of low acuity patients. More than half of the EDs have introduced a streamlining process that starts with patient diversion to dedicated treatment areas. Fast tracks are managed either by nurses exclusively, a doctor and a nurse, or may use doctors only during busy periods. In one ED, fast track entails frequently attending patients contacting a coordinator to advise of their impending presentation. The coordinator then contacts the health personnel who usually manage the patient and arrangements are made to see the patient in the ED at their expected time of arrival, or for the patient to be admitted directly to the hospital.

Fewer EDs use multidisciplinary triage. The operation of this initiative was dependent upon medical staffing levels as double specialist coverage in the ED is required. One ED provides multidisciplinary triage 10 hours per day and six days per week, while another does so only on busier afternoons. All EDs using fast track have nurse initiated management, two (17%) operate both nurse initiated management and multidisciplinary triage, and two (17%) operate all three initiatives.

Disposition nurses or communication clerks are now a permanent feature of three (18%) ED. A fourth ED has trialled the concept and intends to introduce it. The availability of this initiative ranges from weekdays only (0700 to 1500) to seven days per week (12–24 hours per day). One ED reported that its disposition nurses have helped establish better communication and links with other hospitals.

The two day treatment centres were established in collaboration with inpatient units to facilitate the review

Table 3 New services introduced into the emergency departments

Service	Number (%) of hospitals	Number of beds (range)	Year started
Care coordination team	12 (71)	NA	1999–2002
Short stay unit	10 (59)	4–16	1999–2002
Psychiatric services	10 (59)	NA	1995–2002
Chest pain unit	7 (41)	3–5	1998–2002
Clinical pharmacy service	3 (18)	NA	2001–2002
Sexual assault services	1 (6)	NA	2001
HITH within the ED	1 (6)	NA	2000

HITH, hospital in the home.

and management of patients known to those units. An assortment of other positions has also been introduced recently into a number of EDs. These include health promotion advocates for staff and patients, patient liaison nurses for quality control of communication, and information technology staff to manage the ED information systems.

DISCUSSION

Access block has been a major contributor to patient flow pressures in Melbourne's EDs. It is defined as the percentage of ED patients who are admitted, transferred, or dying, whose total ED time exceeds eight hours.[8] Access block has been attributed to increases in ED attendances[1] and cases transported to EDs by ambulance,[2–4] a national reduction in acute hospital and residential care beds,[8] and increasing numbers of elderly patients and those with complex psychiatric and drug related conditions.[3 5] Also, the introduction of case mix funding in 1993 created the incentive to increase elective patient throughput thus diminishing ED peak demand capacity.[2 9] Finally, the ''product lifecycle'' of some funding incentives schemes directed at patient access targets, such as the emergency services enhancement programme, have reached their end.[4]

This study indicates a clear paradigm shift in the care provided by Melbourne's EDs in response to mounting pressures. There has evolved a progressive diversion away from traditional inpatient care to a greater emphasis on outpatient management. However, such changes have necessitated fundamental restructuring of EDs and community support facilities. The establishment of several traditional inpatient services within the EDs provides evidence of this.

Observation units (SSU and CPU) aim to provide intensive, short term patient evaluation and promote the efficient use of hospital beds. There is now considerable evidence that SSUs decrease inpatient admissions[10 11] and average length of stay[10 12] without compromising representation rates upon discharge.[10 13] CPUs are reported to significantly lower the cost of evaluating chest pain patients and allow coronary care beds to be used more efficiently.[14 15] Furthermore, a review of CPUs in the UK concluded they are effective in creating an inverse relation between the rates of ruling out and missing myocardial infarction.[14]

Table 4 Facilitative initiatives introduced by the emergency departments

Initiative	Number (%) of hospitals	Year started
Nurse initiated management	12 (71)	2001–2002
Fast track	10 (59)	1999–2000
Multidisciplinary triage	4 (24)	2001–2002
Disposition nurse/communication clerk	3 (18)	1998–2001
Day treatment centre	2 (12)	2000–2002

In 1994, the Commonwealth government introduced the National Mental Health Plan.[16] This plan for mental health services reform included merger of psychiatric and general triage facilities and has resulted in public hospital EDs receiving more patients with complex psychiatric, alcohol, and drug related conditions.[3] This change has necessitated the presence of skilled psychiatric nursing and, in some cases, medical staff dedicated to the management of ED psychiatric patients. Although not formally evaluated, some EDs in this study considered such personnel provide quicker patient assessment of the mentally ill with reductions in their ED stay and better utilisation of other ED staff.

Commensurate with the increasing complexity of some patients' drug regimens and medical conditions generally, ED clinical pharmacy services have been either established or are under consideration in several EDs. A recent, unpublished evaluation of the largest service showed significant decreases in interventions required by ward pharmacists, improved antibiotic prescribing compliance, decreased time to adequate pain control, and increased reporting of adverse drug reactions (Simone Taylor PharmD, Austin and Repatriation Medical Centre Hospital, personal communication)

The high prevalence of CCT arguably reflects the important functions of this service, especially with the elderly population who consume a disproportionate amount of hospital resources.[5] There are several reasons for this resource demand. Firstly, the general population is aging, many of the elderly have complex and multiple problems, and appropriate management generally takes longer.[2] Furthermore, the number of elderly who are living alone is growing. This trend is associated with an increase in morbidity and the need for post-hospital care, the latter being compounded by the increased feminisation of the paid workforce that has decreased capacity, or willingness, of families to care for their elderly relatives.[2 8]

Clearly, not all elderly patients require hospital admission. However, when home support services and/or sub-acute, post-acute, or long term care resources are inadequate or inadequately used, admission may be necessary. To redress this problem, the Patient Management Task Force recommended establishing aged care and psychiatric assessment teams, providing community support, and/or referring patients back to their local GP as required.[5 13] CCTs have evolved to provide this service. Only one CCT has formally evaluated its service. Moss *et al*[7] showed that it effectively provides safe discharge from hospital and helps to minimise unnecessary or inappropriate admissions and repeat presentations of patients. However, they also showed that the CCT efficacy was dependent upon ED staffing levels and the degree of community services available.[7]

HITH is reported as producing comparable health outcomes and readmission rates with inpatient care. It enables patients to remain in the workforce or at school and with familiar people in familiar environments.[17] Traditionally, HITH has not been physically part of the ED and, at the time of the study, only one service had physically merged with an

ED. However, the Patient Management Task Force, in recommending better links between the two facilities,[2] may stimulate future mergers.

Nurse initiated management, fast track, and multidisciplinary triage, singly or in combination, were the most commonly reported facilitative initiatives. Indeed, these may not be mutually exclusive entities and varied considerably in their composition and function. Little rigorous research into the effectiveness of these initiatives has been undertaken. However, anecdotal and some published evidence suggests that they do improve waiting room congestion, reduce waiting times for management and length of stay in the ED, and patient "walk outs".[12 18]

Although established in only three EDs, the position of disposition nurse/communication clerk is under consideration by several others. These personnel are thought to reduce the time that health professionals would otherwise have to devote to non-medical or nursing duties, as well as assisting in the diversion of privately insured patients away from the public system. Day treatment centres had been established in only two ED and reflect upon their specific needs. Although not formally evaluated, these centres were reported to be useful for short interactions or procedures such as patient reviews, change of catheters, and blood transfusions. Anecdotally, they are thought to improve cubicle availability and departmental decongestion by enabling patients to bypass the main ED areas.

This study has some important limitations. As all EDs participated in this study, selection bias through sampling error should have been avoided. However, recall bias may have been introduced when recording the year of a service or facilitative initiative establishment. All other data collected were objective and unlikely to have been affected by interviewer bias. It is possible that the study lacks external validity as EDs in only one city were examined. There is anecdotal evidence, however, that similar changes are also occurring throughout Australia and elsewhere. Subsequent reports may confirm this phenomenon.

CONCLUSION

In response to increasing pressures on Melbourne's ED, a significant paradigm shift in ED care provision has evolved over the past five years. There is now a growing trend for the management of patients in the outpatient setting with the support of community services. The interventions reported comprise a range of new services and facilitative initiatives. Further work is required to evaluate the cost effectiveness of these interventions as well as the potential for the development of other ED services aiming to further reduce ED congestion.

CONTRIBUTORS

All authors conceived the study and assisted with the design of the questionnaire. DT supervised the conduct of the study and data collection. DB performed all interviews and managed the data, including quality control. DB and DT drafted the manuscript and all authors contributed substantially to its revision. DT takes responsibility for the paper as a whole.

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