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Impact of an emergency short stay unit on emergency department performance of poisoned patients☆

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ABSTRACT

Objectives: This was a before and after study which sought to assess the impact of opening an ED short stay unit (ESSU) on the ED performance of poisoned patients.**Methods:** Data was collected from two groups of adult patients presenting to an ED with a tertiary referral inpatient Toxicology unit from the 2009 and 2012 calendar years, to assess the impact of the ESSU. The toxicology unit clinical database and hospital electronic medical records were interrogated for demographic, clinical and hospital flow details of presentations. The primary outcome was ED length of stay (LOS). Other outcomes included proportion of patients remaining in ED for their admission, 28 day re-presentations and hospital LOS.**Results:** During 2009, 795 patients met inclusion criteria, and during 2012, 762. The median LOS in ED was reduced from 8.5 h (IQR: 4.7–14 h) to 2.7 h (IQR: 1.6–4.6; $p < 0.0001$). The proportion of patients remaining in ED for their entire hospital stay was reduced from 515/795 (65%) to 56/762 (7.3%) [Absolute difference: 57%; 95% CI: 53 to 62%; $p < 0.0001$]. Total hospital LOS increased from 14.5 h (IQR: 8.4–21.8 h) to 16.7 h (IQR: 11.5–23; $p < 0.0001$), but there was a decrease in re-presentations with self-poisoning within 28 days from 6.9% in 2009 to 4.5% in 2012 ($p < 0.038$). There was no difference between disposition destination or toxins causing exposure between the two groups.**Conclusions:** The ESSU led to a significant improvement in ED performance of poisoned patients. It also potentially assisted in reducing ED overcrowding.

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1. Introduction

Acute poisoning is a relatively common presenting complaint to the emergency department (ED) with one recent Australian study attributing approximately 0.7% of all ED presentations to this category [1]. Previous studies have demonstrated that the care of poisoned patients can be streamlined with a shorter overall length of stay when the inpatient care is delivered by a specialist toxicology service [2,3]. There is a dearth of research investigating the optimum location within acute healthcare facilities where inpatient care for poisoned patients is best undertaken.

In recent times, ED short stay units (ESSU) have become widespread and allowed a number of ED presentations to be fast tracked for an abbreviated period of inpatient care provided appropriate criteria are met

[4]. Some of the perceived benefits of short stay units are a reduction in length of stay and a reduction in ED overcrowding [5,6]. Overcrowding in the ED is known to be associated with increased hospital mortality and was one of the factors responsible for the introduction of the National Emergency Access Targets within Australian hospitals, aimed at getting specific proportions of ED patients either discharged or admitted to hospital within 4 h of ED presentation [7].

Much of the medical literature evaluating short stay units has focused on individual ED presentation groups and how these compare with conventional inpatient management [8]. At our facility, an ESSU was opened in 2010 with admission criteria focused around patient complexity and likelihood of discharge within 24 h. Such criteria would appropriately cover a number of patient groups such as low risk chest pain [9]. Poisoned patients were likewise a favourable group having a significantly lower median age when compared with other acute, adult presentation groups, as well as a median hospital length of stay of <24 h [10].

Following the opening of the ESSU it was decided that poisoned patients requiring ongoing care who met the aforementioned criteria would be admitted. This was a change from the prior arrangement

☆ This data has been presented previously: Poster presentation: EAPCCT 2014, Brussels, Belgium. Oral presentation: EuSEM 2014, Amsterdam, The Netherlands.

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whereby the ongoing care of poisoned patient was carried out in a medical inpatient ward within the hospital. The aim of this study was to assess the impact of the opening of an ESSU on the hospital journey of poisoned patients.

2. Methods

2.1. Design and setting

We undertook a retrospective review of all poisoned patients admitted to a tertiary toxicology service via the ED. Our toxicology service provides an adult inpatient care and tertiary referral service to health care facilities in the surrounding region comprising a population of approximately 620 000. A telephone consultation service is also provided for paediatric and adolescent presentations as well as adults who are not ultimately transferred to our inpatient facility. The ED at our facility

is classified as an urban district ED by the Australasian College for Emergency Medicine and has an annual census of approximately 36,000.

Prior to the ESSU opening, poisoned patients were admitted to an inpatient medical ward following discussion with the toxicologist on duty and provided they did not require ongoing critical care in which case ICU admission was undertaken. In some cases the lack of an available inpatient ward bed meant patients remained within the ED for the entirety of their inpatient stay. Prior to 2010 allocation of inpatient beds was the task of duty nursing administration staff in the hospital and thus beyond the control of both the toxicologist and ED staff.

The ESSU opened in November 2010 after which poisoned patients not requiring ongoing critical care were admitted. An excerpt from the guideline document outlining admission criteria for all patient groups is detailed in Fig. 1. No additional requirements were applied for admitting poisoned patients other than discussion with the toxicologist prior to transfer as had occurred previously. One key operational difference

Patients should only be admitted to the ESSU where it is anticipated they will be discharged within 24 hours.

Examples include the following BUT are not limited to:

- Allergic reactions
- Minor head injuries
- Renal colic
- Biliary colic
- Mild asthma
- Gastroenteritis with mild dehydration
- Low risk chest pain
- Migraine management
- Post sedation care
- Awaiting CT, ultrasound
- Patients awaiting transfer to another hospital, **NOT** a critical care unit
- Those who require longer than 4 hours assessment observation
- Older, vulnerable or at risk patients who require multiple, additional assessments
- Patients who's management requires further time to define response to treatment eg antibiotics, asthma, analgesics
- Intoxication
- Envenomation
- Minor injuries requiring prolonged treatment (dislocated shoulders, extensive suturing)
- Toxicology patients (after discussion with the toxicologist on duty)

Unsuitable Patients

In general patients should not be admitted to ESSU where they clearly require hospital admission for over 24 hours or a specialty service*. The principles of the most appropriate place for the patient should be followed. The patients' journey through the health system should be forward moving, with this in mind some other examples of unsuitable patients include:-

- Patients with no clear management plan, including disposition
- Patients who are considered unstable
- Patients less than 16 years of age
- Post operative patients
- **Patients waiting for a critical care bed**
- Patients requiring CPAP and NIV Ventilation
- Elderly patients who are unable to mobilise, if they were previously able to mobilise
- Violent / Behaviourally Disturbed patients

*Patients jointly admitted with the Toxicology service are an exception

Fig. 1. Admission criteria for ESSU admission.

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