

## Report

# Audit of paediatric surgical intensive care unit admissions in north Jordan

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**SUMMARY** An audit was carried out over a 12-month period at a district general hospital in the north of Jordan. The study aimed to establish the reasons for and outcome of paediatric intensive care unit admissions. Of the 854 admissions, 107 were paediatric surgical cases. The causes of trauma were: road traffic accident (42 cases), burns (35) and falls (18). The remaining 12 cases were either post-operative admissions (7 cases) or acute admissions (5 cases). A total of 31 patients died and 8 children were left with significant disability or brain death. We conclude that trauma is a significant cause of disability, morbidity and mortality in children in our area. Society as a whole needs to look at the causes of childhood trauma and identify ways of reducing it.

## Introduction

Admissions to surgical intensive care units (ICU) are very demanding in terms of resources and there is a general desire in all fields of medicine to audit them. ICU admissions are costly in human terms as well as resources [1,2], and in relation to children the argument for audit becomes even more powerful.

This study aimed to find the reasons for and outcome of surgical paediatric ICU admissions in the north of Jordan in order to identify areas for improvement and changes that could be implemented. We also sought to establish whether resource allocations to specialist medical facilities might need to be shifted.

## Methods

An audit was carried out of all the surgical paediatric ICU admissions at Prince Rashid

Hospital, Irbid, Jordan a district general hospital serving the north of Jordan. The study was conducted over a 12-month period between 1 January 2000 and 31 December 2000. Data were collected initially from the ICU register and then from patients' clinical notes. Data on patients transferred to the King Hussein Medical Centre (KHMC), our tertiary referral centre, were obtained from the centre's register.

## Results

Over the period of the study there were a total of 854 admissions, of which 246 (29%) were surgical cases. There were 107 paediatric surgical admissions, which were 43% of the total surgical admissions.

Trauma of different kinds accounted for most paediatric surgical ICU admissions:

- Road traffic accidents: 42 cases (39%).

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- Burns: 35 cases (33%); 5 were electrical burns.
- Falls: 18 cases (17%).

Head injury as the main clinical diagnosis accounted for 47 admissions (44%).

The remaining cases were:

- Acute surgical admissions: 5 cases. One of these was acute pancreatitis in a 1-year-old. Another case was acute appendicitis in a patient with congenital heart disease.
- Post-operative admissions: 7 cases. These were mainly for respiratory management, for example, ventilation or aspiration.

Overall 31 children (29%) died. Ten of the burn cases died, but none due to electrical burns. Of the surviving 76 children, there were 8 who remained wheelchair-bound or in a persistent vegetative state.

After discharge to the ward, 6 patients (6%) had to be readmitted to the ICU, 3 of whom eventually died. Thus mortality in the readmitted group was 50%.

Of all 107 cases, 48 cases (45%) were sent to the referral centre (KHMC), mainly for neurosurgery or plastic surgery.

## Discussion

The study found a high paediatric surgical admission rate to the ICU in this hospital (43% of all surgical admissions), which may be explained by the high percentage of the population in Jordan who are under 16 years of age (nearly 50%).

The overall mortality for paediatric surgical admissions was 29%, which was comparable with figures quoted in the literature [1-5]. Although the numbers in this study were small, mortality among patients readmitted to hospital was considerably

higher than among the original cohort: 50% in the readmitted group compared with 29% overall. These findings were also consistent with other published data [1,3,6].

Trauma of different kinds accounted for nearly 90% of the total admissions (95 of 107) and head injury as a clinical diagnosis in 44% of cases. It should be emphasized that head injuries are expensive and demanding in human terms and in resources [7]. In a study conducted in the United Kingdom it was estimated that 7.6% of general surgical beds were occupied by head injury patients, despite considerable pressures on the financial resources of these units [7].

Of the survivors, 8 children (11%) remained wheelchair-bound or in a persistent vegetative state. Such patients can be highly demanding both in human terms and in resources as their recovery is protracted after discharge [4,8].

Burns were the cause of admission for 35 patients; of these, 5 had electrical burns. Our results confirmed that in the studied population electrical burns tended on average to be less severe than other types of burn. None of the patients with electrical burns died in the studied period compared with 10 deaths in the burn group overall. These figures were similar to those found in the literature [9].

It has been suggested in other studies that early discharge from ICU contributed to high mortality rates [3,10,11]. We did not observe this even though our numbers were small. One reason was that we only studied children and the threshold for keeping children in the ICU might have been lower than for adults. Adults are more likely to have chronic illnesses that have to be optimized in the ICU before discharge back to the ward. [3,10,11].

## Conclusion

Trauma is a major cause of disability, morbidity and mortality in children in our area. Our study raises questions about childhood trauma that go beyond the scope of the medical profession. Accidents around the home are by far the commonest cause of trauma and the family is fundamentally involved. Society as a whole needs to look at the causes of childhood trauma and identify ways of reducing it, for example by educating parents about household hazards and ways of preventing them.

The high referral rate to specialist units, especially neurosurgical units, may provide an argument for establishing neurosurgical units at the district general hospital level.

A large number of children in the study remained severely disabled or even brain-dead. This needs to be borne in mind by medical teams. Although the primary goal in ICUs is to save lives, a higher emphasis should perhaps be ultimately placed on saving brains.

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