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Time to analgesia for care delivered by nurse practitioners in the emergency department – a retrospective chart audit



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ABSTRACT

Objectives: To evaluate quality of care delivered to patients presenting to the emergency department (ED) with pain and managed by emergency nurse practitioners by:

- 1 Evaluating time to analgesia from initial presentation
- 2 Evaluating time from being seen to next analgesia
- 3 Measuring pain score documentation

Background: The delivery of quality care in the emergency department (ED) is emerging as one of the most important service indicators being measured by health services. Emergency nurse practitioner services are designed to improve timely, quality care for patients. One of the goals of quality emergency care is the timely and effective delivery of analgesia for patients. Timely analgesia is an important indicator of ED service performance.

Methods: A retrospective explicit chart review of 128 consecutive patients with pain and managed by emergency nurse practitioners was conducted. Data collected included demographics, presenting complaint, pain scores, and time to first dose of analgesia. Patients were identified from the ED patient information system (Cerner log) and data were extracted from electronic medical records.

Results: Pain scores were documented in 67 (52.3%; 95% CI: 43.3–61.2) patients. The median time to analgesia from presentation was 60.5 (IQR 30–87) minutes, with 34 (26.6%; 95% CI: 19.1–35.1) patients receiving analgesia within 30 minutes of presentation to hospital. There were 22 (17.2%; 95% CI: 11.1–24.9) patients who received analgesia prior to assessment by a nurse practitioner. Among patients who received analgesia after assessment by a nurse practitioner, the median time to analgesia after assessment was 25 (IQR 12–50) minutes, with 65 (61.3%; 95% CI: 51.4–70.6) patients receiving analgesia within 30 minutes of assessment.

Conclusions: The majority of patients assessed by nurse practitioners received analgesia within 30 minutes after assessment. However, opportunities for substantial improvement in such times along with documentation of pain scores were identified and will be targeted in future research.

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1. Introduction

Acute pain is the most common reason for patients presenting to Australian emergency departments (EDs) (Doherty et al., 2013; Finn et al., 2012; Holdgate et al., 2010; Kelly and Gunn, 2008), and time to analgesia and documentation of pain scores are key

clinical indicators compiled by the Australian Council of Healthcare Standards. However, timely delivery of effective analgesia remains an ongoing challenge and the capacity of EDs to consistently deliver timely analgesia may be impacted by the increase in the number and complexity of presentations. ED overcrowding, access block, the growing number of chronic diseases in the community and reduced access to primary healthcare have all contributed to this increased demand for services (Lowthian and Cameron, 2012; Lowthian et al., 2011; Forero et al., 2010; Health Workforce Australia, 2012).

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One of the goals of providing high quality emergency care is the timely and effective delivery of analgesia for patients. In a joint position statement released by the Australasian College for Emergency Medicine, and the College of Emergency Nursing Australasia, pain management is identified as a fundamental component of quality care for ED patients (Australian College of Emergency Medicine, 2009). Early and effective pain management in the ED setting may also play a pivotal role in reducing the likelihood of chronic pain syndromes, pain-related anxiety and distress following an acute pain presentation (Thomas and Shewakramani, 2008; Turturro, 2002; Weisman et al., 1998). A median time to analgesia following a presentation to the ED of 30 minutes is considered the national standard, but in practice, has been shown to be over an hour (Herd et al., 2009). Poor documentation of pain scores has been consistently demonstrated (Furyk and Sumner, 2008; National Health and Medical Research Council, 2012; Wood, 2008).

Nurse practitioners in the ED are a rapidly expanding service model within Australia (Gardner et al., 2010; Jennings et al., 2013; Middleton et al., 2011), however there has been limited robust evaluation on their impact upon quality of patient care and clinical outcomes. In previous studies describing analgesia prescribing practices among Australian nurse practitioners (NPs), there has been no analysis of pain management or the timeliness or effectiveness of analgesic prescribing (Buckley et al., 2013; Dunn et al., 2010).

The primary aim of the study was to evaluate time to analgesia administered to patients presenting with pain and managed by a NP. The secondary aim of this study was to determine the frequency of pain scores being documented.

2. Methods

2.1. Setting

In Australia, a framework delineates EDs into four levels that reflect increasing capacity and capability to provide emergency care, support, education and research to the overall healthcare system (Australian College of Emergency Medicine, 2012b). The Alfred Hospital is serviced by a level four ED, namely a large multifunctioning major tertiary referral hospital with capabilities for managing a wide range of complex conditions. The ED's annual attendance was approximately 55,000 patients in the last fiscal year. The ED is serviced by a 'fast track' area, staffed by nine NPs between the hours of 0700 and 2330, seven days a week. The NPs deliver a hybrid service delivery model, holding both nursing and medical skills and geographically located in the fast track zone. Specifically the NP model of care includes assessment and management of patients both independently and collaboratively within the established ED model of care. Patients deemed suitable are directed to the fast track area by a streaming nurse. All streaming nurses hold postgraduate qualifications in emergency care and are considered very experienced and senior nurses in the ED. The streaming nurses' decision of where to allocate patients is protocol driven based on patients' presenting complaints. There are no nurse initiated analgesic protocols in place currently in the ED. Occasionally the streaming nurse if time permits may seek an authorised person to 'write up' analgesia while the patient waits to be taken through to their treatment zone.

2.2. Design

A retrospective, explicit chart review was conducted by a single investigator. A detailed data collection form was designed to allow for information to be easily coded into a suitable format for data entry and statistical analysis. A coding manual was produced for verification and transparency. To ensure the highest accuracy of our data collection by the single investigator, 20% of all data forms were randomly selected by the primary investigator to compare the

entered data with the hard copy and the ED patient information system (Cerner Firstnet™) output. All patients were assessed by the streaming nurse to allocate a patient's urgency for care and treatment zone allocation. The streaming nurse documents a patient's complaint of pain as a mandatory component of their assessment. All patients presenting with a primary complaint of 'pain' and managed in the fast track area by a NP were eligible for inclusion. Patients who did not receive analgesia during their presentation were excluded. Time of registration into the ED patient information system (usually entered by the registration clerk on arrival) was used as the arrival time. Documentation of pain scores and time of analgesia administration was extracted from the medication chart in the patients' electronic medical records.

All consecutive patients from the time-period of 18 December 2013 and retrospective as far as required to comply with the required sample size were eligible for inclusion. Patients with data missing for any of the stipulated times or diagnosis were handled by list-wise deletion. Time to analgesia from presentation to the ED was the primary outcome measure. Time to analgesia after assessment by a nurse practitioner was the secondary outcome measure.

2.3. Analysis

For an absolute (risk) difference between the hypothesised proportion (analgesia given by 30 minutes) and the proportion in the study population ($\alpha = 0.05$ and power = 0.9) of 20%, the most conservative (largest) sample size needed was 64. To allow a subgroup analysis of the association between pain score documentation and time to analgesia, the sample size was doubled to 128. Data were stored in Microsoft Excel and analysed using Stata v 12.0 (College Station, Texas). Normally distributed continuous variables were reported as means (standard deviation) and ordinal or skewed variables were reported as medians (inter-quartile range). The significance of difference between two proportions was calculated using the chi-square test. A P -value of <0.05 was considered to be statistically significant.

The study was approved by The Alfred Hospital Research & Ethics Committee.

3. Results

In accordance with the required sample size, there were 128 patients with complete data for the required variables included in the study. Patient demographics and presenting complaint, subgrouped by pain score documentation are listed in Table 1.

The median time to be seen was 33.5 (12–60) minutes with 58 (45.3%) patients being seen within 30 minutes of presentation. The median time to analgesia from presentation was 60.5 (30–87) minutes, with 34 (26.6%) patients receiving analgesia within 30 minutes of presentation to hospital. There were 22 (17.2%; 95% CI: 11.1–24.9) patients who received analgesia prior to assessment by a nurse practitioner. Among the remaining patients who received analgesia after assessment by a nurse practitioner, the median time to analgesia after assessment was 25 (12–50) minutes, with 65 (61.3%) patients receiving analgesia within 30 minutes of assessment.

Among patients with pain score documented, 35 (52.2%) were assessed within 30 minutes, compared to 23 (37.7%) patients without documentation of pain score ($P = 0.10$). There were 11 (16.4%) patients with documented pain scores who received analgesia within 30 minutes of presentation, compared to 23 (27.7%) patients without documented pain scores ($P = 0.007$). When pain scores were documented and patients received analgesia post assessment, 36 (58.1%) patients who received analgesia within 30 minutes of assessment, compared to 29 (65.9%) patients who did not have pain score documented ($P = 0.42$).

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