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Research paper

# Implementation and evaluation of a 'Navigator' role to improve emergency department throughput

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ABSTRACT

*Background:* Emergency department overcrowding impacts patients, staff, and quality of care, and there is government pressure to optimize throughput and reduce waiting times. One solution for improving patient flow is the emerging 'navigator' role: a nurse that supports staff in care delivery; facilitating efficient and timely patient movement through the emergency department.
*Methods:* A 20-week project was implemented to evaluate an emergency department nurse navigator role. A controlled trial was used. The navigator worked on a week-on-week-off basis, eight hours per day, seven days per week. Time-based and cost-associated outcomes were compared.
*Results:* Data from nearly 20,000 presentations during the trial period were analysed. All outcomes were improved during the ten weeks the Navigator was working. A slight improvement in National Emergency Access Target compliance was shown, with an average of 4.5 min per presentation saved. The labour cost associated with the time saved was estimated to be $170,000.
*Conclusions:* The results from this study indicate that for a relatively small investment, complementary nursing roles such as the navigator can impact emergency department patient flow. However, further studies are required to determine optimisation of the role.
*Relevance to practice:* This study provides rigorous evidence of the effects of a nurse navigator role on emergency department throughput. Whilst positive outcomes were demonstrated, suggesting a whole-of-system benefit, the magnitude of effect on a per-presentation basis was relatively small. Further studies are required to demonstrate the clinical relevance of such roles.


## Introduction

The cost of Australian acute healthcare is approximately $8 billion each year, rising annually well over the inflation rate, making government health budgets potentially unaffordable within 20 years [1]. A major issue for the health system is increasing demand and overcrowding of emergency departments (ED) [2], leading to access block (when patients in ED that require admission to hospital have a total ED time greater than 8 h) [3], congesting not only the ED but overall system operation, and impacting on patients and staff [4,5]. In this context, public health services are undergoing considerable change including reshaping their models of care delivery and, in some cases, redesigning or redesignating existing services and building new facilities.

One area that has received a sharp focus from government, in terms of its effectiveness and efficiency, is the ED, which has been criticised because of escalating costs and ineffective management of throughput, resulting in long delays in admission to ED and long waiting times for patients. Furthermore, temporary closures at times of high demand, often referred to as ambulance *bypass*, have resulted in patients being to be transferred to other facilities for emergency treatment. However, in Queensland this is no longer allowed [6]. This means that when an ambulance arrives at an ED that is at capacity, there is usually a delay in offload from the ambulance trolley to an ED treatment area. This is referred to as ambulance *ramping* [7,8].

In Queensland, the demand for emergency services has been compounded by the relatively rapid population growth, particularly in the south east corner. At the time of this study there was mounting pressure from the federal government's National Emer-

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gency Access Target (NEAT) to improve throughput in ED; with a target set for December 2015 to achieve ED discharge within 4 h for 90% of ED presentations [9]. At a Queensland state level, the government's Blueprint for Better Healthcare in Queensland [10] outlines structural and cultural improvements, including reiteration of the Metropolitan Emergency Department Access Initiative that aims to improve patient access to ED. At a local level, The Prince Charles Hospital (TPCH) Emergency Medical Services (EMS) – the setting for this study – continues to expand rapidly, having transitioned to co-located adult and paediatric services. Presentations have increased in absolute numbers from less than 13,000 in 2006 to 72,400 (adult and paediatric) at the time of this study in 2014, and with respect to case mix and complexity.

Hospital and ED overcrowding is recognised as an increasing problem [11] that results in adverse effects upon patients and staff alike [12–14], and upon the quality of care delivered [15–18]. ED crowding has been linked to staff stress [5], decreased staff satisfaction and retention [12], prolonged inpatient length of stay (LOS) [12,13] and financial implications [19,20]. Access block has been linked to increases in ED and hospital LOS, ambulance diversion, morbidity and mortality [4,5,12]. Many factors attributed to ED bed-block are hospital- or district-wide issues outside ED staff's control. However, addressing these issues with innovative strategies can facilitate whole-system flow.

When considering whole-system flow within a health district, there are several variables that impact on ED patient flow. Primarily, flow can be considered in terms of supply and demand. The latter is mainly dependent on the number of people presenting to ED as 'walk-ins' or via ambulance, whereas the former is dependent on the size of the ED and what capacity it is operating at, as well as onward availability of hospital beds. ED congestion is a function of many factors: both internal and external [21], which may be explained further using the Input-Throughput-Output model developed by Asplin et al. [22]. Input factors relate to demand, whereas throughput factors are related ED and hospital provision of care processes e.g. diagnostic services, staffing; and output factors are related to post-ED ongoing care of the patient e.g. hospital admission, transport services. Furthermore, all factors are subject to other extraneous factors such as fluxes in local population e.g. major events, seasonal variation, and policy changes [21].

Whilst it is difficult to control the number of ED walk-in or ambulance presentations, it may be possible to improve the flow of presentations by attending to the needs of patients presenting to ED in a timely manner. One way that this has been addressed is via the emerging role of the ED Navigator, a nurse that monitors and facilitates patient movement through the department by supporting staff in their delivery of care, and facilitating the patient's journey throughout the ED to ensure that it is as efficient and timely as possible. Introduction of a 24-h Navigator role was attributed with being one of several initiatives in Western Australian Health's successful attainment of NEAT targets in its *Four Hour Rule Program*, reportedly improving their performance by "about 15% overnight" through their monitoring of the timeline of every patient and avoiding time wastage by encouraging timely bookings, referrals, decision making and transfer/discharge of patients [23]. However, 'navigator' was a collective term applied to several different roles, such as ED Operations Manager and ED Patient Flow Coordinator that were developed independently at each hospital [24]. Unfortunately, an independent review of the Four Hour Rule Program found that the role caused stress within the ED environment, including allegations of bullying behavior. It was recommended that the role be re-examined and clearly defined [24]. In Queensland, a role similar to the Navigator, in that it aims to improve patient flow, has been implemented in some EDs: the Clinical Initiatives Nurse (CIN) [25]; the stated primary purpose of which is to improve Patient Off Stretcher Time (POST), patient flow through ED, handover processes, and to provide care to patients in the ED waiting room when required [26]. While the CIN role is purported to have achieved timely intervention and a reduction in did-not-wait rates [27], the position does vary in role description and execution [28], with little evidence regarding associated outcomes [29], albeit some anecdotal evidence suggesting that the position has assisted in the reduction of wait times [28]. A key characteristic is that the CIN is generally assigned to the front end of the department, initiating treatment before patients are seen by medical staff [29].

The navigator role requires an experienced ED nurse who is cognisant of ED processes. Navigators contribute actively to the movement of patients through the department by monitoring patient timelines and flagging a patient who is approaching their time limit for each stage or who appears to have stalled in the process, and helping to identify and troubleshoot in crisis areas. They undertake a diversity of time-consuming tasks such as coordinating bookings and patient transfers to available beds (from triage to ED/from ED to inpatient areas), tracking down information for those patients whose status was unclear in the admission process, and facilitating referrals and requisite decision-making. By acting as an assistant in this manner they promote the movement of patients through the department while allowing the team leaders to focus on the overall directing of flow. While various government reports are available, they tend to detail implementation of the role without supportive evidence and in the absence of valid controls. This lack of peer-reviewed research studies evaluating the navigator role highlights a gap in current knowledge and the need to gather rigorous evidence regarding this emerging role.

### *Background*

Funding was obtained for a project to implement and evaluate a nurse navigator role within a Queensland ED. In this project, the role of the Navigator was to monitor patient timelines, flagging those approaching target times or stalled processes, identify and troubleshoot crisis areas, undertake time-consuming tasks e.g. co-ordinate bookings/patient transfers, update patient information, and facilitate referrals and decision-making; thus assisting patients' movement through ED while allowing team leaders to focus on overall flow. As this was a new role, although discussions were held with the Navigators about the role intentions, no specific training was provided. It was anticipated that the role would evolve during the course of the project. This paper presents the results of time-based and cost-related outcomes associated with the project.

### *Aim*

Within an adult ED setting, the primary aim of this study was to objectively assess the effects of a Nurse Navigator role on NEAT and other measurable time-based outcomes. The secondary aim was to estimate the labour cost of any time saved associated with the role.

## Methods

### *Design*

This study employed a controlled trial design. Ethical approval was received from the hospital research ethics committee (ref: HREC/14/QPCH/23).

### *Setting and sample*

The setting for this study was a major tertiary referral hospital in Brisbane, Australia. The hospital has 630 beds and provides a broad range of specialties, including co-located paediatric and adult

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