

The experience of nurses whose role requires allocating patients to outlier and over census beds during access-block: a review of the literature

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Abstract

Background

Strategies intended to streamline ED patient admission and discharge have been introduced to alleviate access block. To meet policy, local hospitals design demand management processes which are intended to meet the changing needs of the facility by directing the patient journeys throughout the hospital. Given the crucial role patient flow managers and after-hours nurse managers play in managing patient flow there is a need to explore the experience of these nurse managers while managing access block.

Objectives

To gain a better understanding of the nurse managers experience of allocating patients to outlier or over-census beds.

Methods

A systematic literature search was undertaken and reported using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guideline. The search was for research papers which described the nurse manager's experiences utilising outlier or surge beds at times of access block. The review included all relevant literature, and papers were not excluded based on study design or methodology.

Results

The electronic search identified 2,057 papers. The inclusion/exclusion criteria removed 2,010 papers, leaving 47 papers for further abstracts, or full text screening. Finally, five papers were identified for possible inclusion in the review. Two co-authors independently assessed the five, final papers for inclusion, yet, none contained the nurse managers experience of allocation patients to outlier beds.

Conclusion

The outlier and over-census protocols are two strategies employed in response to periods of peak demand. The application of these strategies is the responsibility of the nurse manager. Up until now, evidence remains unreported on the experience of nurse managers responsible for managing resources at times of access block. In an attempt to address this gap we have planned to address this as an area of future research.

Background

Hospitals worldwide all strive to deliver safe, timely, and high-quality care to all patients. However, this is often challenged by increasing bed demands, in an already overcapacity environment. And, to a large part is due to increasing Emergency Department (ED) presentations to access emergency care, with as concomitant decreased availability of inpatient beds. Resulting in longer waiting times for assessment and treatment, where indicated, and reduced ambulance offloads. All these pressures have been implicated in poorer patient outcomes, attributed to ED overcrowding and access block [1–4].

In times of peak activity and demand for beds, hospitals require a framework which efficiently moves patients through care by maximising the resources which are readily available [5]. This must be balanced by a push to increase efficiency while being mindful of their expenditures [6]. Since the 2011 National Health Reform Agreement the Australian Federal and State and Territory governments have funded the public hospital system using an activity-based funding (ABF) scheme, patient volume-based funding is offering hospitals a fixed dollar amount per patient care service delivered. Strategies have been implemented which address the demands of increasing patient volume and aim to relieve access block. Solutions are designed to ensure optimal use of available resources whilst not compromising patient safety [7]. An example being, that when there are no beds available in the patient's specialty ward patients are admitted to another ward bed which may not ordinarily provide the expert care required, as an *outlier* or *border* [8, 9], or implementing an over-census protocol, a decision typically made by experienced senior nurses to open surge beds [10]. To date published research appears to be limited to the effectiveness of these strategies, and little if any describe the experience of nurse managers responsible for allocating patients to these types of beds. Therefore, this integrative review has been undertaken to better understand the nurse managers experience of allocating patients to outlier or over-census beds.

Methods

A systematic search and review of current literature was undertaken and reported using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guideline [11]. In consultation with a health librarian an electronic search of the literature was undertaken. The search was for research papers which described the nurse manager's experiences utilising outlier or surge beds at times of access block. The review included all relevant literature, and papers were not excluded based on study design or methodology [12]. Papers not written in English and papers reporting surge capacity and outliers at times of disasters were excluded.

Search Strategy

Using a defined search method, the electronic databases: Cochrane, Medline, CINAHL, Proquest and Google Scholar were searched for papers published from June 2000 until June 2019. The preferred reporting items for systematic reviews and meta-analyses (PRISMA) guidelines (**Table 1**) [11] were used to maintain transparency and ensure an exhaustive systematic search was undertaken (Figure 1). Titles or abstracts were searched for combinations of the following terms: "Access block" OR "Boarding", "Outlier", "Surge bed*/ surge capacity", "Over census", "Attitude of health personnel", "Nurse opinions /

perspectives / experience”, “Nurse attitude”, “Bed occupancy”. In addition, hand searching of reference list were undertaken to identify further studies for inclusion in the review.

Data Extraction

The data extracted from each paper included: (1) First author and year of publication; (2) setting, including country and hospital type; and, (3) a summary of the main outcomes and conclusions.

Results

Initially 2,057 potential papers were identified by the electronic search. After application of the inclusion/exclusion criteria - 2,010 papers were removed, leaving 47 papers for further abstracts, or full text screening. Finally, five papers were identified for possible inclusion in the review. Two co-authors independently assessed the five, final papers for inclusion, yet, none contained the nurse managers experience of allocation patients to outlier beds. At this stage it was decided to present the results of the review, as an Integrative Review. A summary of the five final papers is presented in **Table 2**, overall two major themes dominated the content of these papers: (1) patient flow; and, (2) patient safety.

Patient Flow

Each of the included five papers addressed inefficiencies in patient flow as the primary purpose of their study. Harrison, et al., [13] found that an over-census status invariably resulted in delayed hospital discharge, the largest patient cohort were those being treated by medicine and equally Reid, et al., [14] identified that bed blocking as a result of delayed discharge increased with the age of the patient. Hospital occupancy and delayed patient discharges were identified as major causative factors in the availability of inpatient beds and the flow of admitted patients from ED to their inpatient ward placement [13, 14].

The number of patients discharged from hospital wards directly impacted the availability of inpatient beds despite patient load [13]. Disposition of patients from hospital had been identified as a tool to facilitate patient flow. Conversely, excessive delays in patient discharges associated directly with disruptions to patient flow resulting in access block [13-15]. Reid et al.'s [14] 'Day of Care' survey across nine acute care hospitals used criterion-based indicators to identify ongoing acute care which measured illness severity (e.g. continued cardiopulmonary instability) and service intensity (e.g. receiving intravenous medication or continuous vital sign monitoring). Reviewing 3701 inpatient acuity status, they found that on average 23% (n=798) of the major causes in delayed patient discharge were related to in-hospital activities which were associated with waiting for a consultant or allied health review and/or awaiting the outcomes of a procedure/investigation/results (n= 262, 32%) and out-of-hospital delays, those associated with awaiting community hospital availability, home care, or social work assessment (n=228, 28%). Moreover, the authors found that those patients not meeting the criterion for ongoing acute care were more likely to become an outlier which often resulted in a prolonged length of stay, in some cases greater than 14 days [14].

Three papers took a solutions approach to improving patient flow and promoting access to inpatient beds, which focused on protocols implemented when a hospital is at capacity through the creation of inpatient bed spaces. Implementing a 'pull' rather than 'push' method to the patient journey, ward beds were created by firstly unblocking inpatient beds to allow for flow rather than 'pushing' for patient's admission process to be hastened with no preparation for their ward disposition. This was achieved with careful discharge planning, morning rounds by physicians facilitating morning discharges, the implementation of a *Quick and Sick* ward to care for patients requiring higher level assessment and treatment, staffed with specialist physicians to quickly assess and treat patients taking some of the medical admissions load off emergency [15, 16].

Using an algorithmic decision-support system (DSS) that pre-emptively provided options for intra-hospital transfers and decreased reactive bed moves to create bed spaces, was introduced as a tool to support the bed manager. When compared with the previous reactive 'bed manager decision' model, the DSS allowed for a more refined approach by actively allowing decisions to relocate patients timelier and in most cases reduced the need for patients to be moved altogether. For example, using the DSS model saw a 59% reduction in in-patients actively being moved, more importantly there was an 89% reduction in last minute in-house transfers. While this study did not directly address the bed managers experiences of the using the DSS - typically a nurse, who determines the destination ward for admitted patients, - the patient safety and patient flow implications were significant inasmuch that this approach reduced patient presentation time in the ED by one hour which when calculated over the year this was a saving of an additional 3360 patient bed hours [17].

Patient safety

The ultimate outcome when focussing on patient flow and hospital productivity remains patient safety and improvements in care. The 'Quick and Sick' intervention proposed by Gilligan and Walters [15] aimed at improving patient flow by implementing a weekly outlier physician rota where a designated consultant conducted 'review' rounds of medical outliers, to ensure the care of patients had not been compromised. Measuring weekly mortality rates for both current in-patients and recently discharged patients as well as the number of outliers and ED transfers, the authors saw a 34% decrease in the overall length of stay and a 22% decrease in in-patient mortality, all of which coincided with zero outliers. The mortality rate and the time patients waited in the ED for an inpatient bed decreased. Interestingly, this study saw the readmission rate of medical patients increasing by 36% and as a result so did the number of outlier patients.

Although, Thompson, et al., [17] claimed patient care was not considered to have been compromised when the allocation of outlier bed spaces almost doubled. This was accomplished by improved capacity utilisation, increased bed availability and a decrease in ambulances being diverted to other hospitals. However, the authors do contend that as the number of available beds became smaller the waiting times increase exponentially. Thompson, et al., [17] mentions there was no statistically significant change in patient "fall rates, medication errors, hospital-acquired infections rates, restraint usage, length of stay and

patient satisfaction surveys” (Thompson, 2009. pp272). However, they did not measure patient mortality or morbidity in the outlying patients, nor the satisfaction of the staff caring for increasing numbers of patients not within their specialty.

Discussion

The current landscape of the health system continues to be publicly scrutinised as significant delays in access to hospital beds and waiting times for health care within Emergency Departments (ED) increases. Efforts to minimise these delays whilst accommodating increasing numbers of patients requires solutions which maintain safe, effective and timely patient care. However, exploration of the experience of nurse managers allocating beds, when capacity is high is lacking. This review to explore the experiences of nurse managers use of outlier and over-census protocols at times of access block has highlighted the need for work in this area.

The outlier and over-census protocols are two strategies employed in response to periods of peak demand. The application of these strategies is the responsibility of the nurse manager. However, current literature highlights that this is becoming increasingly difficult as patient numbers are increasing, placing further strains on healthcare services [13-17]. Commonly it has been reported that implementing bed management protocols when hospitals experience full capacity optimises patient throughput [13-17].

Crowded hospitals threaten the provision of timely care to patients. Several literature reviews have been published that address issues of crowding and access block. Many of these reviews offer solutions to the complex issue of overcrowded hospitals, which focus on improving efficiencies in the ED rather than the strategic approach of outliers and over-census protocols [18, 19]. Crowding is likely to affect the compliance with assessment and treatment times for patients. This translates to poor quality of care for patients and in some circumstances increased incidence of adverse effects.

Previous work in this area has had a focus on outliers and patient outcomes [8, 20]. Alameda and Suárez [8] report outliers admission times were 22% longer and in a systematic review undertaken by Metcalfe, et al., [20] found the percentage of Medical Emergency Calls were increased among outlying patients [8, 20]. Todate research has illuminated the magnitude of access block and crowding, the intricacies of solutions employed to resolve access block and the resulting impact on patients [3, 7, 21]. Up until now, evidence remains unreported on the experience of nurse managers responsible for managing resources at times of access block. In an attempt to address this gap we have planned to address this as an area of future research.

Limitations of the Review

All reviews have potential limiting factors, including the potential that studies meeting the aims of the review were missed, or were in fact never published. However, an important potential strength of the review, it is the dearth of studies addressing the nurses experience placing outlier and over-census patients, is a real and important gap in our current understanding of patient flow in the hospital setting. A

broad electronic systematic search was undertaken, and the reference lists hand searched for additional inclusions, all in an attempt to mitigate the potential for publication bias.

Implications for Future Research

While one of the aims of this review was to ascertain and better understand the nurse's experiences and role in deciding to move a patient to become an outlier, there was very little available literature to support this. Instead, it has to be recognised that the role of managing patient flow in the acute setting is increasingly becoming part of an extended nursing role. Therefore, understanding the decision-making process given that patient safety could be put at risk is worthy of further work. Thus, the implications for future nursing research may include:

- To explore the experience of nurse managers in allocating beds when the resources are at a premium;
- To better understand the decisions and experiences of the nurses who place patients into outlier and over-census bed spaces.

Conclusion

The lack of research exploring the experience of nurse managers, in placing patients into outlier and over-census beds is an important gap in understanding patient flow in the hospital setting. Whilst outlier patients and over-census protocols continue to be a strategy utilised by bed managers, greater focus needs to be placed on the decision makers to understand their planning, considerations and decision processes when placing patient into outlier and over-census bed spaces.

Abbreviations

ED – Emergency Department

PRISMA - Preferred Reporting Items for Systematic Reviews and Meta-Analyses

CINAHL - Cumulative Index of Nursing and Allied Health Literature

DSS - Decision-support system

Declarations

Ethical Approval and Consent to participate

Not applicable (review of published literature)

Consent for publication

Not applicable

Availability of supporting data

Contact first author

Competing interests

All authors have no competing interests to declared

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Authors' contributions

LM conceived the study, all authors (LM, MC and SF) contributed to defining and refining the review question and scope of review. LM and MC reviewed published manuscripts; all authors reviewed the findings and contributed to the content, writing, drafting and revision of the manuscript, and agreed to the final version. LM is the guarantor of the manuscript.

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Authors' information

Not applicable

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Tables

Due to technical limitations, Tables 1-2 are only available as a download in the supplemental files section

Figures

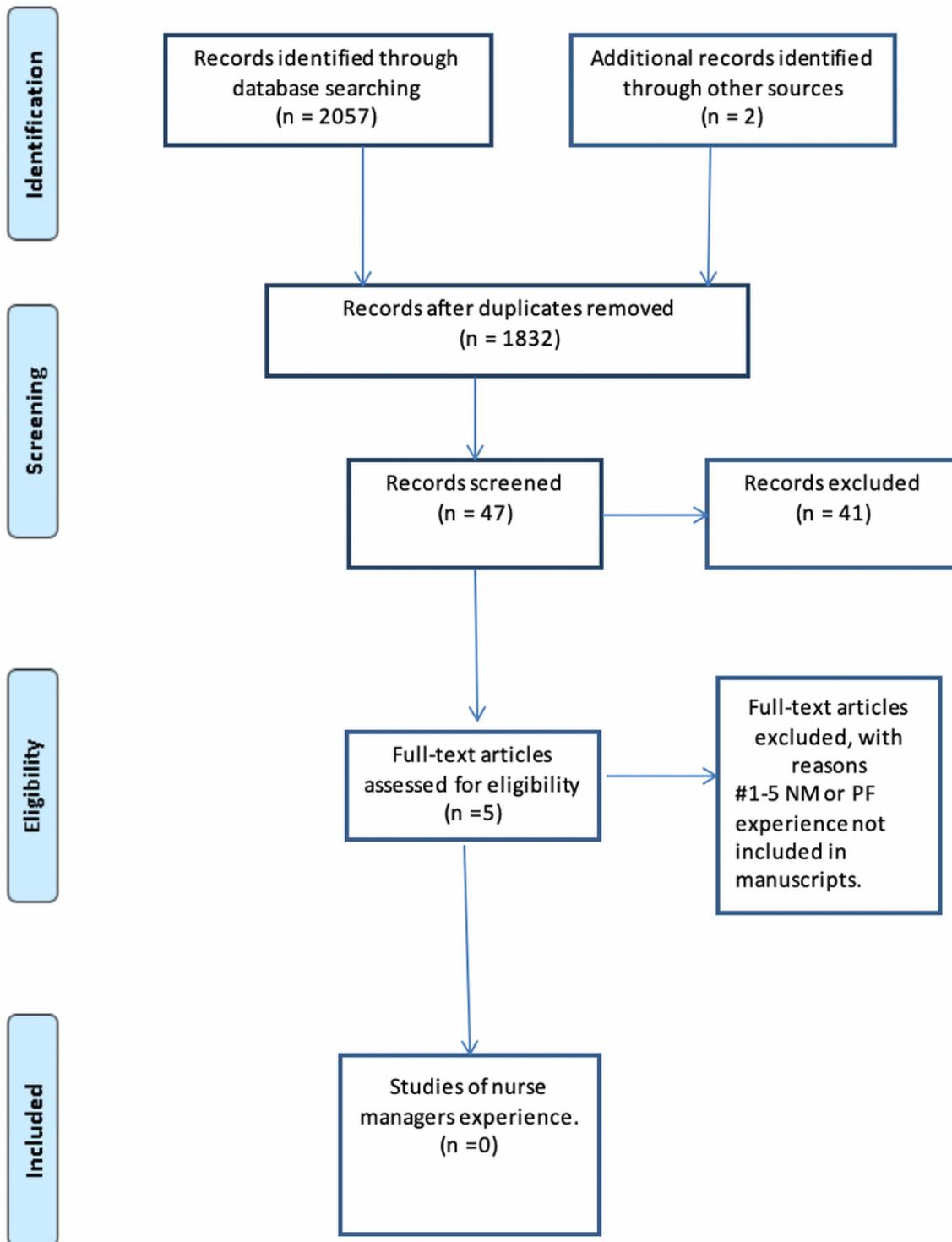


Figure 1

Flow diagram of article selection process

Supplementary Files

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- [Table2SummaryIR.docx](#)
- [Table1PRISMA2009checklistIR.doc](#)