SYNOPSIS

KEY POINT SUMMARY

OBJECTIVES

To describe the implementation of a "vertical flow model" to aid patient flow patterns in an emergency department environment, and subsequently provide a stable, potential working definition of the model itself.

Introduction of a horizontal and vertical split flow model of emergency department patients as a response to overcrowding

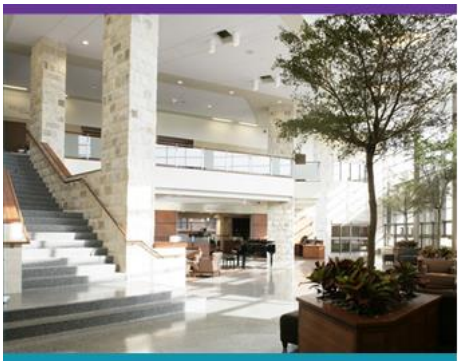
Wallingford, G., Joshi, N., Callagy, P., Stone, J., Brown, I., Shen, S. 2018 / *Journal of Emergency Nursing, Volume 44, Issue 4, Pages 345-352*

Key Concepts/Context

Hospital emergency departments (EDs) strive to optimally organize patient flow so that optimal care can be delivered while patient length of stay is minimized. The emergency severity index (ESI) is a 5-point scale used to help medical staff discern the severity of patient conditions; higher ESI scores indicate less-severe medical conditions. The terms "horizontal" and "vertical" are often used in EDs to denote which patients should remain lying down for treatment and which patients are still capable of sitting upright. Under the often-used "split-flow" model of patient triaging, patients with an ESI of 4 or 5 are "fast tracked", or allocated to physical beds more quickly, so that they can be quickly treated and discharged to free up additional bed space. The authors of this study suggest that a "vertical flow" model can be used to extend similar "fast-tracking" processes to include ESI 3 patients. The vertical flow model involves replacing hospital beds for multiple chairs so that capable patients can be quickly triaged while remaining vertical, thus granting additional space to treat more individuals in the same space.

Methods

This study took place over the course of six months in a large university healthcare center. Data on ED patient length of stay and patient population numbers within the four ED departments were gathered both before and after implementation of the vertical flow model. Staff workflows were significantly altered to accommodate for the vertical flow model during the study period. The primary outcome the researchers used to gauge the efficacy of the vertical flow model was patient length



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of stay; shorter durations indicated improvement. The secondary outcome the authors focused on was the number of patients occupying the Delta Zone, which was the one of the four ED departments that was redesigned to accommodate the vertical flow model.

Findings

After treating a total of 20,460 patients rated at ESI 3 during the vertical flow model study period, patient LOS was decreased from a total of 384 minutes to 270 minutes. The authors note that this time saving was observed in all six months of the study. With the implementation of the vertical flow model, the ED was capable of accommodating a higher total number of patients in shorter lengths of time without any adverse patient care events.

Limitations

The authors note that this study took place in a single healthcare facility that took extensive measures to prepare itself for the intervention; implementing the vertical flow model into other healthcare facilities may not immediately result in similar successes due to the factors involved in successful implementation. The authors also note that staff resistance to the new model may have skewed some data, as well as the generally younger population of patients who were involved in the study and required shorter stays in the ED.

Design Implications

The vertical flow model may help some emergency departments accommodate higher numbers of patients at faster rates, including patients with generally more severe conditions (such as patients classified under ESI 3 as opposed to ESI 4 or 5). Designers might consider how EDs could be organized to accommodate additional chairs instead of gurneys when needed to support patients that are capable of remaining seated while in the ED, thus granting additional space and patient flow.