

# Dealing with Stress and Workload in Emergency Departments

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**Abstract** Emergency Departments (EDs) are widely known for their stochastic nature, unpredictable arrivals and—in recent years—overcrowding problems. These could cause stress to physicians and, as a consequence, bad quality of patient's medical care. This problem is investigated in a Spanish ED by developing a dynamic measure of stress, analyzing the patient flow control considering not only waiting time but also physicians' stress, and finally by suggesting a computer-based tool to help triage nurses to manage the workload distribution among physicians.

**Keywords** Emergency department · Workload · Stress · Patient flow

## 1 Introduction

ED Physicians are usually exposed to more severe stress than other departments' physicians [1]. Its principal sources are time pressure, critical decisions and amount of work [2]. Patient Flow is managed after triage by nurses, in some cases by using simple rotational rules, which look for workload equity among physicians. Nevertheless, the randomness of patient arrivals results in inequality of stress experienced by physicians. The main purpose of this presentation is to outline the current research conducted to analyze physicians' stress working in an ED. The analysis has been divided in three steps: in the first one the issue of developing a dynamic measure of stress is addressed, secondly policies for the patient flow control are studied by incorporating the dynamic stress of physicians as a criterion (in addition to the usual patient waiting time), and finally a computer-based tool implements the best policy to assist the triage nurses to manage physicians' workload.

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## 2 Measuring Stress and Workload

Physicians in ED reported that the stress they feel is caused mainly by three components: workload (pending patients), uncertainty (unpredictable arrivals or illness of patients not seen) and time pressure (overcrowding). It is being developed a methodology to measure stress among physicians through their assessment of real scenarios. These scenarios account for the workload assigned to a physician disaggregated by type of patients (severity), their stage of medical care process, waiting time targets and teaching duties. The collected scores are the primary data used to estimate the stress assessment function.

## 3 Patient Flow Control

Patient Flow is controlled by the triage nurses. As soon as patients are triaged, they are assigned to a physician rotationally. This control could be improved by analyzing different ways of distributing patients among physicians in order not only to optimize patient waiting time but also stress among physicians.

## 4 Implementation

Our purpose is to implement a new tool to support decision making at triage based on the previous flow control analysis. This system should be fair and easy to use as patient flow management does not fall within the competence of triage nurses.

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## References

1. Estryn-Behar, M., et al.: Emergency physicians accumulate more stress factors than other physicians-results from the French SESMAT study. *Emerg. Med. J.* **28**(5), 397–410 (2011)
2. Phipps, L.: Stress among doctors and nurses in the emergency department of a general hospital. *CMAJ* **139**(5), 6–375 (1988)