

5th International Congress on

Healthcare & Hospital Management

December 03-04, 2018 | Rome, Italy

Bed management system of Sant Joan De Déu (BEDMA-SJD), an innovative system for efficient management of health care processes

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Introduction: There is abundant scientific literature that analyzes the problem of overcrowding in emergency departments and their negative effects on the safety and quality of care provision. The main factor that determines overcrowding is the existence of inpatients admitted in the emergency room due to the lack of beds in the inpatient area. Our current bed management system has as its main goal to minimize the periods of saturation in our hospital.

Methods: Two simple easy-replicable tools: Quirplan platform: This is a computer tool that integrates diverse information from the electronic health records related to scheduled surgical activity. It allows the establishment of a maximum number of daily beds that can be used for this surgical activity and Predil formula: Predicts the availability of daily beds 24 hours in advance. It uses real-time information from EHR. It also makes an estimate of the variables necessary to obtain the expected balance sheet for which there is no certainty of what will happen: number of inpatient discharges and number of admissions from emergencies that will occur during the next 24 hours. This estimate is constructed by combining data from the recent historical with information extracted from EHR.

Results: Usefulness of the Predil formula: when the Predil formula foresees that the balance of patient inputs and outputs will create a balanced situation (maximum of 6 patients without bed in our particular case given our set infrastructure) the accuracy is 97%. Hospital overcrowding indicators have improved in 2017. In emergency department (only 7 days out of 365 with at least an hour measurement of the EDWIN index >2), Inpatient area (bed occupation: 81%) and surgical area (5 suspensions on the last day due to the lack of beds).

Conclusions: The BEDMA-SJD is a good strategy to reduce the saturation of the hospital.