

A Unified Modeling Framework for the Surgery Department Management Problem

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Abstract. Healthcare management is a widely investigated topic in OR literature. Among the others, great relevance has been given to the problem of optimizing the activities of the hospital surgery departments to ensure an effective and efficient usage of the operating rooms. At the operational level, several papers tackled the Surgery Scheduling Problem, i.e., determining for each elective patient: the surgery date and starting time; the medical resources to be allocated. In this context, this work is focused on the development of a unified modelling framework able to: manage operating rooms using the three scheduling strategies proposed in literature; select patients from a waiting list and assign them to a specific surgery and operating room session; sequence the surgeries for each session. The proposed framework is based on an ILP model starting from an existing formulation, modified to consider several additional requirements related to: emergency management, surgery complexity and postponements, and patient's health conditions. Such model has been integrated within a prototypal optimization tool which has been validated on several instances derived from real data. Obtained results demonstrate that the tool can represent a valuable DSS allowing to simulate different room usage policies and providing useful managerial insights.

Keywords: Health care; Operating room; Integer programming; Scheduling;

References

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