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COMBINING LATIN HYPERCUBE DESIGNS AND DISCRETE EVENT SIMULATION IN A STUDY OF A SURGICAL UNIT

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ABSTRACT

In this article experiments on a discrete event simulation model for an orthopedic surgery are considered. The model is developed as part of a larger project in co-operation with Copenhagen University Hospital in Gentofte. Experiments on the model are performed by using Latin Hypercube Designs. The parameter set consists of system settings such as use of preparation room for sedation and the number of operating rooms, as well as management decisions such as staffing, size of the recovery room and the number of simultaneously active operating rooms. Sensitivity analysis and optimization combined with meta-modeling are employed in search for optimal setups. The primary objective in this article is to minimize time spent by the patients in the system. The overall long-term objective for the orthopedic surgery unit is to minimize time lost during the pre- and post operation activities for acute and elective surgery as well as dedicated elective surgery.

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