

Scheduling patients at the UZ Leuven

In many hospitals there are patients who receive surgery later than what is medically advised. In one of Europe's largest hospitals, the UZ Leuven, this is the case for approximately every third patient. Serving patients late is a problem as they might consequently be exposed to an increased health risk.

In order to improve the current situation, the lateness of patients had to be quantified and the responsible mechanism, the patient scheduling process, better understood. Drawing from this understanding, we implemented and tested different patient scheduling methods using a discrete event simulation model. In order to get a realistic test environment, we tried to avoid making any assumptions. Instead we investigated and modeled all the mechanisms that we found to have an important impact on the way patients are scheduled and served at the hospital in reality.

We found that it is important to model the non-elective to OR allocation mechanisms in place and, additionally, also to include elective rescheduling. Modeling rescheduling ensures that OR related performance metrics, such as overtime, will only loosely depend on the chosen patient scheduling method.

We also found that capacity considerations should guide both patient scheduling and replanning related decision making. This is the case as those scheduling strategies that ensure that OR capacity is efficiently used will also result in a high number of patients served within their medically advised time limit. An efficient use of OR capacity can be achieved, for instance, by serving patients first come, first served. As applying first come, first serve might not always be possible in a real setting, it is important to allow for patient replanning.

SHORT BIO

Erik Demeulemeester is Professor in the Research Center for Operations Management at the KU Leuven. He earned the degree of commercial engineer (field of Management Informatics) in 1987, the degree of Master of Business Administration in 1988 and a PhD in 1992, all from the KU Leuven. The title of the PhD was 'Optimal algorithms for various classes of multiple resource-constrained project scheduling problems'. From 2001 on, he is Full Professor and he currently teaches a course on quality management, a course on project and production scheduling as well as a seminar on production and logistics. His main research interests are situated in the field of project scheduling and health care planning and he has published many papers on these

topics. He currently belongs to the editorial board of the European Journal of Operational Research, the Journal of Scheduling and the European Journal of Industrial Engineering. He also is appointed as a member of the Program Committee for the EURO XXVIII Conference in Poznan (July 3-6, 2016). Additionally, he became a core jury member for the EURO Excellence in Practice Award (EEPA) that will be awarded at the EURO-k conferences in 2016, 2018 and 2019. In the past, he has twice organized a PMS workshop in Leuven and once an ORAHS meeting. These are workshops of around 120 researchers from around the world that presented their newest research results in Leuven. Moreover, he is currently the chair of the Decision Sciences and Management Informatics department at the Faculty of Economics and Business of the KU Leuven.