

Proceedings of the 2nd Annual World Conference
of the Society for Industrial And Systems Engineering
Las Vegas, NV, USA
November 5-7, 2013

Outpatient Scheduling with Overlapping and Double-booking Appointments to Mitigate Productivity Loss from No-shows

Y Han and C-A Chou

Department of Systems Science and Industrial Engineering
State University of New York at Binghamton
Binghamton, NY 13902, USA

Corresponding author's Email: yhan8@binghamton.edu

Abstract: In outpatient appointment scheduling systems, it is commonly found that, on one hand, patients are dissatisfied with long waiting, and on the other hand, providers attempt to increase utilization and reduce overall cost. In particular, no-show patients that cause demand variation and reduce provider productivity are one of major reasons to degrade clinics' overall performance. To overcome such a challenging issue, overlapping and double-booking appointments, which are used to reduce the variation and mitigate the productivity loss caused by no-show patients, have been introduced in the literature. However, an integrated system, designed based on specific environment factors, is not further investigated yet. In this study, we propose an appointment scheduling system integrating overlapping and double-booking appointments. A discrete event simulation model is developed to simulate an outpatient clinic with multi-providers, scheduled patients, and walk-in patients. High and low levels of no-show patients are considered, respectively. Various scheduling methods are employed and compared in terms of the patient throughput and the total cost of the system. The results reveal that the outpatient appointment scheduling system integrating double-booking and overlapping appointments leads to the most improvement. Compared to a baseline scenario with high no-show level, the patient throughput is increased by 32% and the total cost is decreased by 20%. However, the scheduling systems are not beneficial at low no-show level as the same as high no-show level. It is suggested in future work that other methods, such as an appointment reminder system, can be considered to improve the performance of systems at low no-show level.

Keywords: Outpatient scheduling, overlapping appointment, double-booking appointment, no-show