Clinical Scheduling in Primary Care and Oncology Clinics

ABSTRACT:
Timeliness and efficiency are important characteristics of an effective healthcare system. Appointment scheduling, which determines patient arrival rates and times to the clinics, is used to smooth out staff workflow and reduce patient waiting times. Effective scheduling increases patient satisfaction, improves access to care and leads to better health outcomes. There are many complex environmental factors that should be considered while developing scheduling methods in different healthcare settings. In this talk, clinical scheduling in primary care clinics and oncology clinics will be discussed.

In primary care clinics, patient no-show is an important factor that increases the uncertainty in daily clinic operations and limits the accessibility to care for other patients. The aim of this study is characterizing no-show behavior and using no-show probabilities to schedule patients. The objective is providing a fair schedule with uniform performance across patients. Other criteria such as expectation and variance of patient waiting time, queue length, and overtime are considered as service constraints. A constraint-based approach is proposed to obtain Pareto-optimal solutions for the clinical scheduling problem with service constraints.

The chemotherapy operations planning and scheduling in oncology clinics is a complex problem due to several factors such as cyclic nature of chemotherapy treatment plans, high variability in resource requirements (treatment time, nurse time, pharmacy time) and multiple clinic resources involved. It is important to strictly adhere to patient’s optimal treatment plan to achieve the best health outcomes. However, it is typically difficult to attain strict adherence for every patient due to limited resources in the clinics. In this study, mathematical programming models are proposed to solve chemotherapy operations planning and scheduling problem with the objectives of minimizing treatment delays and maximizing resource utilization.

BIOGRAPHY:
Dr. Ayten Turkcan is an associate research scientist in Regenstrief Center for Healthcare Engineering at Purdue University. She received her M.S., B.S. and Ph.D. degrees in Industrial Engineering from Bilkent University, Turkey. She worked as an assistant professor in Industrial Engineering at Middle East Technical University, Turkey.

Dr. Turkcan’s research focuses on implementation of operations research techniques to solve healthcare delivery problems. She uses linear and integer programming, multi-criteria optimization, constraint programming, heuristic search, and simulation to model and solve planning and scheduling problems. She has been working on several research projects related to outpatient scheduling, chemotherapy planning and scheduling, operating room scheduling, workflow analysis, and planning of mental health services. She has also been working for Healthcare Technical Assistance Program at Purdue University on short-term projects related to patient flow, staff workflow, scheduling, and facility layout design to assist clinics and hospitals of Indiana in improving healthcare quality, safety, and efficiency.

Refreshments will be served.