

Ambulatory Clinic Scheduling at Women's College Hospital

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Challenge

Ambulatory or outpatient care is a major component of the Canadian healthcare system. The annual number of ambulatory care (excluding Emergency Room) visits in Canada is roughly 800 per 1000 people. The efficient organization of the clinic schedule is important for hospitals because the schedule governs which patients will be in a hospital, which staff will be working, and what resources will be in demand at any given time. Women's College Hospital (WCH) in Toronto is an entirely ambulatory facility offering over 300 clinics per week and receiving more than 280,000 patient visits annually. To accommodate future growth, WCH constructed a new state-of-the-art facility, which opened in May 2013. Their previous schedule would not be feasible to implement in the new facility, so we worked with WCH to develop a new one.



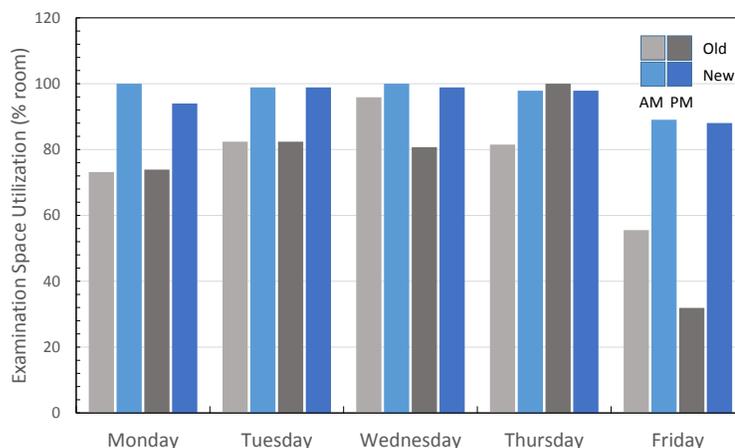
Methodology

Clinic scheduling requires input from several stakeholder groups, including the hospital's senior leadership team, clinic group managers and clinical staff, and the consideration of multiple conflicting objectives, such as the demand for shared resources and the commitments of staff to education and surgery. We began by interviewing dozens of WCH staff to gather data on the current clinic schedule – WCH did not have an overall view of its clinic schedule since clinics had not historically been managed centrally. We used information gathered from the interviews to define the model objectives and constraints, as well as to build buy-in for the project. We then developed an integer programming model to optimize the schedule to suit the new hospital building floorplan, which has three floors assigned to accommodate clinics. The model sought to minimize the number of clinics that needed to be moved to different timeslots from those they historically occupied, and the number of clinics that would need to be moved to different floors. The policy constraints included teaching and surgery commitments, number of rooms required by each clinic, and rooms for a clinic must all be on the same floor.

Results and Impact

We tested multiple scheduling scenarios using the model and considered different space allocation and hospital operating policies. This allowed WCH leadership to explore alternative policies to ultimately generate a better schedule, which has been implemented and remains currently in use. The new schedule managed to accommodate 349 clinics

into a space 22% smaller than the old hospital. Additionally, 95% of the clinics remained in their historical timeslot and 88% were assigned to their preferred floor. This resulted in an increase in average utilization of examination space from 77% to 97%. Examination space utilization on Friday was also markedly improved, and utilization levels were much more evenly distributed across the timeslots.



The relocation of the clinics into the new building required staff to accept adjustments to their routines and schedules. Our approach helped ensure staff perceived the new rules governing the schedule of clinics as being fairly developed and applied, and allows WCH leadership to centrally manage the day-to-day operations of the clinics as well as to more strategically plan long-term decisions. A better patient experience has also been achieved because clinicians are adhering to the centralized schedule to effectively share the space in the new building.

Partner Profile

Women's College Hospital is Canada's leading independent, ambulatory care hospital with a primary focus on the health of women. It was founded in 1883 by Dr. Emily Stowe, the first Canadian woman licensed to practice medicine in Canada. The hospital employs 800 staff to support 546 physicians, 300 nurses and allied health professionals, and 100 researchers and scientists.

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