Quantitative Medicine Forum

“A Robust Optimization Model for Managing Elective Admission in Hospital”

Speaker:
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Host:
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Date:
Thursday, 18 October 2012

Time:
12.30pm – 1.30pm

Venue:
Duke-NUS Graduate Medical School
Singapore
Amphitheatre, Level 2
8, College Road, Singapore 169857

Abstract:
The admission of emergency inpatients in a hospital is unscheduled, urgent and takes priority over elective patients, who are usually scheduled several days in advance. Hospital beds are a critical resource and the management of elective admissions by enforcing quotas could reduce incidents of shortfall. We propose a distributionally robust optimization approach for managing elective admissions to determine these quotas. Based on an adjustable family of distributions, we propose two robust models, one with fixed budget of variation and the other with optimized budget of variation subject to an expected bed shortfall constraint. We solve the robust optimization model by deriving a second order conic problem equivalent of the model. The proposed model is tested in simulations based on real hospital admission data and we report favorable results for adopting the robust optimization models.

Biography:
Dr. Meng Fanwen completed his PhD program in operations research (OR) from National University of Singapore. Prior to joining National Healthcare Group (NHG), he worked with National University of Singapore and University of Southampton of UK as senior research fellow and post-doc research fellow. His research work focuses on problems concerning operations planning and management in deterministic or uncertain environments. Some of his research work were published in the top OR journals, such as, SIAM Journal on Optimization, Mathematics of Operations Research, Mathematical Programming, European Journal of Operational Research. His research interests include capacity planning, resource allocation and scheduling in hospital, stochastic programming, robust optimization, logistics and supply chain management.

All are welcome to attend. No RSVP is required. Lunch will be served from 12.00pm onwards, outside the amphitheatre.