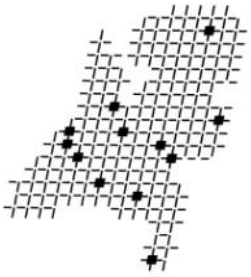

LNMB

Nederlands Genootschap voor Besliskunde

Netherlands Society for Operations Research

SEMINAR "OPERATIONS RESEARCH IN HEALTH CARE"

jointly organized by the LNMB and the section Health Care of the NGB
Conference Center "De Werelt", Lunteren, January 14, 2010

The section Health Care of the NGB and the LNMB jointly organize the one-day seminar "Operations Research in Health Care", in Conference Center 'De Werelt', Lunteren, on January 14, 2010.

The seminar is chaired by prof.dr. J. Wijngaard (University of Groningen and member of the board of the Society for Logistic Management). The program offers a wide variety of experts, among two keynote speakers: Thierry Chaussalet (University of Westminster, UK) and Armand Girbes (VU Medical Center, Amsterdam).

The seminar is the 12th annual seminar, following the previous successful seminars:
Operations Research & Enterprise Resource Planning (1999)
*Operations Research in Financial Management (*2000)
E-Commerce & Operations Research (2001)
Capacity Management - How Operations Research models support decision makers (2002)
New developments in Operations Research software (2003)
On-line methods: Challenges for OR in a real-time world (2004)
Mathematical Models for Financial Optimization (2005)
Operations Research and Health Care (2006)
Operations Research and Public Transportation (2007)
Operations Research and Energy (2008)
Operations Research and Traffic (2009)

ABOUT THE THEME

The demand for health care resources is growing continuously due to an ageing population and technological advances. Since the available capacity shows an opposite trend, more efficient planning of health care processes is required to offer acceptable service levels for patients. Meanwhile, health care logistics has received a vastly growing interest of the Operations Research community. This has been illustrated by the organization of two highly successful conferences on OR in Health Care over the past two years. With this seminar, we continue this young tradition. We specifically aim to further narrow the gap between the practical challenges of health care professionals and the methodological tools of researchers working on OR.

SEMINAR PROGRAM

09.30 – 10.00 Registration and Coffee
10.00 – 10.15 Welcome and introduction by the chairman Jacob Wijngaard
10.15 – 11.00 Keynote speaker: Armand Girbes (VU Medical Center, Amsterdam)
11.00 – 11.15 Coffee/tea break
11.15 – 12.45 Invited and contributed papers in parallel sessions
12.45 – 14.00 Lunch
14.00 – 15.30 Invited and contributed papers in parallel sessions
15.30 – 16.00 Coffee/tea break
16.00 – 16.45 Keynote speaker: Thierry Chaussalet (University of Westminster, London, UK)
16.45 – 17.00 Closing
17.00 – 18.00 Drinks

LANGUAGE AND APPLICATION

The conference language is English. To participate in the seminar, please fill in the registration form on the last page of this announcement and return it **before January 3, 2010**.
The conference fee is € 75 for LNMB and NGB members, and € 125 for others. You will receive an invoice after your registration form has been received. The conference fee covers lunch, coffee, tea, and drinks.

ADDRESS

Conference Center 'De Werelt'
Westhofflaan 2
Lunteren
The Netherlands
Tel: 0318 - 484641
For more information, e.g. 'how to reach', see: www.congrescentrum.com

ABSTRACTS

At this time not all abstracts are available. Below you will find the abstracts of eleven invited and contributed papers. The other abstracts are soon available at our website

www.lnmb.nl/conferences/lunteren2010/index.html

Rienk Bijlsma (System Navigator/Hospital Navigator, Delft)
Balancing between capacity and care
Abstract:
Healthcare institutions & professionals have the joint challenge of delivering maximum care with limited capacity and funds. Hospital Navigator has developed a decision support system for bed management, theatre planning & waiting list management based on simulation technology. This system is used in the NHS, where it enables hospital management & consultants to better predict and understand the impact of new policies in regard to the use of resource, and the delivery of care. This leads towards better informed decisions regarding the delivery of maximum care, deployment of resource and funding.

Aleida Braaksma (Amsterdam Medical Center)
Integral multidisciplinary rehabilitation treatment planning
Abstract:
At a rehabilitation outpatient clinic patients are treated to recover from injury, illness, or disease to as normal a condition as possible. To achieve this, patients require a series of treatments by therapists from various disciplines. In current practice, a lack of coordination between these disciplines, and the deficiency to plan the entire treatment plan at once, is witnessed. This jeopardizes both quality of care and logistical performance. Our integral treatment planning method, that applies a combination of integer linear programming and simulation, ensures continuity of care, while simultaneously controlling performance indicators such as access times and utilization. Applying our approach to a case study within the AMC shows promising results.

Nico Dellaert (Eindhoven University of Technology)
Improving operational effectiveness of tactical master plans for emergency and elective patients under stochastic demand and capacitated resources
Abstract:
This paper develops a two-stage planning procedure for master planning of elective and emergency patients while allocating at best the available hospital resources. Four types of resources are considered: operating theatre, beds in the medium and in the intensive care units, and nursing hours in the intensive care unit. A tactical plan is obtained by minimizing the deviations of the resources consumption to the target levels of resources utilization. Some capacity is reserved for emergency care. To deal with the deviation between actually arriving patients and the average number of patients on which the tactical plan is based, we consider the option of planning a higher number of patients (overplanning). To adapt the tactical plan to the actual stream of elective patients, we also consider flexibility rules.

Overplanning and flexibility leads to a weekly schedule of elective patients. This schedule is modified to account for emergency patients. Scheduled elective patients may be cancelled and emergency patients may be sent to other hospitals. Cancellations rules for both types of patients rely on the possibility to exceed the available capacities. Several performance indicators are defined to assess patient service/dissatisfaction and hospital efficiency. Simulation results show a trade-off between hospital efficiency and patient service. We also obtain a rank of the different strategies: overplanning, flexibility and cancellation rules.

Han Hoogeveen (Utrecht University)
Personalized rosters for employees in a 24/7 environment at UMC
Abstract:
We must roster 35 employees working 24/7 in three shifts with varying mininum attendance. Each worker specifies personal preferences, like a fixed day off. We have to find feasible year-rosters for each whose combination occupies all duties. The goal is to maximize total roster appreciation by the employees.
We solve this through column generation with a rolling horizon approach. We determine many appreciable, feasible rosters for each person, from which we pick one per worker. This resulted in an almost optimal solution. Problems with more personnel are solved without increasing the running time, and the results even get better.

Peter Hulshof (University of Twente)
Redesigning Ambulatory Care with a Doctor-travels-to-Patient Policy
Abstract:
In many hospitals, ambulatory care is organized such that doctors remain in dedicated offices while patients come and go. However, with demand for ambulatory care growing, outpatient clinics are looking for methods to improve the efficient delivery of ambulatory care. Therefore, a policy where patients wait and prepare in consultation rooms, and care providers come and go, is considered.
We compare the alternative and classical approach and show under which conditions the alternative is better. Additionally, we compute the number of rooms required in the alternative approach. We discuss the results for a case study in a general mid-sized hospital.

Nikky Kortbeek (University of Twente)
Organizing Outpatient Clinics: Exploring the Viability of Walk-in Based Policies
Abstract:
Outpatient and diagnostic testing clinics have long provided patients with appointments, so as to match capacity with demand. However, the main disadvantage of a pure appointment policy is that substantial access delays can be created. This study explores the viability of a walk-in based policy: a mixed strategy of walk-in and appointments. We present a stochastic method that finds the mixed strategy that achieves an optimal balance between the benefits and drawbacks of a pure appointment and a pure walk-in policy. The optimal policy successfully counterbalances the non-stationary nature of walk-in arrivals at both the daily and weekly levels, by prescribing how many appointment slots to reserve and at which times.

Paulien Out (VU University Amsterdam & CC Zorgadviseurs)
Optimal outpatient scheduling with emergency arrivals
Abstract:
We present an efficient method for scheduling outpatient appointments to a facility with emergency arrivals. A weighted sum of the waiting times, idle times and tardiness is minimised. No-shows are allowed. We assume Poisson arrivals for emergency patients and general iid service times. We will present numerical examples.

Peter Vanberkel (University of Twente)
An exact approach for relating recovering surgical patient workload to the master surgical schedule
Abstract:
No other department influences the workload of a hospital more than the Department of Surgery and in particular, the activities in the operating room. These activities are governed by the master surgical schedule (MSS), which states which patient types receive surgery on which day. In this paper we describe an analytical approach to project the workload for downstream departments based on this MSS. Specifically the ward occupancy distributions, patient admission/discharge distributions, and the distributions for ongoing interventions/treatments is computed. Recovering after surgery requires the support of multiple departments, such as nursing, physiotherapy, rehabilitation and long term care. With our model, managers from these departments can determine their workload by aggregating tasks associated with recovering surgical patients. The model, which supported the development of a new MSS at the Netherlands Cancer Institute-Antoni van Leeuwenhoek Hospital, provides the foundation for a decision support tool to relate downstream hospital departments to the operating room.

Egbert van der Veen (ORTEC, Gouda)
On Capacity Planning in Health Care
Abstract:
This presentation discusses some work in progress and research perspectives on a capacity planning research in the care sector (care for mentally and/or physically disabled persons). The goal of the underlying problem is to determine an optimal workforce, indicating the number of employees, the skill levels and the contract types of the employees. This workforce is supposed to be able to cover the workload that is implied by the client care indications (Dutch: ZZP-indicaties), indicating the amount of care clients have right to receive. The difficulty lies in translating 'amounts of care' into staffing levels and matching the right types of employees to these.

Jan Vissers (Institute of Health Policy and Management, Erasmus University Rotterdam)
A European perspective on OR in Healthcare
Abstract:
ORAHS is one of the domain specific EURO Working Groups installed by EURO- the umbrella organisation for Operational Research in Europe. In this presentation we report on the development of ORAHS as a European platform for OR in health.
We propose a two-way framework for analysis, where one dimension is the nine stages of the product life cycle: identifying consumer requirements, designing a new service to meet these requirements, forecasting demand for such a service, securing resources for it, allocating these resources, developing programs & plans to use these resources for delivering the service, establishing criteria for service delivery, managing the performance of the service, and finally, evaluating its performance. The other dimension is a three-level classification into broad application areas referring to processes at different levels in healthcare: patients & providers, units & hospitals, and regional & national.
We have used this framework to carry out a quantitative analysis of all the papers presented during the meetings of ORAHS since its inception in 1975. We then describe developments over this 35 year period in applying OR approaches and techniques to health care, and present an overview of the main application areas and challenges.

Maartje Zonderland (University of Twente & Leiden University Medical Center)
Planning and scheduling of semi-urgent surgeries
Abstract:
Semi-urgent surgeries, that have to be performed within the regular operating room (OR) schedule shortly but not necessarily today, pose an uncertain demand on available hospital resources, and interfere with the planning of elective patients. For a highly utilized OR, reservation of a fraction of OR time for semi-urgent surgeries avoids excessive cancellation of elective surgeries, but may also result in unused OR time, since arrivals of semi-urgent patients are unpredictable.
We consider the trade-off between cancellation of elective surgeries and unused OR time. First, using a queuing theory framework, we evaluate the OR capacity needed to accommodate every incoming semi-urgent surgery. Second, we introduce another queuing model that enables a trade-off between the cancelation rate of elective surgeries and unused OR time. Third, based on Markov decision theory, we develop a decision support tool that assists the scheduling process of elective and semi-urgent surgeries. We demonstrate our results with actual data obtained from a department of neurosurgery.

Thierry Chaussalet (University of Westminster, London, UK)
Title: TBA Abstract: TBA

Armand Girbes (VU University Medical Center Amsterdam)
Title: TBA Abstract: TBA

Peer Goudswaard (University Medical Center Groningen)
Title: TBA Abstract: TBA

REGISTRATION FORM

I hereby register for the LNBM/NGB seminar "**Operations Research in Health Care**", which will be held on January 14, 2010 in Conference Center "De Werelt", Lunteren.

Family name: ……

First name: ……

Title: …… Male / Female

Company/Institute: …….

Address: ……

Postal Code: ……. City: ……

Telephone number: …….. E-mail: ……

Date: ……. Signature: ……

Below, please tick the appropriate box:

I am:

LNMB/NGB member (Registration fee € 75): ☐

Other (Registration fee € 125): ☐

FEE PAYMENT INSTRUCTIONS WILL BE SENT TO YOU AFTER REGISTRATION

Send the registration form before January 3, 2010 by regular mail or e-mail or by fax to

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