22nd Healthcare Operations Research Appreciation Course

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Health Services & Outcomes Research, National Healthcare Group

Course Overview

Many healthcare issues benefit from a holistic and quantitative framework to identify the leverage points and to engage different stakeholders. For example:

- Feasible service planning needs understanding of patients' proximity, short and medium term utilization, capacity sizing and patient demand as a function of aging.
- Good appointment scheduling requires understanding of balance of clinicians' overtime, patient wait time, no show rate, variation of consult duration and lateness of arrival.
- Acceptable operating theatre capacity allocation requires a balance of OT utilization, elective surgery wait time, supply constraints, demand growth and downstream bed usage.
- Ring fencing of beds while containing overflow may have an impact on patients' admission wait time.

The 2-day course will introduce Operations Research (OR) concepts with healthcare applications. It will focus on building intuition around theory, walk through illustrative examples and show insights from results that will support and inform decision making. Case studies will show applications of OR techniques as well as the process of problem solving during the engagement with the decision maker.

Operations Research techniques are useful to determine the best course of action of a decision problem under limited resources. It is a science and an art. The science is in the maths and algorithms for addressing decision problems. It is an art as success in all the phases that precede and succeed the solution of a mathematical model, depends largely on the creativity and personal abilities of the decision maker. Gathering of the data for model construction, validation of the model, and implementation of the obtained solution depend on the ability of the OR team to establish good lines of communication with the sources of information as well as with the individuals in charge of implementation of the recommended solutions.

Date and time

20 to 21 Jan 2026, 9:00 am – 5.30 pm

Location

1 Mandalay Road, National Skin Centre (NHG Health Annex Building), Singapore 308205.

Training Room: 3M28 (Lift Lobby E) .

Who should attend?

This course is designed for healthcare professionals who have managing/planning functions, wish to go beyond using simple averages and heuristics, and want to be exposed to more advanced quantitative modelling. You will learn to

- View dynamic systems holistically
- Allocate resources under constraints while trading off among multiple objectives
- Analyze dynamic and uncertain systems balancing wait time and system utilization

Program

Time	Day 1	Day 2
0900-1030	**Introduction to OR**	**Simulation II** - Analyze complex process flows and what if scenarios
	Tea Break	
1100-1230	**Systems Thinking and System Dynamics** - For a holistic view of complex dynamic systems	**Optimization** - For resource allocation under constraints and trading off among multiple objectives
	Lunch	
1330-1530	**Queueing Analysis** - For studying waiting and utilization of dynamic and uncertain systems	**Case study** - Participants structure their own problems using the methods covered in the course and present the results
	Tea Break	
1600-1730	**Simulation I**	**Summary** **Quiz**

Registration

Registration closes **2 Jan 2026 or when the class reaches 25 persons**. CME points will be given.

For NHG, NUHS and SHS participants, please provide your cost centre information in the registration form.

Please use this link to register: https://form.gov.sg/68d6502cd0487fc7650e7621

Or scan with this QR code:

For clarifications, please send to Teow Kiok Liang (kiok.liang.teow@nhghealth.com.sg) or Tan Hwee Ling (hwee.ling.tan@nhghealth.com.sg).

Course Fees (inclusive of 9% GST)

- $545 (w/GST) for NHG participant & $1,090 (w/GST) for Non-NHG participant

About the facilitators

Dr Meng Fanwen, HSOR, NHG (Fanwen.meng@nhghealth.com.sg)

Fanwen holds a PhD in Optimization, NUS. Prior to joining NHG, he worked in NUS and the University of Southampton in UK on problems concerning operations planning and management in deterministic or uncertain environments. His research interests include capacity planning, resource allocation and scheduling in hospital, stochastic programming, robust optimization, logistics and supply chain management.

Dr Zhu Zhecheng, HSOR, NHG (Zhecheng.zhu@nhghealth.com.sg)

Zhecheng holds a PhD in Industrial & Systems Engineering, NUS. His research area is applied optimization and discrete event simulation. He has project experience in outpatient appointment scheduling, pharmacy flow simulation, data visualization etc.

Mr Palvannan, R.K., HSOR, NHG (Palvannan.kannapiran@nhghealth.com.sg)

Palvannan joined NHG after working in the defence and engineering research institute as operations research analyst. Currently he facilitates developing multi-disciplinary solutions that focuses on clinical outcomes with economic inputs and operational considerations. He has a Master of Engineering, Industrial & Systems Engineering, NUS.

Mr Teow Kiok Liang, HSOR, NHG (kiok.liang.teow@nhghealth.com.sg)

Kiok Liang joined NHG in 2005. His work covers different aspects of healthcare, including resource planning, operational efficiency, and projection. He has published several papers, won a MOH Health Services Research Grant, and is currently seconded part time to MOH as Operations Research Specialist. He holds a Master in Science, Industrial & Systems Engineering, NUS.