Dear ORAHS family,

The Center for Healthcare Operations Improvement and Research (**CHOIR**) at the University of Twente announces the 30th talk in the **ORAHS International Seminar Series**.

The ORAHS International Seminars are planned via MS Teams in the late afternoon (Europe), morning (US), or evening (Asia/Pacific) and are part of the EURO Online Seminar Series.

On **30 September 2025, at 16:00 (CEST)**, Dr. Amin Asadi (University of Twente, The Netherlands) will talk about "*Dynamic Recharging and Dispatch Policies in Last-mile Medical Drone Delivery*".

Please save the date and register for this seminar here:
https://events.teams.microsoft.com/event/de3dcd1d-0abe-4a38-b9d6-f445cf28a12b@723246a1-c3f5-43c5-acdc-43adb404ac4d

Abstract: Drones are increasingly used in healthcare logistics to deliver medical supplies to remote, congested, or disaster-affected areas where traditional transportation is inadequate. However, managing fleets is difficult because demand for urgent products such as blood is stochastic and must be met despite limited range, availability, and charging trade-offs—where fast-charging boosts readiness but accelerates battery degradation, while slow-charging preserves battery life but limits responsiveness. Therefore, we introduce a decentralized stochastic multi-hospital allocation and recharging model for blood transportation that accounts for heterogeneous flight ranges, spatiotemporal stochastic demand, and charging trade-offs. We model the system as a Markov Decision Process that tracks drone charge states, mission durations, and resource availability, and develop a multi-agent deep reinforcement learning framework to derive real-time adaptive dispatching and recharging policies. Experiments show our decentralized modeling and learning approach improves cost efficiency, fleet availability, and responsiveness compared to benchmarks. These results highlight the importance of integrated recharge and dispatch management in enhancing both sustainability (through smarter charging strategies) and performance (through higher demand satisfaction) in drone-enabled healthcare delivery.

Bio: **Dr. Amin Asadi,** Assistant Professor at the Center for Healthcare Operations Improvement and Research (CHOIR) and the Section of Industrial Engineering and Management Science at the University of Twente. His research focuses on sequential decision-making under uncertainty, reinforcement learning, operations research, and data science with applications in healthcare and logistics. Dr. Asadi has published in leading journals such as Transportation Research Part E, Transportation Science, Expert Systems with Applications, and Medical Decision Making. He is an active contributor to INFORMS, IISE, and EURO conferences, and in addition to his reviewing activities in top OR/AI outlets, he has served as a judge for the INFORMS Public Sector Operations Research Best Paper Award in 2023 and 2025.

More information about our speaker can be found here: https://people.utwente.nl/amin.asadi

For more information about our seminar presentations, please follow this link:
https://www.utwente.nl/en/choir/research/ORAHS-International-Seminar-Series/

We look forward to seeing you soon and often in the ORAHS International Seminar Series.

CHOIR Group
University of Twente