



جلسه ارائه علمی دانشکده مهندسی صنایع

# مدل های تخصیص در انتقال خون

## Allocation Policies in Blood Transfusion

دکتر حسین ابویی مهریزی

استادیار دانشگاه واترلو

فارغ التحصیل مقاطع کارشناسی و کارشناسی ارشد مهندسی صنایع از دانشگاه صنعتی شریف و دوره دکتری مدیریت عملیات از دانشگاه تورنتو کانادا

### چکیده

Red Blood Cells (RBCs) transfusion is an essential part of many treatments and surgeries. While advances in storage technologies in the late ۱۹۷۰s led to an increase of RBCs shelf-life from ۲۱ to ۴۲ days, an extensive body of recent studies suggests moderate to strong correlation between receiving older blood and increased risk of adverse clinical outcomes. This raises the important question of whether the age of transfused blood can be reduced without significantly affecting its availability.

We develop a stylized model of the blood bank of a hospital and consider a family of allocation policies characterized by a threshold. Under the threshold policy, the oldest available RBCs unit which is younger than the threshold is allocated unless no such unit is available, in which case, the freshest available unit is allocated. The model captures important underlying characteristics of the system namely uncertainty in demand and supply, and fixed shelf-life of RBCs units. For the system operating under the threshold policy, we obtain the long-run proportion of outdated units as well as the distribution of the age of transfused units. Through a numerical study we observe the age-availability trade-off and provide further insights on the potential of allocation policies in reducing the age of transfused blood in hospitals.

### خلاصه بیوگرافی



Hossein Abouee Mehrizi is an Assistant Professor of Applied Operations Research and Canada Research Chair in Healthcare Operations Management at University of Waterloo. His primary research interests are modeling and analysis of complex stochastic systems, queuing theory, and stochastic processes. His primary application focus is on problems related to healthcare operations management. He received his BS and MS from Sharif University of Technology in Industrial Engineering, and PhD from University of Toronto in Operations Management.

سه شنبه ۹۲/۹/۲۶، ساعت ۱۳ تا ۱۴  
دانشکده مهندسی صنایع، طبقه چهارم، سالن سمعی بصری