

# Seminar



## Challenge in Kidney Transplantation where Artificial Intelligence / Machine Learning Could Help

**Abstract.** The allocation of donor kidneys to recipients is a complex process and depends on a number of factors. The transplant surgeon, based on several factors that include the quality of the donor, must decide whether a kidney is acceptable or not. Unfortunately, not all surgeons weigh the data equally. Some are more likely to accept a kidney while others are not; which can prolong/delay the transplantation process. We believe machine learning would be ideal in this setting, given the volume and complexity of the data. The goal is to develop an algorithm that computes, for any given surgeon the likelihood of accepting a kidney for transplantation. This likelihood-based approach would then be integrated into the kidney allocation process as a means to maximize the utility of a scarce resource.

### Biography

Dr. David Leeser is Professor and Chief of Transplant Surgery and Immunology and Vice Chair of Academic Affairs in the Department of Surgery at East Carolina University's Brody School of Medicine. Dr. Leeser specializes in kidney transplantation, minimally invasive hemodialysis access surgery, pancreas transplantation and single port donor nephrectomy. Dr. Leeser is also the Chief of Transplantation for Vidant Medical Center and Vidant Health. Dr. Leeser received his Medical Degree from Temple University School of Medicine. He completed an internship in General Surgery at Walter Reed Army Medical Center, a residency in General Surgery at Temple University Hospital, and a fellowship in Transplant Surgery at University of Maryland Medical System. Dr. Leeser is a retired Lieutenant Colonel in the United States Army with two tours of duty in Iraq and was awarded the Bronze Star. Dr. Leeser has previously held the rank of Associate Professor of Surgery at the University of Maryland School of Medicine and Weill Cornell Medical College.

Dr. Irish is Vice Chair for Research and Research Professor at the Brody School of Medicine, East Carolina University. Dr. Irish is involved in all aspects of healthcare research within the Department of Surgery. This includes observational as well as clinical research with a strong emphasis on the Eastern North Carolina communities. Dr. Irish specializes in health outcomes research, statistical modeling and prediction, clinical trial methodology and large-scale database and claims analysis. His major research interest consists of: (1) identification of important prognostic factors of disease progression and clinical outcomes, including validation of biomarkers; (2) developing statistical models and assessing their clinical utility; and (3) designing randomized controlled trials, specifically in low incidence/rare conditions with specific reference to subject enrichment strategies



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Time: 2:00 - 2:50pm

Room: Bate 1003

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