From OR to the OR: How Optimization is Shaping Modern Medicine

The field of Operations Research, with its focus on efficiency, optimization, and improved design has the ability to impact all facets of our lives and all fields of investigational research. Medicine is no exception. We are nearing a time when a complete genome scan will be part of our medical records, informing physicians about the mutations our genes harbor which make us susceptible to an array of diseases and treatments. Next generation imaging involving novel radiopharmaceuticals will allow better and faster visualization of pathology while limiting radiation dose to patients. Minimally invasive procedures performed under image guidance continue to revolutionize healthcare delivery, minimizing morbidity, saving costs, and improving patient satisfaction. Many of the challenging problems faced in medicine are beyond the training received in medical school and require multidisciplinary teams of engineers, biostatisticians, and geneticists, among others. Having sat on both sides of the table, I have a unique perspective that affords great opportunities for collaboration. In this talk, I will examine several problems in biomedicine and show how OR/ISE techniques can help solve them.