Kidney Exchange: An Operations Perspective

Abstract: Many patients in need of a kidney transplant have a willing but incompatible (or poorly matched) living donor. Kidney exchange programs arrange exchanges among such patient-donor pairs, in cycles and chains of exchange, so each patient receives a compatible kidney. Kidney exchange has become a standard form of transplantation in the United States and a few other countries, in large part because of continued attention to the operational details that arose as obstacles were overcome and new obstacles became relevant. We review some of the key operational issues in the design of successful kidney exchange programs. Kidney exchange has yet to reach its full potential, and the paper further describes some open questions that we hope will continue to attract attention from researchers interested in the operational aspects of dynamic exchange.

Bio: Al Roth is the Craig and Susan McCaw Professor of Economics at Stanford, and the George Gund Professor Emeritus of Economics and Business Administration at Harvard. He and Lloyd Shapley shared the 2012 Nobel memorial prize in Economics "for the theory of stable allocations and the practice of market design." He received a Ph.D. in Operations Research from Stanford University in 1974.