The publishing of the National Academy reports during the beginning of the century called out operations research and systems engineering to solve the healthcare sector’s vexing problems. Yet, few instances of broad impact exist in improving patient experience, access and population health, and in reducing costs. Mayo Clinic’s Information and Decision Engineering program situated in the Robert D. and Patricia E. Kern Center for the Science of Health Care Delivery, conducts methodological advancements in operations research and decision science to transform health and health care. This talk focuses on some of the systems engineering and informatics initiatives, that changed practice and improved value of care within Mayo’s practice. The creation of Clinical Engineering Learning Laboratories (CELLs) to partner clinicians and engineers, embed learners, establish big data and analytics environments, and leverage sensors and technology will be highlighted. Join the discussion on best practices and lessons learned for conducting scientifically rigorous and practically relevant research.