Targeting Precision Medicine: Evidence from Prenatal Screening
(with Peter Conner, Amy Finkelstein, Petra Persson, and Heidi Williams)

Abstract

Technological advances increasingly offer opportunities to target medical care to patients identified through up-front screening, which raises the question of how broadly or narrowly to screen for potential patients. We explore this trade-off empirically in the context of a new, non-invasive prenatal screen (cfDNA) that can be used to target a follow-up invasive test. We use Swedish administrative data on screening and testing choices for pregnancies conceived between 2011 and 2019. Each pregnancy receives an initial, low-cost non-invasive screen that delivers a predicted risk of fetal chromosomal abnormality. During our study period, cfDNA is introduced, which provides more precise information about risk but is also more costly than the initial screen. We find that insurance coverage for cfDNA dramatically increases its use and lowers rates of subsequent invasive testing, which is about twice as costly and creates an elevated risk of miscarriage. To assess the impact of counterfactual targeting of cfDNA coverage, we develop a stylized model of prenatal testing choices and estimate it based on the choices observed in the data. We find that narrow targeting of cfDNA screening has the (rare) potential to improve outcomes and reduce costs, while broader screening still improves outcomes but also raises costs. These findings point to the potential gains from well-designed targeting of screening, but at the same time highlight the importance of the targeting design.