

## **Partnering to Apply Clinical Analytics for Reducing Gender Minority Disparities**

Principal Investigator: Benjamin Cook, PhD, MPH, Cambridge Health Alliance/Harvard Medical School

Co-Investigator: Ana Progovac, PhD, Cambridge Health Alliance/Harvard Medical School

Emerging evidence about gender minority persons (i.e., transgender or gender non-binary persons; GMs henceforth) show that GMs experience higher rates of poverty, unemployment, HIV, substance use, mental health disorders, suicidality, domestic violence, and discrimination in medical settings compared to the general population. Identifying and reducing GM health disparities is difficult because measures of gender identity are rarely collected in national health surveys, electronic health records (EHRs), or administrative databases. We propose using a recently validated algorithm to identify elderly and non-elderly disabled GM patients in 2009-2014 Medicare claims data, and compare their rates of (a) suicide attempt, (b) avoidable hospitalizations, and (c) domestic violence to their non-GM peers (Aim 1). Next, we propose to identify GM patients in 2009-2016 EHRs from Cambridge Health Alliance (CHA), using both the validated Medicare claims-based algorithm and key words from clinician notes, to develop and validate a natural language processing (NLP) and machine learning (ML) prediction method for (a) suicide attempts, (b) avoidable hospitalizations, and (c) domestic violence among GM patients (Aim 2). Throughout the project, we will collaborate with clinical, health system, and GM advocacy stakeholders around: study design; ethical considerations of developing an NLP/ML prediction method for negative health outcomes for GM populations; and analysis, interpretation, and dissemination of results. This grant will enable building a community research partnership to develop and refine relevant, ethical, and appropriate NLP/ML-based clinical decision-support tools embedded in the EHR clinician interface that will enable clinicians to improve healthcare delivery for GM patients.