Employment and Financial Changes as Risk Factors for Suicide Attempt

Specific Aim – We propose to integrate income and employment verification data from Equifax, consumer credit data from Acxiom and Lexis Nexis, and spatially aggregated data (e.g., neighborhood deprivation index, crime statistics) with health care utilization data and death certificate data to measure the strength of association between financial instability and suicide attempt.

Background – While much is known about subpopulsimations of individuals at higher risk of suicide attempt, little is known about when they are at higher risk. Negative life events such as job loss, bankruptcy, and divorce are hypothesized to be precipitators of suicide attempt but health care utilization data and free text progress notes have not been good sources of information about negative life events. Even when such data do exist in the electronic medical record, the information is only available for people who survive a suicide attempt or reported by loved ones after the fact (biased). Business service firms like Equifax handle employment verification (background checks) for millions of individuals because these are expensive for employers to do. Further, individual-level credit data are available through Acxiom and Lexis Nexis. These data sources have not been integrated with health care data or death certificate data.

Preliminary Studies – The proposed work will build on several areas of existing MHRN infrastructure and investigator expertise, including:

* Use of validated, patient-reported measures of depression and suicidal ideation
* Methods for identifying treatment exposure (e.g., antidepressants, psychotherapy)
* Methods and tools for ascertaining suicidal ideation, non-fatal suicide attempts, and suicide deaths

Design and Methods – Using data from MHRN health systems, Equifax and Acxiom, we propose to:

* Identify a cohort of individuals with fatal and non-fatal suicide attempt and a matched comparison group of comparable patients without suicide attempt
* Compare outcomes of suicide attempt or death where the predictors of interest are: number of employers in the prior two years (including none), income, recent (<6 months) job loss with no new employer, any bankruptcy filing (< 6 months), number of flags for irregular credit card purchases in the 6 months prior, purchasing by category (especially cash advances), and percent credit utilized. Additional geographically-derived variables include the neighborhood deprivation index, domestic violence crime rates, property crime rates, and firearm crime rates.

Innovation and Impact – This work will employ external data streams to augment health care data in order to improve our estimation of when individuals are at higher risk of suicide attempt. This work builds on work in suicide risk prediction modeling and is likely to contribute to machine learning approaches to suicide risk prediction.

Lead Investigator – Rob Penfold  
Sites Interested – KPWA, KPSCA , KPCO, KPGA, HFHS, HPRF, Harvard Pilgrim, Geisinger  
Work Plan:

* Lead site (KPWA) will develop distributed programs to create analytic datasets from VDW, Clarity, Equifax, Acxiom, Lexis Nexis, and other sources
* Sites will share individual-level data for centralized analysis
* KPWA team will lead analysis
* Investigators from all sites will participate in interpretation and preparation of manuscripts

Timeline and budget scheme – This project would benefit from starting no sooner than year two of the proposed budget cycle in order to finalize IRB, privacy and data integration issues.

Anticipated total budget (including F&A costs) will be approximately $210,000 for the KPWA site and approximately $65,000 for other sites – for a total budget of approximately $600,000. This would likely be divided across two project budget years.