



PROJECT TITLE: Prediction and Intervention Models for Combating the Opioid Epidemic

PROPOSAL NUMBER: 16-06191.PSU

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RESEARCH THEME: Access to Care

BUDGET: \$100,000

UNIVERSITY: PSU

PROJECT YEAR: 1

PROJECT DESCRIPTION:

Each day, more than 115 Americans die as a result of overdosing on opioids. The objective of this project is to develop a prediction, prevention, and intervention model that seeks to combat the opioid epidemic. This project seeks to connect the multiple facets of the opioid epidemic into a unifying decision support system that not only predicts the risks of opioid addiction, but also proposes reliable, safe, and effective prevention and mitigation strategies.

HOW THIS IS DIFFERENT THAN RELATED RESEARCH:

Current approaches to mitigating the effects of the opioid epidemic typically focus on population health perspectives and model the epidemic at a macro-level. However, these models often fail to prevent individual patients from succumbing to the harmful effects of opioid addiction. The proposed project seeks to develop individually-customized predictive models aimed at either preventing opioid addiction or intervening to mitigate the effects of opioid addiction.

EXPERIMENTAL PLAN:

The experimental plan includes the following tasks:

- (1) Acquire metrics such as total deaths caused by opioid overdosing from the Centers for Disease Control and Prevention (CDC) WONDER Database from 2006-2016, etc.
- (2) Collect demographic information from census data
- (3) Develop individually-customized opioid prediction models
- (4) Evaluate the impact of proposed intervention strategies in preventing or mitigating the risks of opioid addiction

EXPECTED MILESTONES:

- (1) Individually-customized opioid prediction models that are capable of accurately predicting patient behavior and actions
- (2) Effective intervention strategies that can be integrated into real world clinical workflows
- (3) Decision support system that demonstrates the translation from basic research into healthcare practice

BENEFITS TO INDUSTRY:

- (1) Decision support system that can be integrated into clinical workflows
- (2) Insights into effective prevention and intervention treatments and strategies

EXPECTED DELIVERABLES:

- (1) Peer-reviewed publications that demonstrate the effectiveness of the proposed models
- (2) Software that can be integrated into clinical workflows in support of combating the opioid epidemic