PROJECT TITLE: Social Determinants & Healthcare Delivery for At-Risk Pediatric Populations

PROPOSAL NUMBER: Policy4	PIs: Heim & Mastrangelo
RESEARCH THEME: Policy Integration	
BUDGET: $50,000	UNIVERSITY: UW	PROJECT YEAR: 1

PROJECT DESCRIPTION:

Many factors contribute to health and health outcomes of patient populations. Among these are social and environmental determinates, such as economic stability, housing and physical environment, food access, community support, and available health care systems. Events are signals or indications that one or more of the variables of interest, in this proposed study, social determinates, has changed. The degree of change as well as the emergent set of changes that might occur in concert, can often have health consequences for at-risk populations. Initiatives have been undertaken to increase our understanding of how these factors can influence the organization and delivery of care to broad populations and communities with the greatest needs. Only limited research has focused on the relationship of social determinants and healthcare for pediatric populations. We intend to investigate and quantify opportunities for improving pediatric population health, patient experience and costs (the Triple Aim) by aligning social determinant events with timely (rapid) healthcare delivery. One premise we intend to explore is the relationship between early visibility of changes in social

HOW THIS IS DIFFERENT THAN RELATED RESEARCH:

This proposed research focuses on at-risk, asthmatic pediatric populations and examines the potential to improve the time-until-response for care and the reduction in total cost of care. Using simulation modeling, the research intends to demonstrate the value of responding to individual social determinant events (signals) as well as multiple events occurring within a defined time span. The research has the potential to impact other chronic respiratory diseases affected by environmental factors. This is the second phase which will demonstrate the practical application of social determinant response by developing the necessary databases, triggers and event sources.

EXPERIMENTAL PLAN:

We are interested in identifying the relationship among social determinants and dynamic changes to those factors that influence the state of the child ’ s health. For example, asthma exacerbation can be brought on by environmental exposures and stress. It can also be a result of changes in housing, such as movement into crowded homeless shelters, where they may be exposed to increased levels of smoke and other irritants. In the second phase we will begin to develop discrete event simulation (DES) models that capture the dynamic relationships among: at-risk pediatric populations; social determinant events; healthcare response and subsequent disease path evolution

EXPECTED MILESTONES:

The datasets were used to construct and verify the logic process flows for the prototype DES models. Experiments, using the parameterized simulation models, will take place during the second year of the project to validate the predicted results with our IAB partner (SCH).

BENEFITS TO INDUSTRY:

Investigate anticipated changes in levels of demand when considering at-risk pediatric populations and triggering events. Simulation models examine the complex interdependent consequences of new patient monitoring capabilities.

EXPECTED DELIVERABLES:

User-directed simulation model and instructional videos.