

Validating an environmental history questionnaire for use in OB/GYN

Abstract: An alarming gap exist between our understanding of the risks to mother and fetus for environmental toxicant exposure during pregnancy and the ability of contemporary obstetrics to screen women for these exposures. In this proposal will address this gap by creating and validating an environmental history screening questionnaire. This will be the first instrument of its kind targeted at the obstetrical population. The first aim of this project will use a survey instrument developed by the National Environmental Education Foundation for use in the pediatric population and adapted by us to asses maternal exposure to phthalates, hydrocarbons, pesticides, volatile organic compounds and toxic metals during the first trimester. This information will provide information on geographic, socioeconomic and racial exposure/risk patterns. The second aim of this study will assay blood and urine for metal exposure. The survey instrument will be validated against these results. We have chosen to begin with metals as they can be reliably, economically assayed, and have already established toxicity standards. Multiple statistical techniques will be used: logistic regression and ANOVA to examine for geographic/demographic associations (AIM 1) and elastic net regularization to identify predictors of metal levels with fivefold cross-validation and models ranked by receiver operating curves to indicate predictive efficacy (AIM 2). Women demonstrating elevated levels will undergo source identification and counseling for remediation. We envision this as a proof of concept proposal and anticipate adapting the same technique in the future to the other classes of environmental toxicants.