

“Honorary Biomedical Sciences & Health Information Lecture Series”



INFLUENCE OF ENVIRONMENTAL EXPOSURE ON HEALTH DISPARITIES

A Distinguished Lecture

By

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Abstract: The etiology of chronic diseases that are major contributors to disparities in morbidity and mortality involves a complex mix of genetics and environmental factors. Genetics broadly influences all aspects of health. The maternal genes have an influence over fetal growth, particularly maternal height, which represents uterine capacity, a predictor of fetal size, which in turn is predictor of disease in later life. But when it comes to reducing health disparities, a genetic approach may have, for the foreseeable future, a relatively limited role. At this stage of genomic medicine, and for some time to come, the best opportunity to reduce genetically susceptible individuals will not be to re-engineer their gene, but modify their environment. Moreover it is increasingly clear all diseases involve an environmental component and it is also clear that unless environmental factors are considered, a complete epidemiology cannot be achieved. In this setting, a scientific consensus is emerging that the origins of adult disease, a number of which account for health status disparities, are often found in the fetal environment. Earlier epidemiological evidence suggested that such chronic diseases as diabetes, heart disease, and stroke, were regarded as products of adult behavior. However evidence now links adult disease to environmental exposure in early life including intrauterine life. For example, intrauterine exposure to diethylstilbestrol---a synthetic estrogen---- was discovered to underline vaginal and cervical cancer in young women. Perinatal and prenatal exposure to tobacco smoke or its constituents may well represent the leading cause of environmentally-induced disease and morbidity. These and other data suggest that we may need to look at new approaches to reducing the burden of preventable environmentally-related disease.

Keywords: Environmental exposure, gene-environment interactions, chronic diseases, health disparities