

Memorial researcher: socioeconomic disadvantage may genetically lead to mid-life obesity



PAWTUCKET – A new study performed at Memorial Hospital's Clinical Studies Center in the Center for Primary Care and Prevention with a Brown University team, reveals that the association is likely made through regulation of genes called epigenetics.

CHARLES B. EATON, MD, MS, director of the Center for Primary Care and Prevention at Memorial was one of several principal investigators of the study

that led to the publication "Epigenetic Mediators Between Childhood Socioeconomic Disadvantage and Mid-Life Body Mass Index: The New England Family Study" in the professional journal *Psychosomatic Medicine*. This sub-study of a large birth cohort study has men and women from before birth through the age of 47 and is aimed at identifying risk factors that may have epigenetic and early developmental childhood origins. One hundred and forty seven participants in the study were examined at Memorial and had fat biopsies and body fat and carotid artery atherosclerosis measured.

"The objective of this recently published research was to evaluate whether an individual's socioeconomic struggles in childhood alter his or her DNA methylation, a process that determines which genes are expressed in different cells or tissues," Dr. Eaton explains. "Both histones and methylation

are processes that regulate gene expression and determine whether a cell is a muscle cell or a brain cell or fat cell. The pattern of methylation has been shown to be associated with the risk of cancer, cardiovascular disease and becoming obese.

"Epigenetics appears to play a central role in fetal development, and we know that early childhood is a sensitive period during which external environmental stimuli can have considerable influence on the establishment of epigenetic patterning," he says, adding that this appears to be particularly true for women.

In the Memorial study, three genes were found to have associations with both socioeconomic disadvantage and obesity in women and one gene in men. A review of the medical literature showed that 70 percent of studies evaluating women show a connection between childhood disadvantage and obesity in adulthood, compared with only 27 percent of studies evaluating men.

"There has been some research that examined this alteration through changes in white blood cells, but we analyzed both white blood cells and fat tissue samples taken from study participants as we were interested in obesity," Dr. Eaton notes. "We found only associations in the fat tissue."

In identifying the impact of socioeconomic disadvantage, a topic Dr. Eaton says will be pursued through further research, the team hopes to spark the creation of interventions to change the eventual outcomes. ♦

Statewide needs assessment identifies 3 areas of focus: maternal and child health, behavioral health, chronic disease

PROVIDENCE – Hospitals will collaborate to address three key health care needs identified during a recent study. Maternal and child health, behavioral health, and chronic disease were found to be important areas impacting the health of Rhode Islanders.

Hospitals gathered in the spring to review the findings of a statewide community health needs assessment (CHNA). Following the session, hospitals agreed to collaborate over the next three years to address maternal and child health, behavioral health, and chronic disease. The CHNA Steering Committee and Rhode Island Department of Health (RI DOH) collaborated to ensure statewide efforts for community health improvements were properly aligned.

In addition to cross-communication between the RI DOH and the CHNA Steering Committee, efforts were made to coordinate local research with the

RI DOH Health Equity Zones (HEZ). While hospitals have community-specific implementation plans to address these and other areas, they will continue to meet collectively to address these issues collaboratively and analyze the impact of their activities.

The community health needs assessment provides a comprehensive study of the health care needs of Rhode Islanders. The process was conducted earlier this year by Baker Tilly and included:

- A Secondary Data Profile comprising indicators for each county and hospital service area compared to state and national benchmarks.
- An analysis and comparison of Hospital Discharge Data including emergency room, observation, and inpatient usage.
- Partner Forums with key representatives in each of the three counties served by the CHNA partners.

- Focus Groups with behavioral health consumers and English and Spanish-speaking Latino/a residents.
- An analysis of secondary data provided by the Healthy Communities Institute.

"The 2016 community health needs assessment has provided Rhode Island's health care community with a comprehensive list of findings," said HARI President **MICHAEL SOUZA**. "The assessment has allowed Rhode Island's health care system to encompass and address the health needs within each community."

In accordance with the Affordable Care Act, hospitals recently received approval from their boards of trustees on the assessment and implementation plans they created. The final reports have been released and can be viewed at www.rihealthcarematters.org. ♦