Break The Cycle 7

Break the Cycle of Environmental Health Disparities

Monday, April 2, 2012
8:30 am – 4:30 pm

Alperin Auditorium
Emory University Rollins School of Public Health
1525 Clifton Road
Atlanta, Georgia 30322

A project of

Southeast Pediatric Environmental Health Specialty Unit at Emory University

and

The Institute for the Study of Disadvantage and Disability, Inc.

Agenda

April 2, 2011

08:30 **Welcome** – I. Leslie Rubin MD, Robert Geller MD,
Carol Kemker (US EPA, Region 4), Michael Hatcher, DrPH, ATSDR

08:45 **SUSTAINABILITY INITIATIVES** – Ciannat Howett, JD
Director of Sustainability Initiatives Program, Emory University

09:05 **BREAKING THE CYCLE** – I. Leslie Rubin, MD

ASSESSING EXPOSURES

09:25 **There's a Hole in the Bucket: Rethinking the Role of Community Collected Data in Environmental Justice Movements**
Tulane Law School
Katheryne Kramer, Student; Colin Crawford, JD, mentor

Traffic Related Air-Pollution and Pediatric Asthma in Durham, NC
Duke University, Children's Environmental Health Initiative
Hilary Henry, Student; Pamela Maxson, PhD , Faculty Mentor

10:15 BREAK

10:30 Disparities in Arsenic Exposure among Children and Adolescents in the US
Mercer University School of Medicine, Dept. of Community Medicine
Gerald Blaney, Student; Yudan Wei, PhD, MD, Faculty

Temporal Trends in Small-Area Violent Crime and Preterm Birth
Emory Rollins School of Public Health, Epidemiology
Lauren Messina, Student; Michael Kramer, PhD, mentor

Breaking the Cycle in GRANDD Style
Emory University Nell Hodgson Woodruff School of Nursing
Ashley Cannon Deringer, Cherish Holt, Randi Bliss Kotal-Lee, and Brett Winston, Students;
Maeve Howett, PhD, APRN, CPNP-PC and Janice Nodvin, Mentors

11:40 **From No Power to Empower: Living the World of Disadvantage and Disability**
Marian Jackson, President of People First of Georgia

12:15 **LUNCH**

INTERVENTIONS

01:15 **School Siting: Breaking The Cycle of Environmental Impact**
Rebecca Watts Hull and Robert Geller, MD

Impact of Community Garden Programs on Food Deserts in a Metropolitan Atlanta Community
Morehouse School of Medicine, Masters of Public Health
Denise Smith, Student; Stephanie Miles-Richardson, DVM, PhD, mentor

Cyclopedia: Improving Social Health Through a Positive Youth Development Bicycle Program
Mt. Sinai School of Medicine, Preventive Medicine
Geoffrey "Cappy" Collins, MD, student; Perry Sheffield, MD, MPH, mentor

02:30 BREAK

03:15 **Effectiveness of Foreign Food Aid Initiatives in Addressing Child Malnutrition and Long-Term Impact on Children's Health**
Tulane Law School
Vihra Groueva, Student; Colin Crawford, JD, mentor

03:30 **Breaking the Cycle in Advance: Anticipating Future Challenges through Climate Adaptation Efforts**
Perry Sheffield, MD, MPH

04:00 **Questions – Answers - Discussion**

04:15 **Wrap Up**

04:30 **Conference Adjourns**

Conference Faculty and Presenters
Guest Speakers

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Ciannet Howett, JD
Emory University Sustainability Initiatives

Ciannet Howett became Emory's first Director of Sustainability Initiatives in September 2006, managing a University-wide effort to ensure that Emory's actions and policies support environmental, social, and economic systems that provide a healthy, productive, and meaningful life for current and future generations. She is also an Adjunct Professor at Emory's Rollins School of Public Health. Ms. Howett attended Emory University as an undergraduate, receiving her B.A. in 1987. She then worked at Emory until 1989 as Associate Director of Alumni Giving and the first Director of the Emory Parents Fund. She received her law degree from the University of Virginia in 1992. She practiced environmental law with Kilpatrick Stockton in its Atlanta and Washington, DC offices for four years, with the U.S. Environmental Protection Agency in Washington, D.C. as Senior Attorney with the Water Enforcement Division for six years and served for four years as Director of the Southern Environmental Law Center's Georgia and Alabama office. She is a Trustee for the R. Howard Dobbs, Jr. Foundation and serves on the Board of Emory Law School's Turner Environmental Law Clinic, The Livable Communities Coalition, Sustainable Atlanta, and Grants to Green. She serves on the DeKalb County Green Commission, the Agnes Scott National Sustainability Advisory Committee, the Oak Ridge National Laboratory Sustainability Task Force, and the President's Council of the Southern Environmental Law Center. She is a frequent regional and national speaker on sustainability issues, and, for four years, has been named a "Georgia Super Lawyer" by Atlanta magazine.

Marian Jackson,
President, People First of Georgia

Marian Jackson understands the world of disability from many perspectives. She is a person with a disability, and the parent of an adult with a disability. After a childhood of poverty, discrimination and living in isolation without support for many years, Ms. Jackson discovered self-advocacy through groups and services that empower people with disabilities to find the support that they need. Meeting and working with others in the disability movement dramatically changed her life. Today, she is on a mission to teach others how it feels to be empowered and to work together for social change. Ms. Jackson has an infectious enthusiasm, as she inspires others to take control of their own lives and speak out about their own experiences with disability. She serves as President of People First of Georgia and is a member of Atlanta ADAPT (American Disabled for Attendant Programs Today).

Perry E. Sheffield, MD MPH
Mt. Sinai School of Medicine, Preventive Medicine

Dr. Sheffield is Assistant Professor, Departments of Pediatrics and Preventive Medicine, at Mount Sinai School of Medicine. She completed the Pediatric Environmental Health Fellowship at the Mount Sinai School of Medicine after graduating from the Medical College of Georgia and then training in Pediatrics in the Harriet Lane Program of Johns Hopkins University. She conducts both qualitative and quantitative research on the health impacts of climate change and public understanding of these issues, with a particular focus on children. Dr. Sheffield serves as Deputy Director of the Mt. Sinai Pediatric Environmental Health Specialty Unit in New York.

Rebecca Watts Hull
Director, Mothers and Others for Clean Air

Rebecca Watts Hull is the Director of Mothers & Others for Clean Air, a partnership of leading public health, environmental, and child advocacy organizations, and a project of the American Lung Association in Georgia. This nonprofit program is dedicated to improving Georgia's air quality and reducing exposure to air pollution, especially for children and other vulnerable groups. Rebecca is an environmental educator with experience in

formal science education, environmental curriculum design and environmental policy and advocacy. She earned an MS in Natural Resources & Environment from the University of Michigan. Ms. Watts Hull will focus on School Siting: Breaking The Cycle of Environmental Impact.

Duke University
Children's Environmental Health Initiative

Student

Hilary Henry

Hilary Henry is a senior at Duke University majoring in environmental science and policy with a minor in cultural anthropology and plans to graduate in December 2012. She is a research assistant with the Children's Environmental Health Initiative and has become interested in the interface between culture and the environment. This interest has led her to explore a variety of topics including health, food, conservation, and how these relate to our environment. Ms. Henry hopes to pursue a job in a related environmental field for several years before returning to graduate school.

Faculty Mentor

Pamela Maxson, PhD

Pamela Maxson is a Research Associate at CEHI where she is the Research Director for the Southern Center on Environmentally Driven Disparities in Birth Outcomes (SCEDDBO) and the research coordinator for CEHI's Clinical Obstetrics study. She received her B.S from the University of Hawaii and her M.S. and Ph.D. in Human Development and Biobehavioral Health from Pennsylvania State University. Her research interests lie in the interface of psychological, social, host, and environmental contributors to health. Specific interests include maternal and child health disparities including the societal, familial, and individual influences on outcomes. She has been teaching at Duke since 1995, focusing on child, adolescent, and lifespan development.

Emory University
Rollins School of Public Health, Epidemiology

Student

Lauren Messina

Lauren Messina is a second year graduate student in the Rollins School of Public Health of Emory University with a concentration in Global Epidemiology. She received her undergraduate degree in Chemistry from Cornell University. She received the Young Investigators Award at the Conference on Retroviruses and Opportunistic Infections in 2012. Through her work with Break the Cycle, Ms. Messina hopes to spread awareness that violent crime does not just impact those directly victimized; mere geographic proximity to high levels of crime may correlate with increased risk of adverse health outcomes. After graduation, she hopes to become a research epidemiologist, focusing on diseases and health outcomes that disproportionately affect underserved populations.

Faculty Mentor

Michael Kramer PhD

Michael R. Kramer is Assistant Professor in the Department of Epidemiology at Emory University Rollins School of Public Health. He is a social and spatial epidemiologist with particular interest women's and children's health. Past and ongoing projects include understanding of social, environmental and biosocial determinants of contraceptive behavior and unintended pregnancy; poor pregnancy outcomes such as stillbirth and preterm birth; infant mortality; and child development and health including cognitive development, and childhood obesity. His

research has particularly focused on the interaction of social and biological risk factors for excess preterm birth risk among low-income and African American women, and in particular how structural processes such as poverty concentration, residential segregation, and public housing policy systematically sort women into healthy or unhealthy environments.

Emory University
Nell Hodgson Woodruff School of Nursing

Student

Ashley Cannon Deringer

Ashley Deringer is a MSN/Adult Nurse Practitioner candidate. She received her BSN from Emory University in 2011 as a second degree student. She graduated with a BA in International Relations from Auburn University in 1993. Her 1st career included service as an Army Medical Service Corps officer, and later work as a project manager and analyst for healthcare information systems with Global Healthcare Exchange, the Army Office of the Surgeon General and several large healthcare systems. A strong desire to better understand the information system needs of clinicians and patients led her to pursue a career in nursing. Ms. Deringer became involved in ISDD's Project GRANDD through her interest in geriatric and underserved populations. She hopes to impact the cycle of disability and disadvantage through ensuring the healthcare needs of custodial grandparents are addressed as they strive to ensure stability and security in their grandchildren's lives. Her focus of study is adult internal medicine and she hopes to work as a Nurse Practitioner in Palliative Medicine upon graduation.

Student

Cherish Holt

Cherish Holt is a Master's student at Emory University who is studying to become an Adult/Geriatric Nurse Practitioner. Not realizing her initial passion of nursing, she took many routes within her collegiate career before embarking on this newfound profession. She received a Bachelor's degree at Fisk University, where she studied Biology. During her undergraduate career, she participated in 2 research projects at Vanderbilt University where she studied hepatocellular carcinoma and the genetics involving susceptibility to side effects of melphalan, a chemotherapy drug. With a background in research, she had no issues helping conduct research projects though Emory University. Last summer, she went on a 2-week immersion trip to Eleuthera, a family island of the Bahamas. In Eleuthera, her and several of her fellow nursing colleagues collected data to help improve wellness and fitness program health promotion on the island. Her current research is centered on Project GRANDD (grandparents raising their grandchildren with disabilities and chronic illness), which focuses on the needs and concerns of grandparents who are raising grandchildren with various disabilities.

Student

Bliss Kotal-Lee

Bliss Kotal-Lee is a 2012 MSN Candidate within Emory University's Nell Hodgson Woodruff School of Nursing's Adult and Gerontological Nurse Practitioner program. She received a Bachelor's degree from the University of Georgia where she majored in Biological Science, and she obtained her Bachelor of Science degree in Nursing from Emory University. Bliss received the Wesley Woods Foundation Award for Excellence in Geriatric Nursing in 2011, an honor which recognizes a student who has demonstrated a commitment to care of the geriatric community and who plans to devote their nursing career to the care of the older adult. After graduation, Bliss plans to pursue a career within the specialty of geriatric medicine with a primary care focus in a rural community where she will aim to help older adults thrive in the community.

Student

Brett Winston

Brett Winston is a MSN Candidate 2012 for Adult and Gerontology Nurse Practitioner.at Emory University Nell Hodgson Woodruff School of Nursing. She received her undergraduate degree at Clemson University in Biological Sciences with a Minor in Spanish**.** Ms. Winston did research at Clemson University studying the parasite-host relationship and has cross-cultural experiences through medical mission and service learning with Emory University - including international work with populations in Honduras and Haiti, and local community work with geriatric and homeless populations. Although her original interest was in life sciences, she soon realized nursing is her area of interest. She enjoys the holistic view of nursing and its emphasis on preventive and community care. Upon graduation Ms. Winston will pursue a career in adult and geriatric nursing, specifically with a primary care or community and wellness focus. She would also like to be involved in more medical missions and local projects as my career moves forward.

Faculty Mentor

Maeve Howett, PhD, APRN, CNP-Ped, IBCLC

Maeve Howett is a pediatric nurse practitioner, lactation consultant, and Clinical Assistant Professor in Family and Community Nursing at the Nell Hodgson Woodruff School of Nursing at Emory University. She has twenty-five years of pediatric nursing experience, with research interests in women's experiences of infant feeding, early childhood nutrition, toxic exposures in infants and lactating women and vulnerable pediatric populations. She is particularly interested in the at-risk mother-infant dyad made vulnerable by poverty or lack of resources. Dr. Howett sits on the Children's Healthcare of Atlanta (CHOA) Research Advisory Council, and is facilitator of the Neonatal and Birth Outcomes Research Group. Dr. Howett was appointed to the Sustainability Taskforce for Emory Healthcare, and has chaired conferences on the topic of Sustainability in Healthcare for nurses for the past two years. For the last eight years, Dr. Howett has taken her students to South Georgia to care for the children of migrant workers and to Jamaica to care for children living in orphanages. Her teaching interests include research, global health, migrant health, hospitalized children, lactation and vulnerable populations. Dr. Howett is also involved in sustainability practices in the school, including an expanded recycling program and the installation of a medicinal herb garden for student instruction. Dr. Howett joined the SE PEHSU team in June 2010.

Faculty Mentor

Janice T. Nodvin

Janice Nodvin is the Project Administrator for the SE PEHSU. See her complete biosketch below.

Mercer University School of Medicine
Department of Community Medicine

Student

Gerald Blaney

Gerald Blaney is an MPH student at Mercer University School of Medicine, Department of Community Medicine in the class of 2012. He received his undergraduate degree at Emory University. Prior to pursuing a Master of Public Health at Mercer, he worked in administration in pediatric emergency at Gwinnett Medical Center. In addition to Break the Cycle, Mr. Blaney is participating in a research project on tobacco-use disparities in Early County, and another project on parasitic worms in sand-gnats. He is also tracking substance abuse patients throughout middle Georgia for the Family Health Center and the Medical Center of Central Georgia. After graduation, he would like to pursue a career in international environmental health.

Faculty Mentor

Yudan Wei, PhD, MD

Yudan Wei, PhD, MD is an Associate Professor of Community Medicine at Mercer University School of Medicine. She received her PhD degree in Toxicological Genetics from Stockholm University, Sweden, a Medical Degree in Preventive Medicine from Harbin Medical University, China, and postdoctoral training at University of Cincinnati Medical Center. She has extensive teaching and research experience in the field of environmental health and community medicine. Her research work includes studies of molecular mechanisms of the combined effects elicited by exposure to chromium and PAHs, biomarkers of chronic arsenic exposure, breast cancer etiology and prevention, and environmental risk factors for low birth weight and childhood obesity. She has also conducted community-based interventions and research on removal of lead contamination, breast cancer education, and childhood obesity awareness. Dr. Wei has numerous publications and presentations in her field, and has actively engaged in international collaborations for teaching and research.

Mount Sinai School of Medicine
Preventive Medicine

Student

Geoffrey "Cappy" Collins, MD

Geoffrey "Cappy" Collins, MD received his art-semiotics degree from Brown University before a career in digital media art direction and design for clients such as Scholastic and PBS. His work in children's education was followed by medical training at the Mount Sinai School of Medicine and a pediatrics residency at the University of Rochester. His professional interests in child advocacy and urban health led to the creation of Cyclopedia (www.cyclo-pedia.org), a bicycle program that combines physical activity with collaborative online documentation to empower urban adolescents. He is currently a pediatric environmental health fellow at the Mount Sinai School of Medicine. He has received numerous accolades for his dedication to the special needs of vulnerable children and for the creation of Cyclopedia which empowers urban adolescents.

Faculty Mentor

Perry E. Sheffield, MD MPH

Dr. Sheffield is Assistant Professor, Departments of Pediatrics and Preventive Medicine at Mount Sinai School of Medicine. (See complete biosketch above.)

Morehouse School of Medicine
Masters in Public Health Program

Student

Denise A. Smith

Denise A. Smith is a native of Beaufort, South Carolina. She is a second year Master of Public Health student at Morehouse School of Medicine. She is currently completing an internship at the US Environmental Protection Agency in the Student Career Experience Program. She received her Bachelor of Science degree in Biology from South Carolina State University. Her participation as a student in the Morehouse School of Medicine Master of Public Health program, with a concentration on Health Administration, Management & Policy, sparked a desire to learn more about community gardens as a means to alleviate food deserts which often contribute to health disparities. She hopes her research findings will bring about some policy recommendations to ensure healthy food environments for those impacted by food deserts. After graduation, Ms. Smith will pursue a public health career focusing on environmental health and justice.

Faculty Mentor

Stephanie Miles-Richardson, DVM, PhD

Stephanie Miles-Richardson is an Associate Professor in the Department of Community Health and Preventive Medicine at Morehouse School of Medicine (MSM). At MSM, she also serves as Interim Director of the Master of Public Health Program (MPH), as well as Health, Administration, Management and Policy Track Coordinator. Dr. Miles-Richardson joined the faculty at Morehouse School of Medicine in November 2008, after over a decade of federal service at the Centers for Disease Control and Prevention (CDC) and the Agency for Toxic Substances and Disease Registry. During her federal career, Dr. Miles-Richardson worked as an Environmental Toxicologist, Scientific Technical Advisor for a 4 million dollar research study, Program Manager for issues related to environmental health and minority populations, and finally, as CDC's Associate Director for Minority Health and Health Disparities Policy. She is also a former Officer in the United States Commissioned Corps. Dr. Miles-Richardson earned an undergraduate degree in Biology from Grambling State University, her veterinary medical degree from Tuskegee University School of Veterinary Medicine, and a dual PhD in Pathology and Environmental Toxicology from Michigan State University.

Tulane University Law School
Payson Center for International Development

Student

Vihra Groueva

Vihra Groueva is a student at Tulane University Law School focusing on a career in health law. A native of Bulgaria, Ms. Groueva was exposed to the wide variety of health issues affecting children through her parents' international humanitarian work in countries like Haiti and South Africa. She continued to build on this experience with her undergraduate work in neuroscience and global health at Emory University. Now, as a second year law student, Ms. Groueva is focusing on the intersection of law and health, particularly in areas related to bioethics, health disparities, and access to health care. Her background interest in her Break the Cycle topic stems from her experience of living in Haiti for a year and a half, and witnessing some of the risks and benefits of foreign aid provided to the country. She spent a large part of her time there in the pediatric ward of a hospital and was constantly struck by the effects of malnutrition on children and also by the inadequacy of the aid they and their parents sometimes received. Her interests for future research and work are centered on issues related to three main areas: the effect of neuroscience research on the law, bioethics, and patient advocacy.

Student

. **Katheryne Kramer**

Katheryne Kramer graduated from Boston College with a degree in International Studies in 2007. She served as a community health education volunteer in Turkmenistan with the Peace Corps, which convinced her to go to law school. Currently, she is in her second year of a joint JD/MPH program through Tulane University Law School and School of Public Health and Tropical Medicine, where she hopes to focus on the intersection of the legal system and healthcare. Ms. Kramer is committed to developing robust legal systems and frameworks that support and empower patients and communities to advocate for quality, equity, and accountability in healthcare. She would like to work for or with the government to design effective health policies, particularly in the area of hospital accountability.

Faculty Mentor

Colin Crawford, JD

Colin Crawford is the Robert C. Cudd Professor of Environmental Law at Tulane University Law School and Executive Director, Payson Center for International Development. He received his BA at Columbia University, his MA at the University of Cambridge, and his JD at Harvard University. Professor Crawford joined the Tulane

faculty in 2010 from the Georgia State University College of Law, where he founded and co-directed the Center for the Comparative Study of Metropolitan Growth and directed a summer program in Rio De Janeiro. He has also been a visiting professor at the University of Denver Sturm College of Law, the National School of Public Health, Oswaldo Cruz Foundation in Rio de Janeiro, and the Technological Institute of Santo Domingo in the Dominican Republic, where he was a Fulbright Scholar.

Professor Crawford has significant expertise in international development, an area in which he will teach and work in his role as Executive Director of Tulane's Payson Center. He is currently completing execution of a three-year grant from Higher Education for Development/US Agency for International Development to direct an environmental law capacity-building project in Guatemala, Nicaragua, the Dominican Republic, El Salvador and Panama.

Southeast Pediatric Environmental Health Specialty Unit Team

Emory University Department of Pediatrics

PEHSU

Robert J. Geller, MD

Robert Geller currently serves as the Chief of the Emory Pediatrics Service at the Grady Health System/ CHOA-Hughes Spalding campus, as Medical Director of the Georgia Poison Center, and as Director of the Emory Southeast Pediatric Environmental Health Specialty Unit (PEHSU). Dr. Geller was graduated in 1979 from Boston University School of Medicine. He then pursued his residency and Chief Residency in Pediatrics at the Medical College of Virginia in Richmond, followed by a fellowship in Clinical Pharmacology and Toxicology at the University of Virginia in Charlottesville. He is a fellow of the American Academy of Pediatrics, the American College of Medical Toxicology, and the American Academy of Clinical Toxicology. He has been a member of the Southeast PEHSU since its formation in 2001. He is the author of more than 50 publications, and is one of the editors of the text, ***Safe and Healthy School Environments***. He is the author or co-author of numerous community information sheets and has met with community members at many sites of children's environmental health concern throughout the Southeastern United States.

Emory University Nell Hodgson Woodruff School of Nursing

PEHSU

Maeve Howett, PhD, APRN, CNP-Ped, IBCLC

Maeve Howett is a pediatric nurse practitioner and lactation consultant and has an appointment as Clinical Assistant Professor in Family and Community Nursing at the Nell Hodgson Woodruff School of Nursing at Emory University. Dr. Howett joined the SE PEHSU team in June 2010. (See full bio above)

Emory University Rollins School of Public Health

PEHSU

Michele Marcus, PhD, MPH

Michele Marcus, PhD, MPH is Professor of Epidemiology and Environmental Health at the Rollins School of Public Health and Professor of Pediatrics in the School of Medicine, Emory University. She recently became Assistant Program Director for Kaiser Permanente's Center for Health Research, Southeast. Dr. Marcus has over 20 years experience as a reproductive and environmental epidemiologist. At Mount Sinai School of Medicine, she was Director of the Environmental Epidemiology Core of the NIEHS Environmental Health Sciences Center. As

a Turner Foundation Fellow at the CDC, she coordinated the work of the Endocrine Disrupters Leadership Panel. She has published extensively in this field and has co-authored two book chapters reviewing the effects of environmental and occupational exposures on reproductive function. Her work includes studies of prematurity, low birth weight, congenital malformations, child growth and pubertal development, adolescent pregnancy, miscarriages, menstrual function, infertility and menopause. She has served on federal expert panels reviewing the health effects of exposure to electromagnetic fields, bisphenol A (BPA), phthalates, and gene/environment interactions following service in the Persian Gulf War. She served on the National Academy of Sciences Institute of Medicine Committee on the health effects of dioxin exposure among Vietnam Veterans. Dr. Marcus has also conducted research on genetic contributions to reproductive health and health effects of exposures to polycyclic aromatic hydrocarbons, pesticides, air pollution, solvents and lead.

Institute for the Study of Disadvantage and Disability, Inc.

PEHSU

Janice T. Nodvin

Janice Nodvin serves as Project Administrator and Educator for the SE PEHSU. She is the Coordinator for the Break the Cycle Projects. Ms. Nodvin is also the Program Director for the Institute for the Study of Disadvantage and Disability, where she serves as Program Director for Project GRANDD (grandparents raising their grandchildren with disabilities and chronic illness), Program Coordinator for the Healthy Tomorrows Partnership Project – Heathcare Without Walls, and Clinic Director for the Adult Down Syndrome Program. Her role and expertise is in the areas of education, parent advocacy and program administration. Ms. Nodvin has co-edited *Safe and Healthy School Environments* and all of the monographs for the Break the Cycle projects. She is the contact person for the SE PEHSU.

Morehouse School of Medicine Department of Pediatrics

PEHSU

I. Leslie Rubin, MD

Leslie Rubin MD is Research Associate Professor in the Department of Pediatrics at Morehouse School of Medicine, Co-Director of the Southeast Pediatric Environmental Health Specialty Unit at Emory, President and Founder of the Institute for the Study of Disadvantage and Disability, and Principal Investigator of the Healthy Tomorrows Partnership Project – Healthcare Without Walls – a project to create a Medical Home for Homeless Children. In May 2004, he co-founded the Institute for the Study of Disadvantage and Disability, which is dedicated to improving awareness and understanding of the relationship between social and economic disadvantage and disabilities in children. In 2004-2005, the first Break the Cycle Program was launched, and has been an annual event since then. Since 2001, he has been a Co-Director with the Southeast Pediatric Environmental Health Specialty Unit at Emory University, where he has integrated his understanding of Developmental Disabilities and applied this to populations of children who had been exposed to adverse environmental circumstances

Overview of Break the Cycle

The threats to children's health and well-being are often multiple and complex. Children are uniquely vulnerable to environmental toxicants for several reasons: They are growing rapidly; they have a more active metabolic rate than adults; they breathe larger amounts of air for their size; they have a greater surface area-to-body mass; they are lower to the ground; and they may pick up and play with objects and then put these objects in their mouths and even swallow them. They are at risk, therefore, to absorb more toxins in the environment through their skin, and breathe more air with its pollutants. They may metabolize chemicals into toxic metabolites at a different rate than adults and, because they are growing rapidly and have a higher metabolic rate, they may incorporate potential toxins into their organ systems and suffer long term consequences that may only be evident much later in life.

Today, some of the major health concerns for children are: asthma; obesity and its complications of hypertension and diabetes; and neurodevelopmental disorders, most commonly learning disabilities and attention deficit hyperactivity disorder. These conditions, which are often caused or exacerbated by various environmental factors, create significant complications that affect both the child's health and the learning and social opportunities that may determine their potential for self-actualization and fulfillment. This is the challenge at an individual level; at a societal level, this affects how society cultivates its future citizens, workforce, and leaders.

It also has become increasingly apparent that children who grow up in an environment of social and economic disadvantage are at greater risk for experiencing toxic effects from lead and other chemicals, impacted by the age of the houses in which they live, the infrastructure of the communities in which they live, and the risks of violence that they may experience. Furthermore, the vulnerability of children who live in circumstances of social and economic disadvantage is greater, by virtue of their risks for exposure, magnified further by the limitations of support for optimal education, access to quality health care, infrastructure, and limited Social Capital.

The combined effects, therefore, of the adverse environmental factors, the child's vulnerability, and the limitations in necessary resources to overcome the adversity, results in a situation of compromised health and well being. It further results in reduced opportunities for success, and thus limited opportunities to grow into capable, independent, and responsible citizens. This creates an inequity in health – in the true WHO definition of physical, emotional, and social well-being. The potential for health of children growing up under these circumstances is substantially less than that for a child growing up in a more affluent and supportive environment. The health disparities can be seen in terms of a cycle that encompasses and can trap generations, the Cycle of Environmental Health Disparities. The combination of caring and creativity among faculty and students in universities to develop creative and innovative projects to Break this Cycle are at the heart of these efforts to change the lives of one child at a time and therefore of whole communities.

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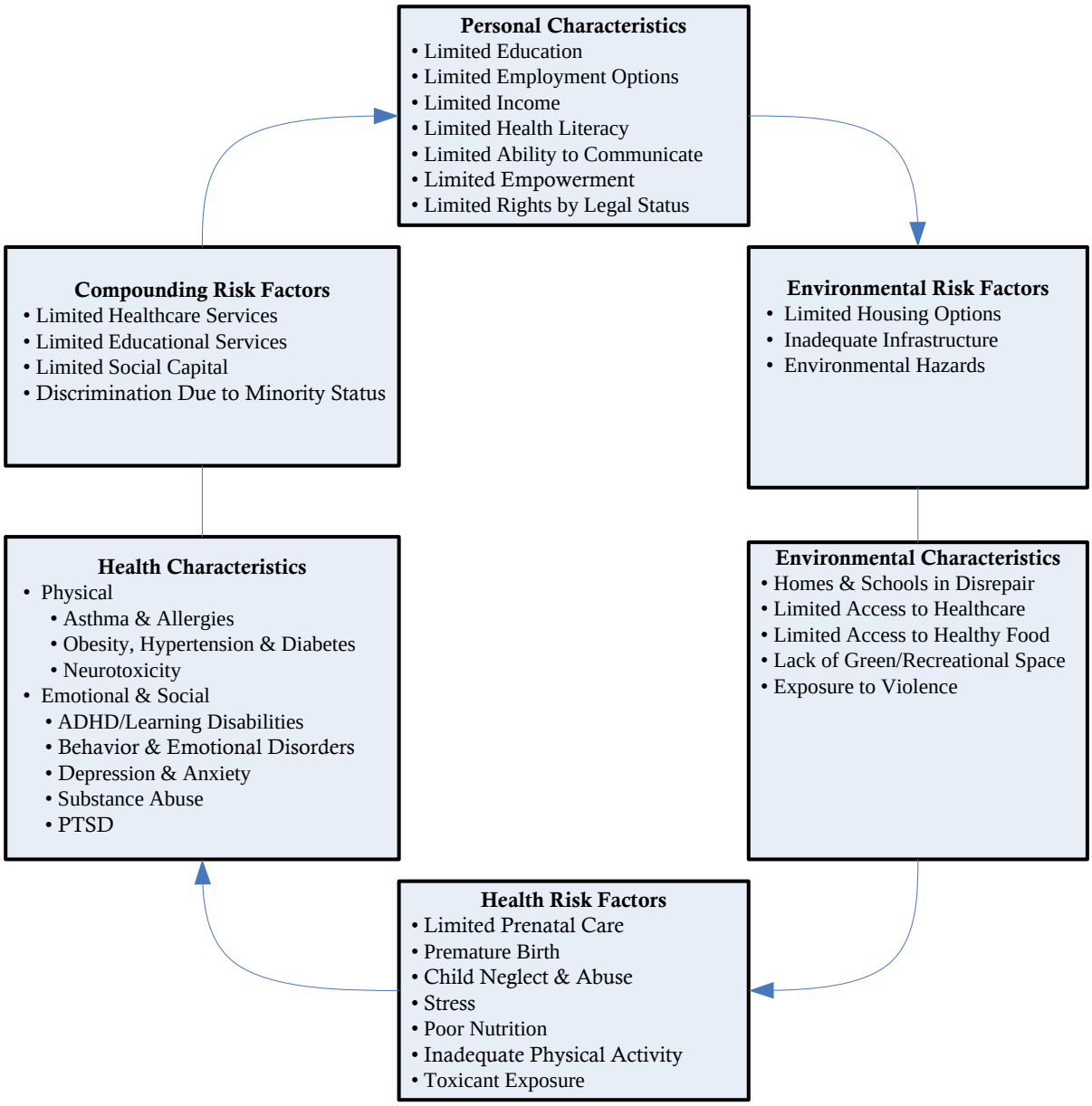
Cycle of Environmental Health Disparities



Environmental Health Disparities

Children's health and wellbeing are shaped by the environment in which they live. Nurturing, resource-rich environments promote optimal health and development. Unsafe and unsupportive environments put children at risk for poor health, developmental delays, impaired learning, and other difficulties that reduce overall quality of life and limit opportunities for success in adulthood.

Children living in families headed by adults with limited education and health literacy, limited income and employment opportunities, and a relative lack of power within their community, are at increased risk for experiencing adverse environmental health outcomes. Their experience of social and economic disadvantage often leaves them with few housing options in rural, urban, or suburban communities. They are more likely to live in poorly-maintained older homes and be exposed to indoor toxicants, such as lead paint and mold, as well as other environmental hazards. They are also more likely to live in communities with limited access to transportation, grocery stores, green space, and recreational opportunities. Moreover, they are more likely to be exposed to street crime and violence within their immediate community.

The increased risk of toxicant exposure, poor nutrition, limited physical activity, abuse, neglect, and stress that are often shaped or exacerbated by environmental conditions in turn increase children's risk of physical health problems, such as asthma, obesity, hypertension and neurodevelopmental disorders. They may also contribute significantly and in a complex manner to compound learning disabilities, attention-deficit hyperactivity disorder (ADHD), depression, trauma reactions, substance abuse, and behavioral disorders. A lack of access to comprehensive healthcare and appropriate educational services, as well as discrimination, social stigma, and lack of social capital further increase the likelihood that children will continue to experience environmental health disparities, even into adulthood.

Break the Cycle Project

Our Break the Cycle Project is a collaborative, interdisciplinary pediatric environmental health research and training program established in 2005 that invites university students with their academic mentors to conduct research related to the reduction or prevention of environment-related illness and disability in children living in circumstances of social and economic disadvantage.

Break the Cycle is designed to:

- Inspire students from a variety of academic disciplines to explore the relationship between the environment and children's health, as well as develop strategies for addressing identified pediatric environmental health challenges
- Promote collaboration among academic leaders at major universities to facilitate creative examination of the issues relating to the impact of environmental factors on children's health and quality of life
- Develop the academic and leadership capacity of professionals within academic and healthcare communities who can, in turn, promote interest in children's environmental health and environmental justice
- Promote the incorporation of children's environmental health topics into university curricula

Students and faculty mentors are recruited from universities throughout the region. Proposed projects are reviewed for relevance, design, and fit within the project cycle by a committee comprised of the core PEHSU team, representative university faculty, environmental health experts, and students. During the research phase, monthly conference calls are held to track the students' progress and ensure that the progress is on target and that the students and faculty mentors receive sufficient guidance and support.

At the end of each project period, each of the student researchers presents the results of their research at a symposium sponsored by SE PEHSU, ISDD, and their strategic partners. The conference also features a nationally recognized keynote speaker to inspire and enrich the thoughts and discussion. This symposium provides budding scientists, academics and advocates with an opportunity to hone their research presentation skills, and also allows for dissemination of their findings to other scientists and academicians as well as healthcare providers, fellow students, advocates and the general public.

The Proceedings of the conference are published in a monograph which is made available to all participants, the project funders and anyone else who would like a copy. It is also made available on the PEHSU website at www.pehsu.emory.edu and the ISDD website at www.isdd-home.org. Furthermore, the papers will be published in an international peer reviewed monograph which will be accessible through the internet publication networks. In previous years we have had monographs published in the *International Journal of Child and Adolescent Health* and the *International Journal of Child Health and Development,* and in press we have a supplement to *Environmental Health Review*.

In past programs, we have seen a diversity of projects examining a variety of environmental health-related factors that include asthma, obesity and neurodevelopmental disabilities, as the health-related concerns along with environmental tobacco smoke, houses, neighborhoods and specific toxins as the causative agents.

Funding for this conference was made possible (in part) by the cooperative agreement award number 1U61TS000118-02 from the Agency for Toxic Substances and Disease Registry (ATSDR). The views expressed in written conference materials or publications and by speakers and moderators do not necessarily reflect the official policies of the Department of Health and Human Services; nor does mention of trade names, commercial practices, or organizations imply endorsement by the U.S. Government

Acknowledgement: The U.S. Environmental Protection Agency (EPA) supports the PEHSU by providing funds to ATSDR under Inter-Agency Agreement number DW-75-92301301-0. Neither EPA nor ATSDR endorse the purchase of any commercial products or services mentioned in PEHSU publications.

We thank the Office of Sustainability Initiatives at Emory University for their sponsorship of this conference. Emory's sustainability vision is to help restore the global ecosystem, foster healthy living, and reduce the University's impact on the local environment. Progress will be measured using the environmental, economic, and social "triple bottom line" of sustainability.

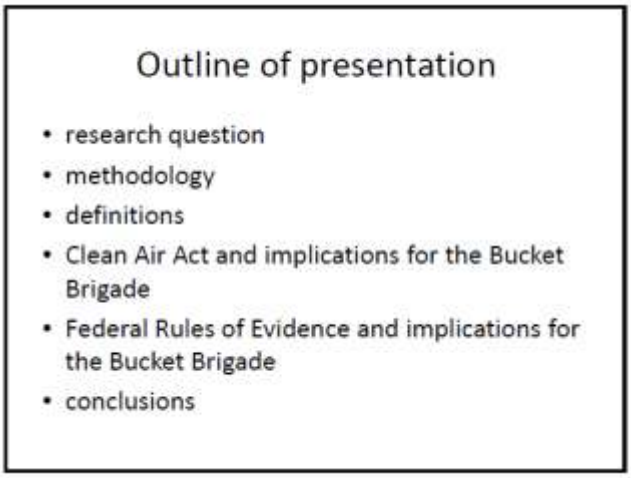
Project Presentations

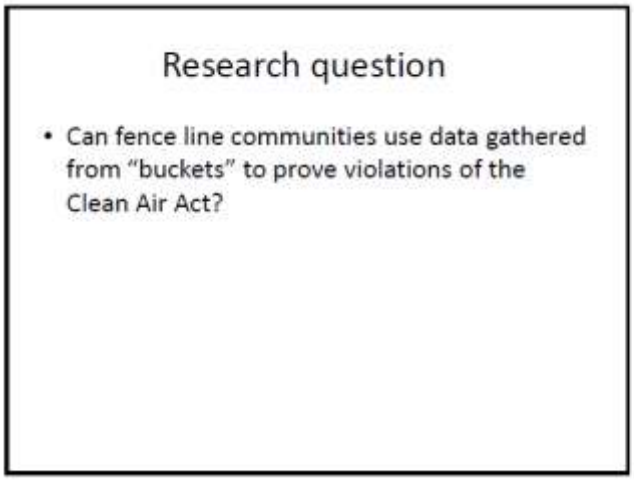
There's a Hole in the Bucket: Rethinking the Role of Community Collected Data in Environmental Justice Movements

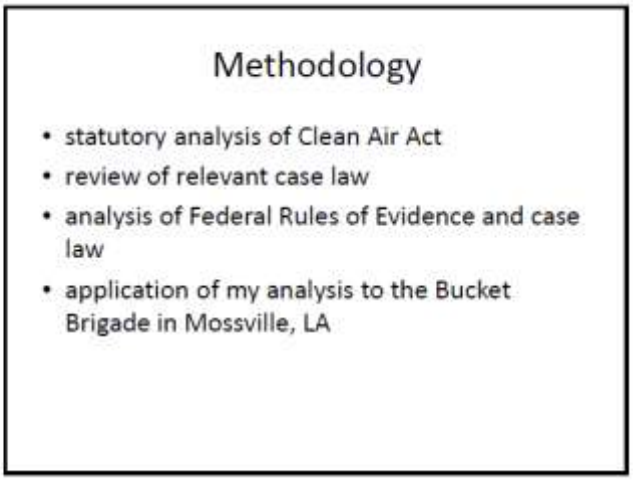
Tulane Law School

Katheryne Kramer, Student; Colin Crawford, JD, Faculty Mentor

Community-collected data gathered by citizens living adjacent to industrial polluters cannot be used to prove violations of the Hazardous Air Pollution (HAP) provisions of the Clean Air Act (CAA). Although the 1990 Amendments of the CAA provided that any credible evidence could be used to prove violations, the applicability of those provisions have been narrowed by decisions in the courts. Furthermore, even if admissible under the CAA, the Federal Rules of Evidence will still apply. While under the CAA, the courts will presume that Environmental Protection Agency (EPA) tests are valid, this presumption does not extend to other data. Thus, any community-collected data would be subject to Rule 702 of the Federal Rules of Evidence, which sets standards for expert testimony. While the trial judge has discretion to under this rule, given the lack of studies on the accuracy and reliability of community-collected data, it would be difficult to admit the data. Absent regulatory or legislative changes that would alter the standards for admitting evidence for CAA citizen suits, the data will not be admitted in court.







Definitions: fence-line communities

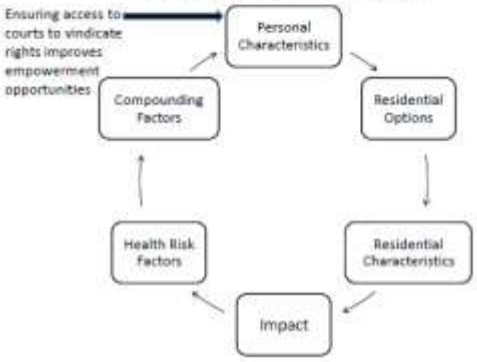
Definitions: the bucket

- Components:
  - Bucket
  - Non-reactive plastic bag
  - Vacuum motor
  - Valve

Definitions: the brigade

Bucket Brigades
- history
- positions:
  - sniffers
  - samplers
  - spinners
  - coordinators

Breaking the cycle



Civics refresher

- branches of government
  - legislative
  - executive
  - judicial
    - Supreme, Appellate, District
- cooperative federalism
  - role of the federal government
  - role of the state
  - citizen suits

Research question: definitions

- Clean Air Act
  - National Emission Standards for Hazardous Air Pollution (NESHAP) and Title V Permitting
  - citizen suits
  - credible evidence
- Federal Rules of Evidence
  - 701, 702,and 703: admission of expert testimony in federal courts

Credible evidence rule

- Section 113(e)(1) and Any Credible Evidence Rule
- Cases 1999-2005
  - Clean Air Implementation Project v. EPA
  - Sierra Club v. Public Service Co. of Colorado
  - Unitek Environmental Services, Inc. v. Hawaiian Cement
- Sierra Club v. Tennessee Valley Authority

Implications for Bucket Brigades in Louisiana:

- 11th Circuit only circuit to have ruled on the issue.
- restrictive in their interpretation of credible evidence rule:
  - federal enforcement
  - duration versus proof of violations.

The short answer:

- No legal or regulatory bar to using community generated air quality data from "buckets" in citizen suits of the Clean Air Act.

Practical challenges:

- practical barriers to getting bucket data admitted in a court
  - credible evidence defined by under the Federal Rules of Evidence
    - judge as "gatekeeper"
    - all expert testimony is guided by the Daubert standard
  - increases the cost of litigation

FRE rules governing expert testimony

- 701: governs non-expert lay witness opinions
- 702: governs the admission of testimony by experts
- 703: sets out the basis of an expert's testimony

Practical consequences of the FRE

- Adds to cost of litigation
- Bucket Brigade data unreliable in terms of:
  - data collection
  - methodology

Daubert standard:

- reliability
  - whether the theory of technique has been/can be tested
  - whether it has been subject to peer review and publication
  - whether the known or potential rate of error is known
  - whether there are standards controlling the operation
  - whether a given technique is generally accepted

Daubert motions and Bucket Brigade data

Daubert motions: preliminary motions to exclude evidence based on its unreliability.

- is the expert qualified?
- is the evidence reliable?
- is the foundation of the expert's opinion reliable?
- is the type of data typically used by experts in the field?

Four options for the future

- do nothing
- improve quality and caliber of community-collected data
- focus on legal approaches that do not rely on this type of evidence
- structure formal role for Bucket Brigades and their data in enforcement and planning

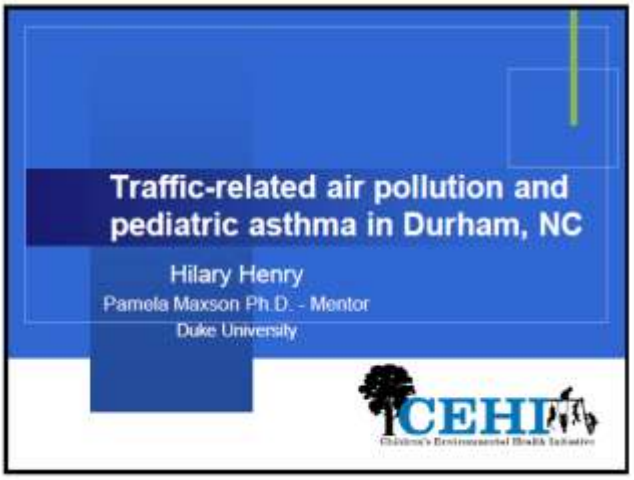
Conclusion:

- develop the relationships and research to strengthen the reliability of the data
- empowers communities and recognizes their right to clean air
- collaborative approach

Traffic Related Air-Pollution and Pediatric Asthma in Durham, North Carolina

Duke University, Children's Environmental Health Initiative
Hilary Henry, Student; Pamela Maxson, PhD, Faculty Mentor

Asthma, which affects approximately 10% of American children, decreases long-term health and can affect other endpoints such as academic absenteeism and performance. Pediatric asthma prevalence increases with air pollution. This study investigates the relationship of asthma case frequency with distance to roadways. Traffic releases particulate matter, nitrogen dioxide, and a variety of other pollutants into the air. Data on asthma cases from the Duke University Health System and data on county roads from Durham County are analyzed spatially using ARCgis. We predict that pediatric asthma case frequency will increase with decreasing distance to major roadways. Mitigating risk, decreasing air pollution exposure from roadways, and increasing resiliency will be necessary to break the cycle of environmental health disparity.



Research Question

What is the effect of traffic-related air pollution on pediatric asthma prevalence in Durham County, NC?

Is there are a relationship between the distance of one's home to a roadway and pediatric asthma?

Method - Data

Patient records collected from the Duke University Hospital System and Durham Regional Hospital

- 2007-2009
- Unique records of Durham County residents
- Children aged 5-12
- Asthma diagnosis ICD-9 code during any year of the study period

Sample Size n=18,563

Method - Distance to roadway

- Patient addresses geocoded in ArcGIS
- Roadway types divided into three categories:
  - Primary: Interstate and US highways
  - Secondary: NC State highways
  - Tertiary: Local roads
- Distance to roadway separated into four categories

< 75 m	150-300 m
75-150 m	>300 m

Method - Analysis

Logistic regression used to analyze data

Two Models

	Unadjusted	Adjusted
Controls:	None	• Age • Race • Gender • Insurance Type • Household median income • Distance to other roadway types
Assumes:	• Asthma risk is additive • Risk accumulates from many intertwined sources	• Asthma risk due to proximity to roadways has a separate measurable effect

Race and insurance groups with small numbers excluded in both models

All analyses conducted in Stata

Demographics

Household median income

First tertile	Less than $38,854
Second tertile	$38,854-$56,000
Third tertile	Greater than $56,000

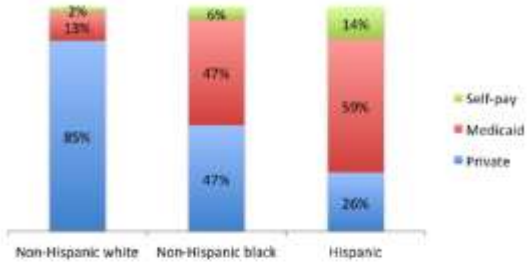
Race

Insurance type

Age

Demographics

Insurance type by race



Demographics and Asthma

Asthma prevalence in whole sample = 11.6%

Asthma prevalence by race	
Non-Hispanic white	8.5%
Non-Hispanic Black	14.6%
Hispanic	9.0%

Asthma Prevalence by Insurance Type	
Private	10.3%
Medicaid	14.2%
Self-pay	9.1%

Results – Unadjusted Model

Asthma prevalence by distance to roadway

Other variables unadjusted

	< 75 m	75-150 m	150-300 m	> 300m
Primary Roadway	OR 1.04 n=347	OR 1.27* n=838	OR 1.13 n= 1203	OR 1.00 n= 16455
Secondary Roadway	OR 1.06 n= 5297	OR 1.23** n= 2378	OR 1.08 n=4259	OR 1.00 n=6629
Tertiary Roadway	OR 0.99 n=16316	OR 1.28+ n=930	OR 0.96 n=1138	OR 1.00 n=1180

+ p<.10 * p<.05 **p<.01

Results – Adjusted Model

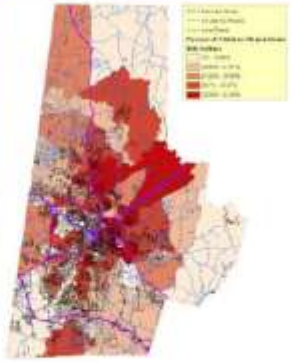
Asthma prevalence by distance to roadway

Age, race, gender, household median income, distance to other roadway types held constant

	< 75 m	75-150 m	150-300 m	> 300m
Primary Roadway	OR 0.99 n=347	OR 1.16 n=558	OR 1.06 n= 1203	OR 1.00 n= 16488
Secondary Roadway	OR 1.08 n= 5297	OR 1.13+ n= 2378	OR 1.02 n=4269	OR 1.00 n=6629
Tertiary Roadway	OR 0.80* n=13318	OR 1.04 n=930	OR 0.88 n=1138	OR 1.00 n=1180

+ p<.10 * p<.05 **p<.01

Asthma in Durham County

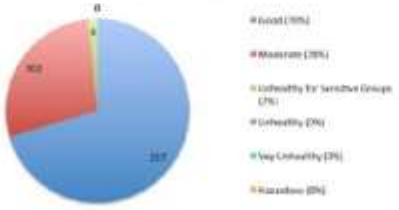


The effect of any particular type of roadway on asthma prevalence is not clear.

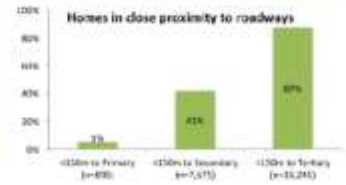
Special considerations for Durham

Air pollution is lower in Durham County than in many other metropolitan areas.

Daily air quality indicator (AQI) measurements for the Raleigh-Durham-Chapel Hill region



Special considerations for Durham

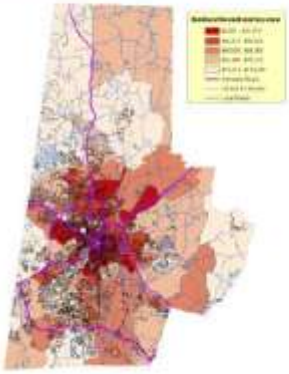


	Road type #2		
Road type #1	<150 m to primary	<150 m to secondary	<150 m to tertiary
<150 m to primary	100%	40%	86%
<150 m to secondary	8%	100%	74%
<150 m to tertiary	8%	26%	100%

Most homes in Durham Countyare near a tertiary roadway

Many homes are close to multiple types of roadways

Income in Durham County



Durham has a mixed demographic profile, with socioeconomic status that tends to be equally distributed, rather than clumped

Next steps - Methods

Refine modeling to account for:

1. Road density
2. Traffic Patterns and Flow
3. Seasonal and meteorological effects on air pollution

Next steps – Neighborhood patterns

Disadvantaged children with asthma are exposed to multiple sources of risk.

Traffic-related air pollution exposure also be linked to other neighborhood disparities:

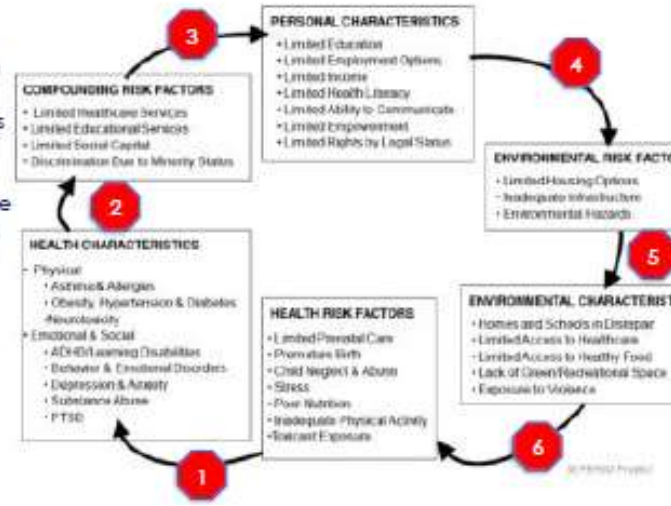
- Race
- Income
- Structural Damage of homes
- Crime

Breaking the Cycle

Asthma in Durham is the result of cumulative risks

How can we Break the Cycle?

1. Provide parents with coping mechanisms for stress
2. Limit exercise during peak traffic hours
3. Increase access to asthma treatment



4. Improve asthma education
5. Provide smoking cessation programs for parents
6. Reduce indoor air pollution

Acknowledgments

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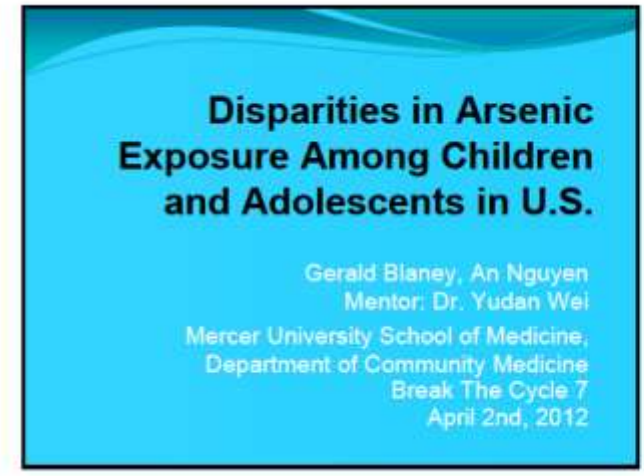
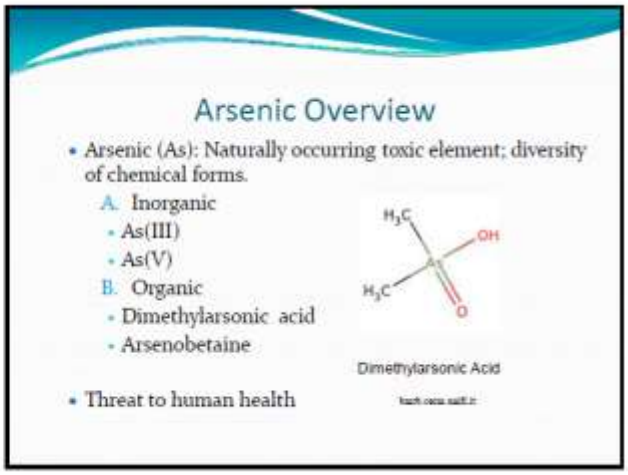
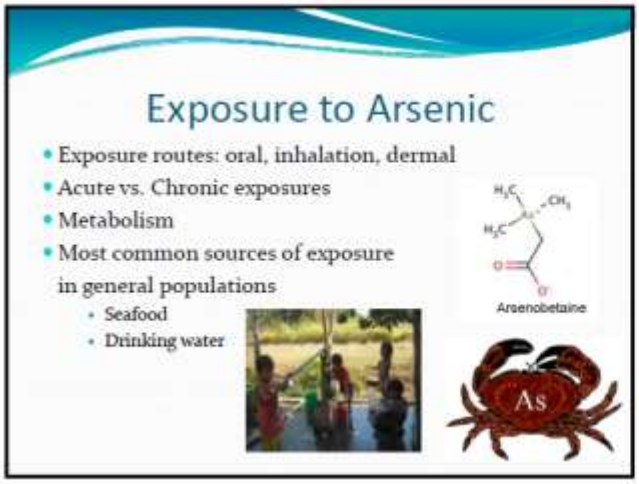
Disparities in Arsenic Exposure among Children and Adolescents in the US

Mercer University School of Medicine, Department of Community Medicine
Gerald Blaney, Student; Yudan Wei, PhD, MD, Faculty Mentor

Chronic arsenic exposure might be associated with cognitive delays, reduced IQ, poor memory in developing children, and a range of negative health outcomes later in life. In this study, data extracted from the CDC's National Health and Nutrition Examination Survey (NHANES), in cycles 2007-2008 and 2009-2010, were used to examine demographic and socio-economic factors which might be correlated with arsenic exposure. These factors included age, gender, household income, ratio of household income to poverty, education level of adults in the household, and occupations of adults in the household. Values for urine levels will be divided into quartiles; education, and income will be divided into high and low categories. The data will be analyzed by using Chi square and multiple regression models on SPSS. This study aims to reduce environmental health disparities among children and adolescents by identifying factors that contribute to the risk for arsenic exposure and by identifying high-risk populations.

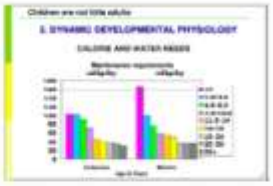






Arsenic Exposure in Childhood

- Childhood exposure can be critical.
- Most studies focus on adults.
- "Children are not little adults."
  - Physiology
  - Behavior
  - Diet
  - Longer potential lifespan



Possible Health Effects During Childhood

- Cognitive delays
- Arrhythmias
- Hypertension
- Blood vessel damage
- Respiratory problems
- Skin changes
- Reduced nerve function
- Nausea
- Vomiting
- Dizziness
- Insomnia
- Nightmares
- Fatigue
- Anemia

Delayed Health Effects of Childhood Exposure

- Peripheral vascular diseases (Black Foot Disease)
- Raynaud's disease
- Chronic kidney disease (CKD)
- Type II diabetes
- Increased mortality in young adults
- Cumulative effect of chronic ill-health during childhood

Getty Images

Delayed Health Effects of Childhood Arsenic Exposure

- Most serious effects may be delayed 5-20 years after exposure.
- Chronic exposure low level exposure lasting <5 years in childhood increases risk for cancers of
  - Skin
  - Liver
  - Bladder
  - Lungs
  - Colon
  - Kidney
  - Prostate

SES and Arsenic Exposure

- Socioeconomic Status (SES) indicators
  - Income
  - Education
  - Occupation
- Predictor of exposure to lead, mercury
- CDC and EPA recommendations to reduce arsenic exposure
- Hypotheses for SES barriers to reducing exposure

Methods

- National Health and Nutrition Examination Survey (NHANES) Data
  - Two cycles (2005-2006 and 2007-2008)
  - Age: 6-19 years
  - Both male and female
  - Independent variables: age, gender, race, socioeconomic status, source of water, seafood consumption
  - Dependent variables: Urinary concentrations of arsenic and speciated arsenics (μg/L)
  - Statistical analysis: Multivariate logistic regression

Methods

- The lower detection limits of Arsenic species:
  - Urinary Total Arsenic: 0.74 μg/L
  - Urinary Arsenous Acid(III) (Arsenite): 1.2 μg/L
  - Urinary Arsenic Acid(V) (Arsenate): 1.0 μg/L
  - Urinary Arsenobetaine: 0.4 μg/L
  - Urinary Arsenocholine: 0.6 μg/L
  - Urinary Monomethylarsonic Acid: 1.7 μg/L
  - Urinary Dimethylarsonic Acid: 0.9 μg/L
  - Urinary Trimethylarsine Oxide: 1.0 μg/L
- Among them, total arsenic, and dimethylarsonic acid were selected for data analysis due to more than 87% study participants having urinary levels of these compounds at or above the detection limit.

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Table 1. Urinary levels of arsenic species among the study participants

Compound	50th Percentile Value (μg/L)	n	# ≥ 50th Percentile	% ≥ 50th Percentile
Total Arsenic	7.29 (0.52 – 836.70)	5738	911	15.88
Dimethylarsonic Acid	3.99 (1.20 – 123.00)	5738	909	15.84

Table x. Distribution of selected demographic characteristics, seafood consumption, and source of water by urinary levels of total arsenic among the study participants

Variable		n	# high exposure*	% high exposure*	95% CI
Age	6-12 years	2757	420	15.23	13.89, 16.57
	13-19 years	2981	491	16.47	15.14, 17.80
Gender	Male	2887	469	16.25	15.56, 18.32
	Female	2851	422	14.80	13.50, 16.10
Race	White	1598	207	12.95	11.30, 14.59
	Black	1727	288	16.68	14.92, 18.45*
	Other	2413	416	17.24	15.73, 18.75*
Income	< $35k	3927	612	15.58	14.45, 16.71
	≥$35K	1697	268	15.79	14.06, 17.53
Consumed Shellfish	No	3336	457	13.70	12.53, 14.87
	Yes	2119	405	19.11	17.44, 20.78*
Consumed Fish	No	2930	373	12.73	11.52, 13.94
	Yes	2524	489	19.37	17.83, 20.91*
Home Water Source	Municipal	3359	525	15.63	14.40, 16.85
	Private/Public Well	2229	363	16.24	14.71, 17.77
	Other	88	11	12.50	5.96, 19.02
Total		5736	911	15.88	14.93, 16.83

*High exposure was defined as a 50th percentile (7.79 ug/L) of urinary total arsenic level

Table y. Distribution of selected demographic characteristics, seafood consumption, and source of water by urinary levels of dimethylarsonic acid among the study participants

Variable		n	# high exposure*	% high exposure*	95% CI
Age	6-12 years	2757	446	16.16	14.81, 17.55
	13-19 years	2981	463	15.53	14.23, 16.83
Gender	Male	2887	491	16.47	15.12, 17.82
	Female	2851	418	14.66	13.43, 15.96
Race	White	1598	203	12.70	11.07, 14.33
	Black	1727	279	16.16	14.42, 17.81*
	Other	2413	427	17.70	16.18, 19.22*
Income	< $35k	3927	605	15.41	14.27, 16.54
	≥ $35K	1697	280	16.50	14.73, 18.27
Consumed Shellfish	No	3336	495	14.84	13.63, 16.05
	Yes	2119	366	17.27	15.66, 18.88
Consumed Fish	No	2930	420	14.33	12.81, 15.85
	Yes	2524	441	17.47	15.99, 18.95*
Home Water Source	Municipal	3359	533	15.87	14.63, 17.11
	Private/Public Well	2229	350	15.70	14.19, 17.21
	Other	88	13	14.77	7.36, 22.18
Total		5736	909	15.84	14.89, 16.78

*High exposure was defined as a 50th percentile (3.78 ug/L) of urinary DMA level

Table 4. Odds ratios of the association between independent variables and urinary levels of arsenic species

Variable		OR (95% CI)	
		Total Arsenic	Dimethylarsonic Acid
Age	6-12 years	1.00	1.00
	13-19 years	1.113 (0.912, 1.357)	0.915 (0.750, 1.117)
Gender	Male	1.00	1.00
	Female	0.805 (0.660, 0.983)*	0.831 (0.681, 1.014)
Race	White	1.00	1.00
	Black	1.395 (1.109, 1.731)*	1.445 (1.159, 1.801)*
	Other	1.474 (1.182, 1.838)*	1.536 (1.236, 1.910)*
Income	< $35k	1.00	1.00
	≥ $35K	1.231 (0.987, 1.534)	1.250 (1.004, 1.556)*
Consumed Shellfish	No	1.00	1.00
	Yes	1.303 (1.057, 1.605)*	1.047 (0.848, 1.292)
Consumed Fish	No	1.00	1.00
	Yes	1.776 (1.443, 2.185)*	1.391 (1.129, 1.713)*
Home Water Source	Municipal	1.00	1.00
	Well	1.069 (0.865, 1.322)	0.925 (0.750, 1.142)
	Other	0.561 (0.250, 1.256)	0.473 (0.237, 0.942)*

Discussion

- Comparison with previous studies
  - SES and children's environmental exposures
  - Arsenic exposure
  - Bottled water
- Divergent opinions in literature
  - Adjusting for urinary creatinine
  - Adjusting for arsenobetaine
- Urinary dimethylarsonic acid could indicate inorganic and/or organic arsenic exposures.
- 87% of dimethylarsonic acid were at or above detection limits.

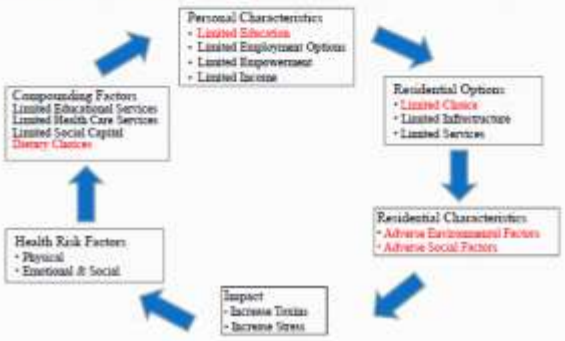
Limitations

- Geographic data is restricted; arsenic levels in groundwater are unevenly distributed.
- Industry specific occupation data unavailable for parents.
- Education for parents
- Unidentified confounders
- Cross-sectional study

Conclusion

- There is a statistically significant increase in total urinary arsenic and urinary dimethylarsonic acid levels among African-American and Other Races, compared to Whites, and in those who consumed fish and shellfish.
- Could be related to socioeconomic status, parents' education level, residential proximity to industry.
- Further study is warranted for the racial disparities in arsenic exposure.

Breaking the Cycle



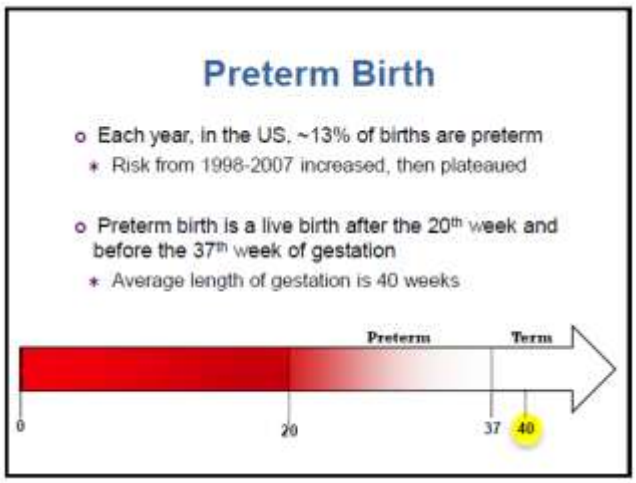
Acknowledgements

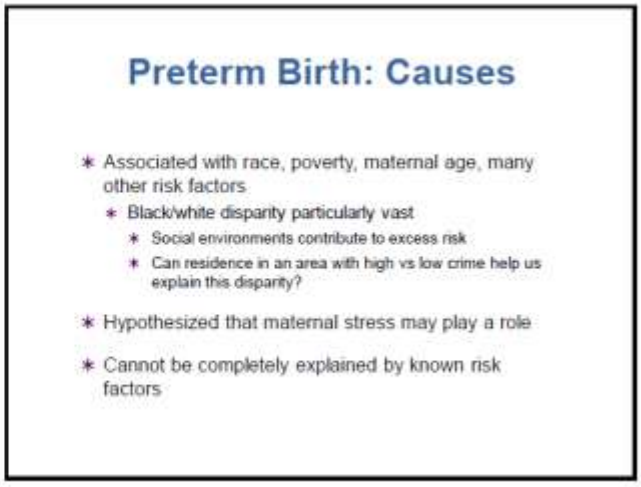
- Southeast Pediatric Environmental Health Specialty Unit at Emory University.
- Break the Cycle 7 of Children's Environmental Health Disparities

Temporal Trends in Small-Area Violent Crime and Preterm Birth

Emory Rollins School of Public Health, Epidemiology
Lauren Messina, Student; Michael Kramer, PhD, Faculty Mentor

Infants born before 37 gestational weeks are considered preterm. Preterm birth is associated with significant perinatal mortality; for children that survive, preterm birth is associated with reduced cognitive ability and other obstacles for children later in life. Various factors are associated with an increased risk of preterm birth, including maternal race, nutritional status, pregnancy history, psychological characteristics, and adverse behaviors. Maternal exposure to community violence has been shown to be associated with preterm birth, but the causal effect of violence on this adverse birth outcome is unknown. The temporal trends are assessed in the association between small-area violent crime and preterm birth in Atlanta, Georgia by calculating the odds of preterm birth, controlling for neighborhood and individual level characteristics, for the years 1997-2007. Multilevel, multivariate logistic regression is used for the analysis. It is expected that the incidence of preterm birth will decrease with decreasing crime within the proximity of the mother's neighborhood, controlling for other neighborhood and individual-level factors.





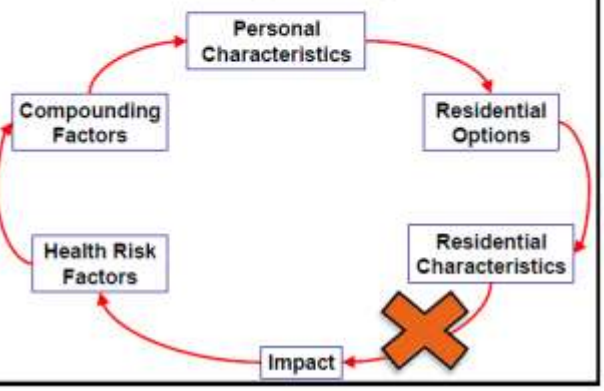
Preterm Birth and Violent Crime

- Several studies have investigated this relationship
  - Mixed evidence of an association; no consensus
    - One study: Effect differs by race
      - Association of preterm birth with violent crime among blacks, but not among whites
    - Another study: No association of preterm birth and violent crime overall
      - There *is* an association between violent crime and low birth weight
  - Analyses in other cities
    - Results applicable in Atlanta?

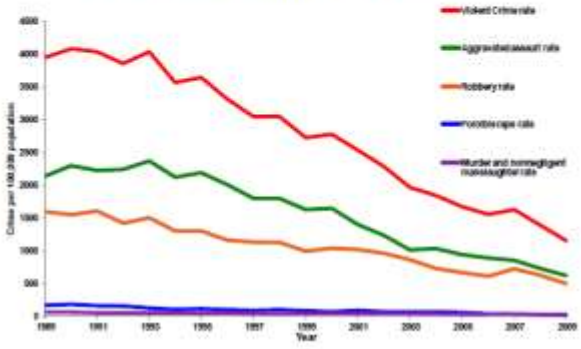
Research Objective

- Explore the relationship between preterm birth and small-area violent crime in Atlanta over a 9-year period, controlling for other factors associated with preterm birth

Breaking the Cycle



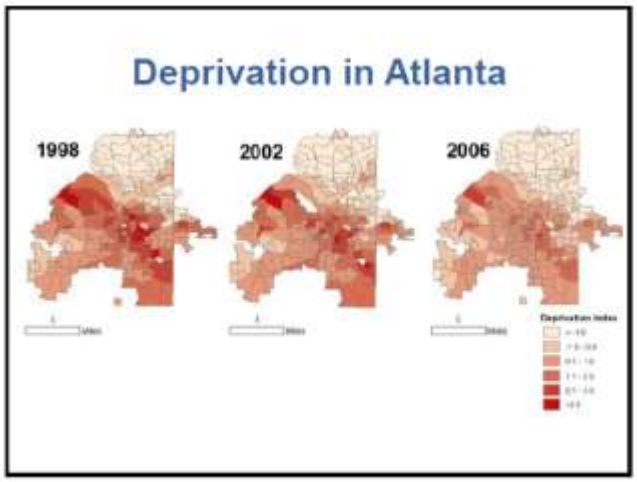
Violent Crime in Atlanta



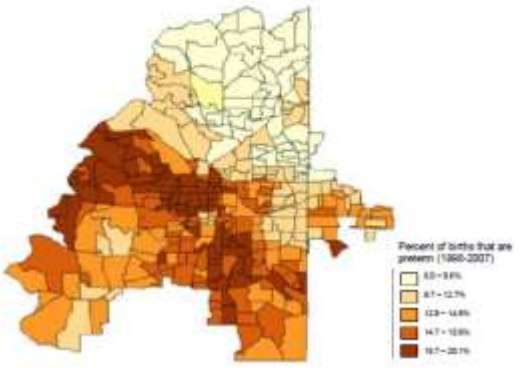

Violent Crime in Atlanta
1998
2002
2006
Data from the Atlanta Police Department

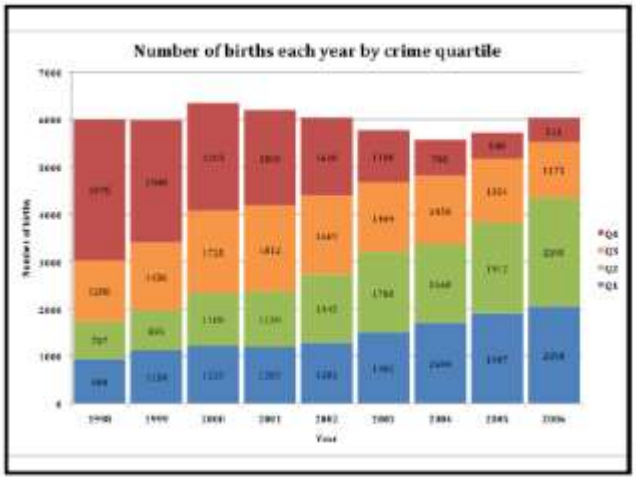

Poverty in Atlanta
1998
2002
2006


Violent Crime in Atlanta
1998
2002
2006


Deprivation in Atlanta
1998
2002
2006

Preterm Birth in Atlanta





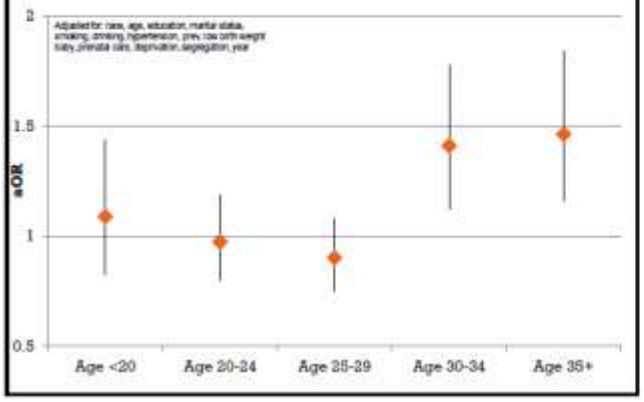
Improving on Previous Studies

- Atlanta provides a unique opportunity for study:
  - Substantial decrease in crime
    - No substantial difference in population characteristics
      - Poverty
      - Deprivation
  - Multiracial population
  - Exchangeability within neighborhoods
    - Despite high segregation in the metropolitan area, there are many multiracial neighborhoods in the city of Atlanta
- Analysis over several years
  - Allows investigation of causal relationship
    - Opportunity for interventions?

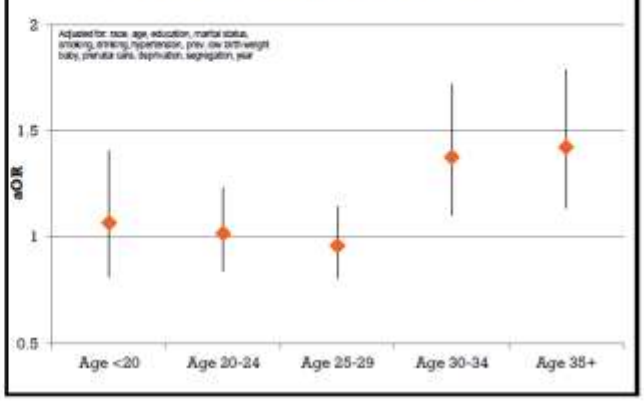
Methods

- Multilevel logistic regression
  - Calculating the association between an exposure (violent crime) and disease (preterm birth)
  - Control for (or hold constant) any factors that might be confounding the association between violent crime and disease
    - Individual-level predictors
      - Race, age, education, marital status, smoking, drinking, hypertension, previous low birth weight baby, prenatal care
    - Neighborhood-level predictors
      - Deprivation, segregation
    - Year
  - Accounting for the association of people within a neighborhood
    - Same exposure to neighborhood violent crime rate
  - Calculate an unbiased estimate

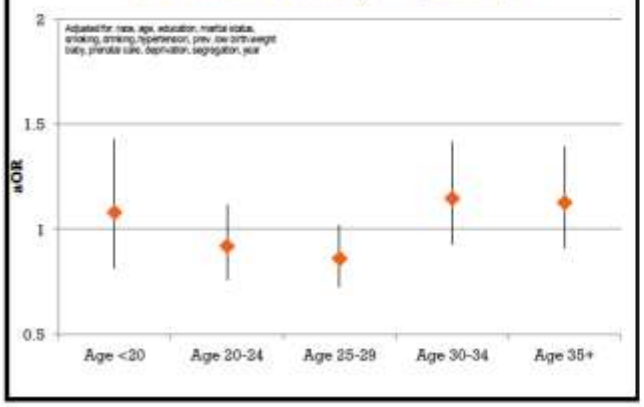
Comparing Highest Crime (4th quartile) to Lowest Crime (1st quartile)



Comparing Medium-High Crime (3rd quartile) to Lowest Crime (1st quartile)



Comparing Medium-Low Crime (2nd quartile) to Lowest Crime (1st quartile)



Results

- Violent crime is significantly associated with preterm birth overall, when controlling for individual and neighborhood effects
- Older women in high crime neighborhoods are more likely to give birth to preterm infants compared to older women in low-crime neighborhoods
- There is no significant association of violent crime with preterm birth among women younger than 30

Weathering Hypothesis

- Women who live in certain neighborhoods are exposed to chronic stress over long periods of time
  - High crime
  - Poverty
  - Segregation
- Chronic stress accelerates aging
  - For all women, the risk of preterm birth increases as the woman ages
  - Women exposed to chronic stress have higher risk of preterm birth earlier in life compared to women not exposed to chronic stress
- Crime (as used in this analysis) is a proxy measure for women who don't have the resources to get out of a high-crime neighborhood
- Limitation: we didn't measure chronic stress

Further Analyses

- Tract-level effects
  - Is the relationship different on a different spatial scale?
- Investigating the interaction of age with violent crime
  - Why does risk differ by age?
  - Weathering effect?
- Unmeasured confounding
  - Is something we haven't measured causing this association?
  - If we control for this statistically, will the association go away?

Acknowledgements

- Professor Michael Kramer
- Dr. Leslie Rubin, Dr. Robert Geller, Dr. Maeve Howett
  Dr. Michele Marcus and Janice Nodvin

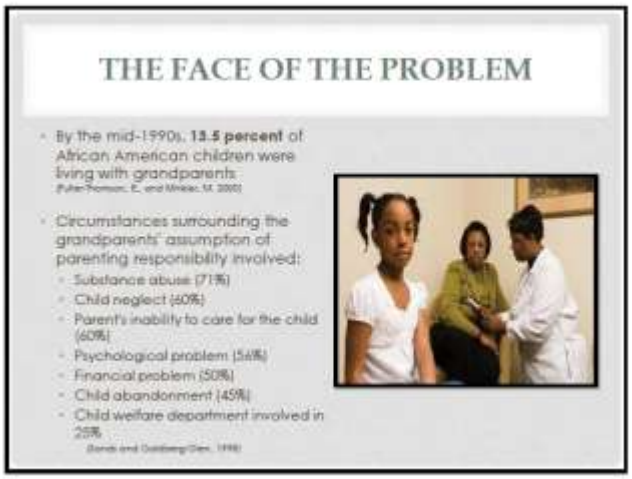
Thank you!

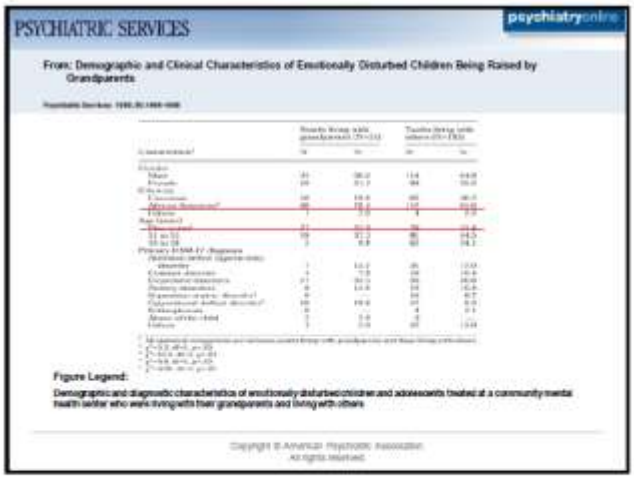
Breaking the Cycle in GRANDD Style

Emory University Nell Hodgson Woodruff School of Nursing

Ashley Cannon Deringer, Cherish Holt, Randi Bliss Kotal-Lee, and Brett Winston, Students; Maeve Howett, PhD, APRN, CPNP-PC and Janice Nodvin, Mentors

Project GRANDD, a support program for Grandparents Raising and Nurturing Dependents with Disabilities has been caring for families since 2005. A critical problem identified as contributing to diminished quality of life was the grandparent's own poor health and wellness as well as lack of access to available resources. To address these problems, nurse practitioner students made home visits to do a health history and physical, an environmental and safety home assessment and a community windshield survey. This project describes the initial pilot that included six families cared for by 12 nurses and the resultant findings in this vulnerable population.




PSYCHIATRIC SERVICES

psychiatryonline

From: Demographic and Clinical Characteristics of Emotionally Disturbed Children Being Raised by Grandparents

Figure Legend:

Demographic and diagnostic characteristics of emotionally disturbed children and adolescents treated at a community mental health center who were living with their grandparents and living with others

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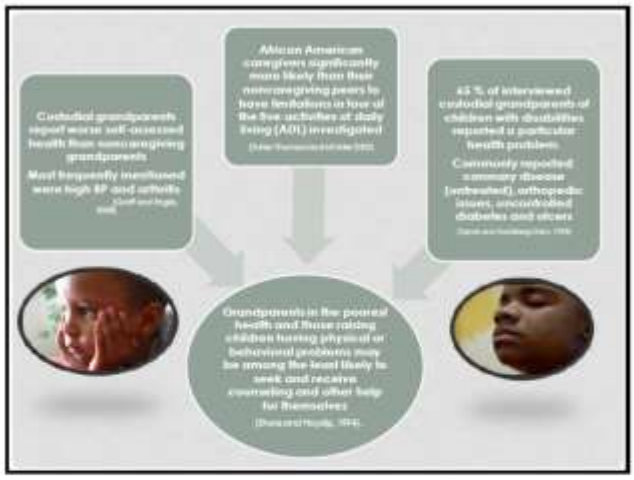


WORKING TOGETHER TO BREAK THE CYCLE

- Elective community project for students
- GRANDD coordinator provided family background and history, resource packets, program goals, education and guidance
- NWHSON faculty mentors provided standardized Health History and Physical forms, windshield survey instruction, clinical guidance and debriefings

GRANDD H-HAP

HOME AND HEALTH IN-HOME ASSESSMENT PROGRAM

- GRANDD coordinator attended initial visits to provide introductions and build trust
- 12 students paired with 6 GRANDD families to make in-home health and home assessments

HOME VISITS

- Windshield surveys
- Extensive health history, Rx reconciliation, focus on health concerns and risk factors
- Physical exams, BP checks, focused assessments on any areas of concern
- Environmental and safety home assessment
  - Child risks -medication safety
  - Environmental eval for older adults- fall risk assessments

GRANDD H-HAP PILOT INTENT

- ANP/GNP students to do home visits focused on the adult caregiver's health, safety, health education
- Visits, follow-up and relationships will have a positive impact on the stability and safety of family units
- Pilot will offer opportunity for process improvement, goal setting, growth, recruitment, basis for potential data collection

ANTICIPATED OUTCOMES

- Custodial grandparents exhibit better health literacy and more self-care behaviors
- Students will have increased awareness of the cycle of disability and disadvantage through exposure to the complex multi-generational custody arrangements of at risk children
- Positive experiences and learning opportunities that will serve as a foundation for continuation and possible expansion of the program

RELATIONSHIPS ARE WORTH A THOUSAND WORDS

Resolve to be tender with the young, compassionate with the aged, sympathetic with the striving, and tolerant with the weak and the wrong. Sometime in your life you will have been all of these. ~ Robert H. Goddard

LESSONS LEARNED AND CHALLENGES

- Transition and hand-off challenges
- Long term goals for GRANDDs and students
- Time and travel constraints
- Resource availability
- Pros/Cons of pre/post evaluation
- Growth and expectation management
- Anecdotal experiences consistent with literature

NEXT STEPS

SOME PEOPLE, NO MATTER HOW OLD THEY GET, NEVER LOSE THEIR BEAUTY - THEY MERELY MOVE IT FROM THEIR FACES INTO THEIR HEARTS. ~MARTIN BUXBAUM

ACKNOWLEDGEMENTS

- Janice Nodvin
- Maeve Howett
- Leslie Rubin
- Darla Ura

isdd institute for the study of disadvantage and disability

PEHSU

EMORY NELL HODGSON WOODRUFF SCHOOL OF NURSING

From No Power to Empower:
Living the World of Disadvantage and Disability
Marian Jackson, President of People First of Georgia

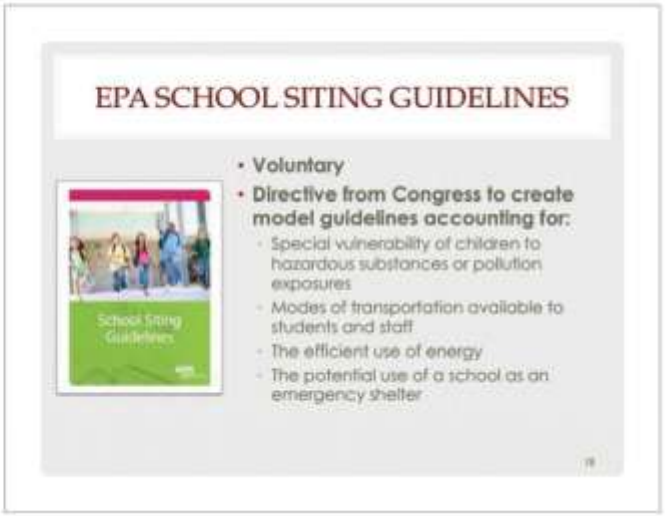
Marian Jackson understands the world of disability from many perspectives. She is a person with a disability, and the parent of an adult with a disability. After a childhood of poverty, discrimination and living in isolation without support for many years, Ms. Jackson discovered self-advocacy through groups and services that empower people with disabilities to find the support that they need. Meeting and working with others in the disability movement dramatically changed her life. Today, she is on a mission to teach others how it feels to be empowered and to work together for social change.

II. INTERVENTIONS

School Siting: Breaking The Cycle of Environmental Impact

Rebecca Watts Hull and Robert Geller, MD

The choice of the site for a new public school has long been a controversial matter. In the past, the site chosen was often located at a long distance from the community being served. This distance resulted in limited parent and student engagement and increased travel, therefore more vehicular traffic, more vehicular air pollution, and longer time squandered in cars going to and coming from school. Recent practices favor increased community involvement in the siting decision, use of smaller land parcels closer at hand to the community being served, and implementation of high-efficiency school building practices.



SCHOOL SITING PRINCIPLES

ANALYTICAL LENSES

School System

School Users
- Teachers
- Students
- Staff
- Family

Local Government

Community

School System

- What are the state requirements?
- What size should the school be?
- How much property do we need?
- How much will it cost to buy the property and construct the school?
- How much will it cost to own and operate the school?

School Users

- What will the school and classrooms look like?
- What amenities will be provided?
- Will the surroundings stimulate learning?
- How will students get to school? Can they walk?
- Is the school safe?

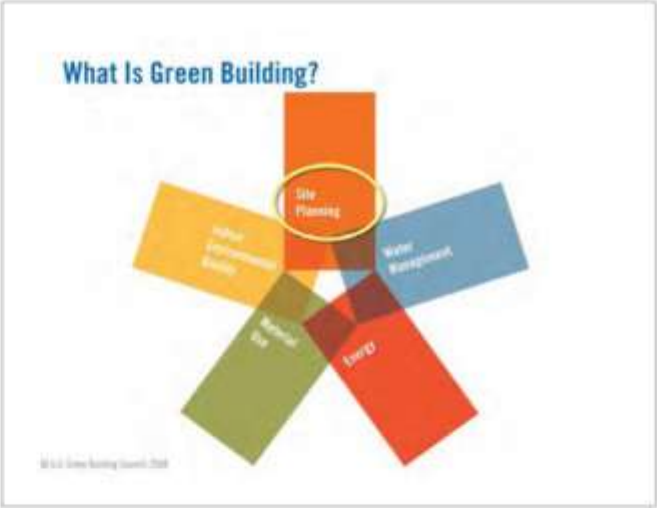
Community

- Do we need a new school? Can the existing school be renovated?
- Will the current school close? What will happen to the building?
- Will the school, playgrounds, etc. be accessible to the community?
- Are there environmental hazards?
- Can we have input about where new schools are located?

Local Government

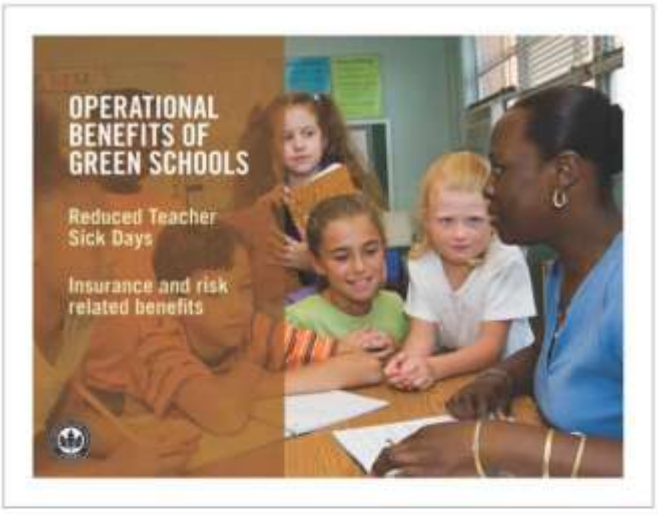
- What are the water and sewer needs of the new school? Do we have adequate capacity?
- Will the surrounding roads support the anticipated traffic?
- Are the school locations coordinated with the future land use plan?
- How will the location impact the demand for local government services?

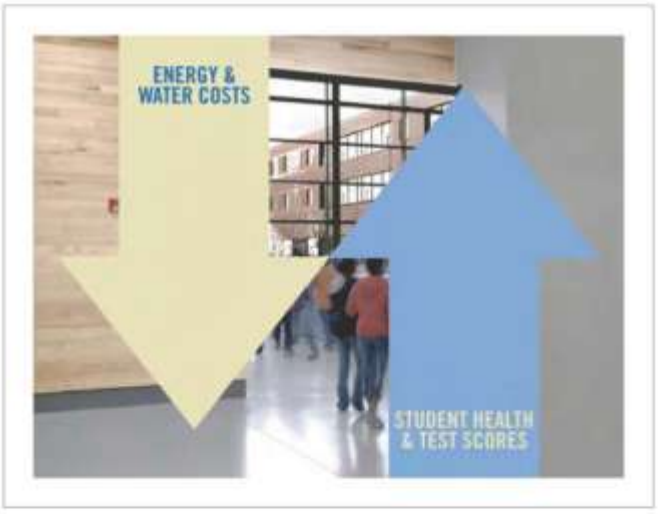

Environmental Siting Criteria Considerations
Before the Siting Process Begins
Environmental Review Process
HIGH PERFORMANCE, HEALTHY SCHOOL

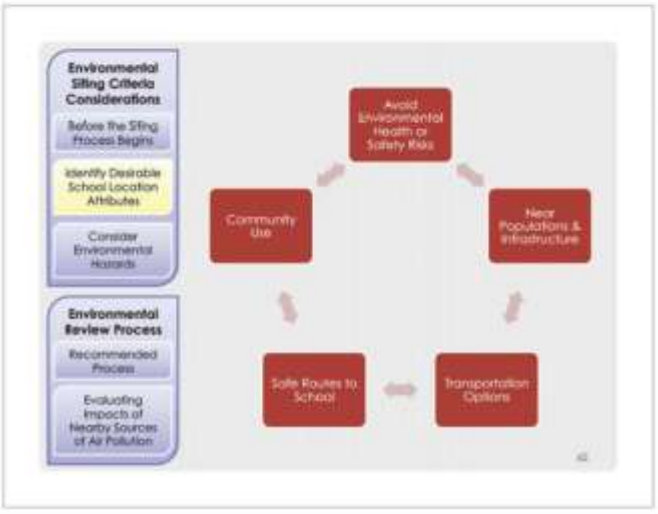

What Is Green Building?
Site Planning


HEALTH BENEFITS OF GREEN SCHOOLS
25%
reduction in asthma
15%
reduction in colds and flu

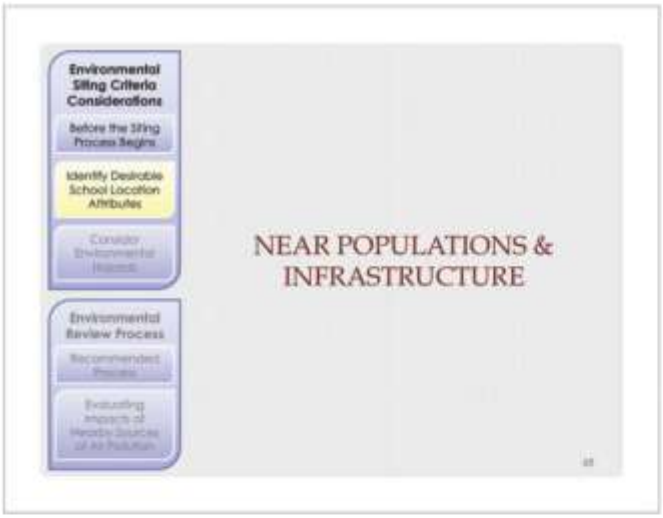

LEARNING BENEFITS OF GREEN SCHOOLS
3%
increase in learning, productivity & performance
3%
reduction in teacher turnover

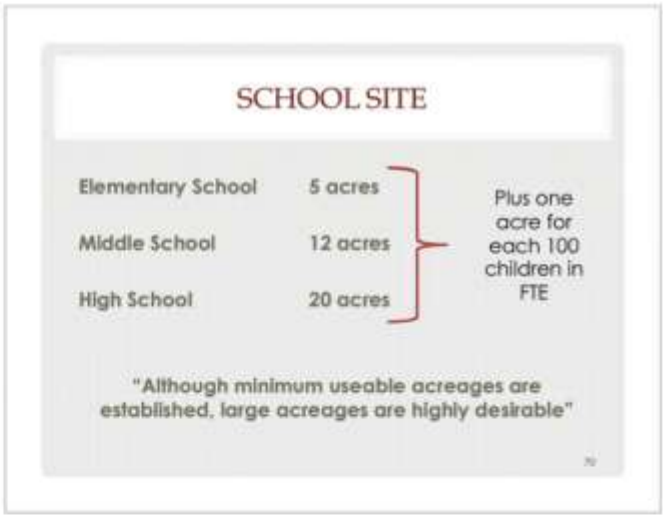

OPERATIONAL BENEFITS OF GREEN SCHOOLS
Reduced Teacher Sick Days
Insurance and risk related benefits


ENERGY & WATER COSTS
STUDENT HEALTH & TEST SCORES


Environmental Siting Criteria Considerations
Before the Siting Process Begins
Identify Desirable School Location Attributes
Consider Environmental Hazards
Environmental Review Process
Recommended Process
Evaluating Impacts of Nearby Sources of Air Pollution
Avoid Environmental Health or Safety Risks
Near Populations & Infrastructure
Transportation Options
Safe Routes to School
Community Use

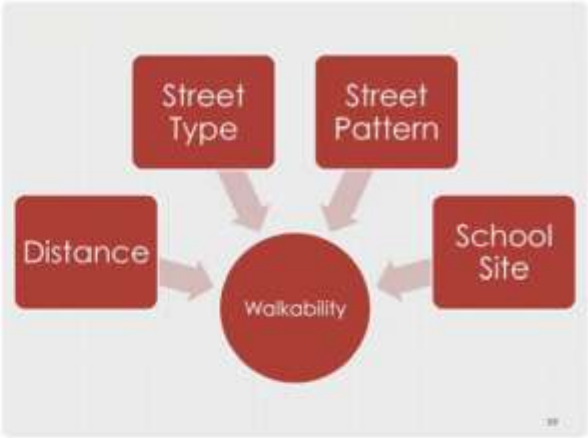

Environmental Siting Criteria Considerations
Before the Siting Process Begins
Identify Desirable School Location Attributes
Environmental Review Process
AVOID ENV. HEALTH OR SAFETY RISKS


Environmental Siting Criteria Considerations
Before the Siting Process Begins
Identify Desirable School Location Attributes
Environmental Review Process
NEAR POPULATIONS & INFRASTRUCTURE


SCHOOL SITE
Elementary School 5 acres
Middle School 12 acres
High School 20 acres
Plus one acre for each 100 children in FTE
"Although minimum useable acreages are established, large acreages are highly desirable"

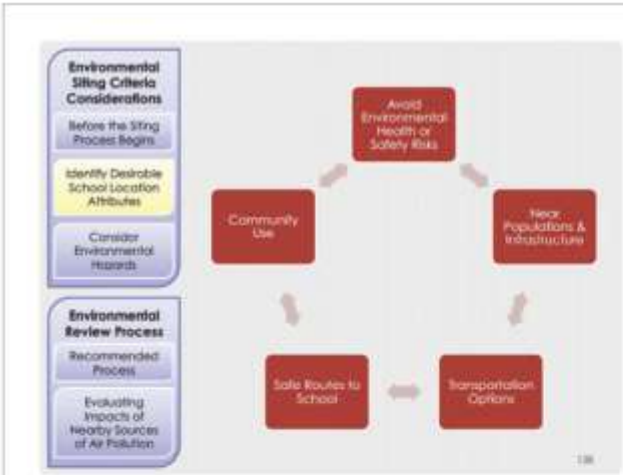

Environmental Siting Criteria Considerations
Before the Siting Process Begins
Identify Desirable School Location Attributes
Environmental Review Process
TRANSPORTATION OPTIONS

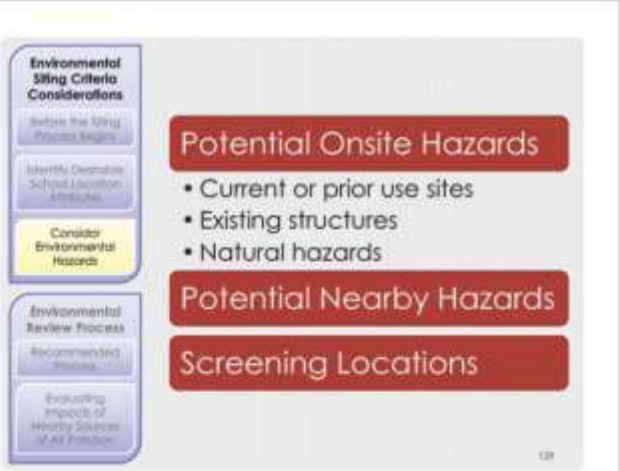

Modes
School Bus
Car
Walk
Bike
Impacts
Air Quality
Health
Costs
VMT


Street Type
Street Pattern
Distance
School Site
Walkability

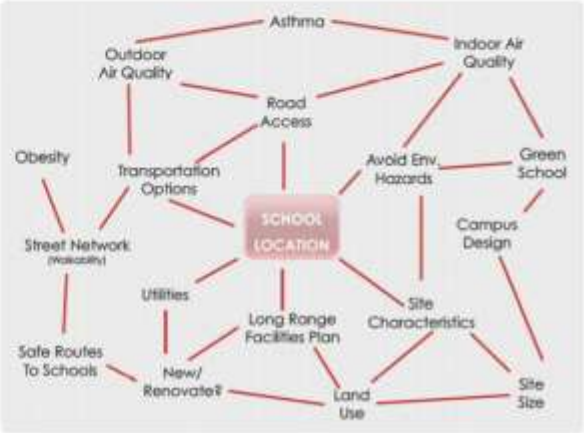

Environmental Siting Criteria Considerations
Before the Siting Process Begins
Identify Desirable School Location Attributes
Environmental Review Process
COMMUNITY USE


EMERGENCY SHELTER
EMA's
Red Cross
Health Dept.
Others


Environmental Siting Criteria Considerations
Before the Siting Process Begins
Identify Desirable School Location Attributes
Consider Environmental Hazards
Environmental Review Process
Recommended Process
Evaluating Impacts of Nearby Sources of Air Pollution
Avoid Environmental Health or Safety Risks
Community Use
Near Populations & Infrastructure
Safe Routes to School
Transportation Options


Environmental Siting Criteria Considerations
Consider Environmental Hazards
Environmental Review Process
Potential Onsite Hazards
• Current or prior use sites
• Existing structures
• Natural hazards
Potential Nearby Hazards
Screening Locations


HAZARDS CRITERIA
Georgia:
• Phase I required
• Provided recommendations:
- Hazards list
- Distances
EPA Guidelines (4.4)
• Onsite hazards
• Nearby hazards
• Factors influencing exposures and potential risks table
• Initial screening potential table

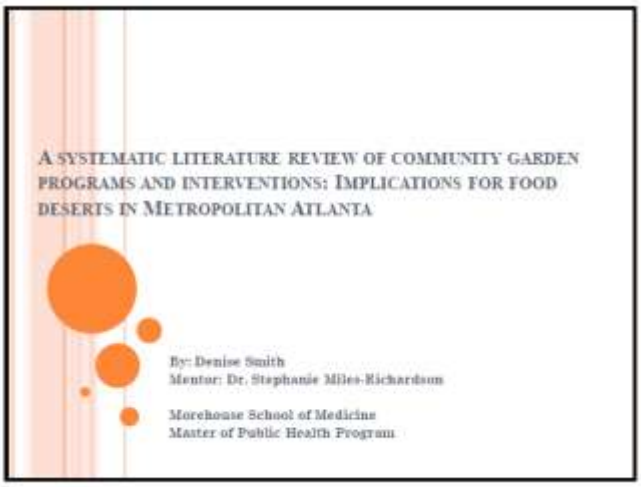

Asthma
Outdoor Air Quality
Indoor Air Quality
Road Access
Obesity
Transportation Options
Avoid Env. Hazards
Green School
SCHOOL LOCATION
Campus Design
Street Network
Utilities
Site Characteristics
Long Range Facilities Plan
Safe Routes To Schools
New/ Renovate?
Land Use
Site Size

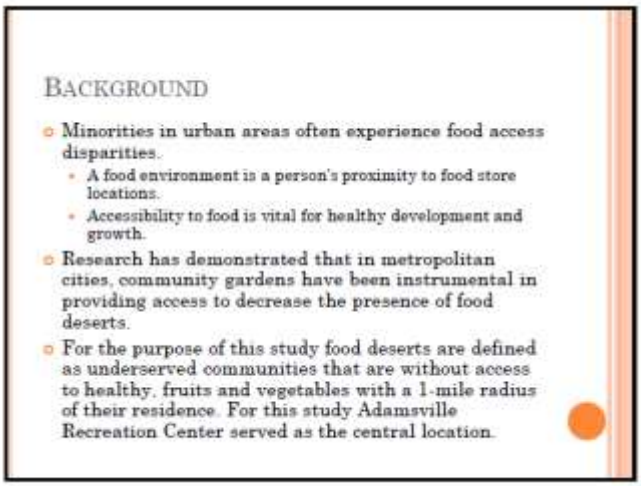
Impact of Community Garden Programs on Food Deserts in a Metropolitan Atlanta Community

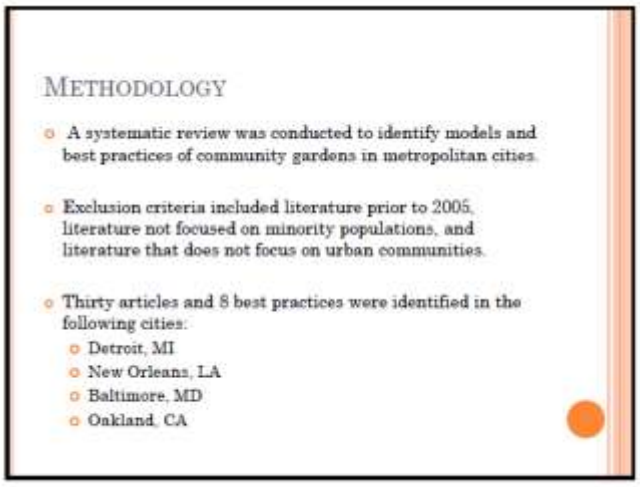
Morehouse School of Medicine, Masters of Public Health

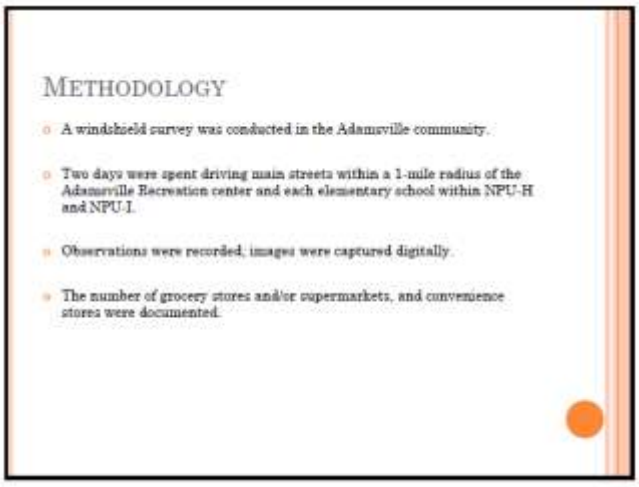
Denise Smith, Student; Stephanie Miles-Richardson, DVM, PhD, faculty mentor

People living in less affluent urban areas tend to have less access to high quality food. Food deserts are defined as low income communities without ready access to healthy, affordable food. In metropolitan cities, community gardens have been instrumental in bridging the gap to decrease the presence of food deserts. In areas described as food deserts, community gardens may serve as a critical component to address food deserts in urban communities. This project will include a windshield survey of such a community in metropolitan Atlanta to assess whether a food desert exists, and will review the literature about the impact of community gardens on food deserts in urban communities.









Research Questions:

1. Is there a food desert in the Adamsville community in metropolitan Atlanta?
2. What are best practices and/or models for community gardens in urban communities?

Hypothesis:

1. The windshield survey of Adamsville will reveal that a food desert exists.
2. A systematic review of the literature will reveal that community garden interventions are a useful a tool in addressing food deserts in urban communities.

Literature Review

- Many minority communities have little to no access to a grocery store, farmers' markets or other sources of fresh fruits and vegetables, which characterizes them as underserved.
- Lack of access to fruits and vegetables can have a negative impact on an individuals diet, which can lead to a development of chronic disease. African Americans in the State of Georgia have a higher prevalence of chronic disease(CDC, 2010).

Literature Review

- Evidence-based research strongly suggests that the consumption of fruits and vegetables provides sources of vitamins and minerals, to include vitamins A, C, E, and folate, which play a significant role in reducing the risk of chronic disease.
  - *Heimendinger (1996), Robinson-O'Brien (2002) and Van Duyn (2003)*
- Underserved neighborhoods in particularly urban inner cities such as New Orleans, Detroit, Oakland and even Atlanta are populated with convenience stores and fast food restaurants that sell primarily cheap, high-sugar, high-fat, processed foods.
  - *Drewnoski, 2004*
- Community gardens have been used to break the cycle and provide access to healthy fruits and vegetables in underserved communities.

Results

SYSTEMATIC LITERATURE REVIEW

Cities	New Orleans	Detroit	Baltimore	Oakland	Atlanta
Population	343,829	713,777	620,961	409,184	420,003
Demographics	60.2% Black 33% White 5.2% Hispanic	82.7% Black 10.6% White 6.8% Hispanic	63.7% Black 29.6% White 4.2% Hispanic	27.4% Black 27.1% White 25.5% Hispanic	54% Black 38.4% White 5.2% Hispanic
% Persons below poverty level	24.4%	34.5%	21.3%	17.2%	22.6%
Median Income level	$37,468	$28,357	$39,386	$49,721	$45,171
% Population That Uses Public Transportation	20%	15%	30%	25%	30%
Food environment	4.76/10,000 grocery stores, 1.49/10,000 con	2.81/10,000, 2.64/10 000	3.08/10,000, 1.52/10, 000	2.50/10,000, 0.67/10, 000	1.91/10,000, .59/10,0 00
Best Practices	Supermarket development in underserved comm., tax incentives, food banks and comm. gardens	Developed independent grocery stores, food banks and greenhouse gardens to provide a coess.	Local gardens & food banks provided access fresh healthy foods.	Incentives for super markets, food policy councils, and commun nity gardens.	*ALFI address food security in Atlanta. L ocal gardens, fa rmers markets, food policy councils.

*ALFI – Atlanta Local Food Initiative

NEIGHBORHOOD PLANNING UNIT H & I

LEGEND

- Grocery stores
- Convenience Stores
- Schools
- Adamsville Recreation Center

NPU H & I are separated by Interstate 285.

WINDSHIELD SURVEY

Neither the Adamsville Recreation Center nor any of the partnering schools are located in a food desert.

Wayfield Supermarket
- Adamsville Elementary School
- Fain Elementary School

Publix Supermarket
- Peyton Forest Elementary
- Atlanta Heights Elementary

Kroger Supermarket
- Harper- Archer Middle School
- Mays High School

DISCUSSION

- Although the Adamsville Community did not meet the definition of a food desert, the development of a community garden could serve as an additional resources of fruits and vegetables in the Adamsville community.
- Community gardens can provide children with nutritional education and help develop healthy eating behaviors at an early age. This may lead to a decrease in the prevalence of chronic disease and obesity in adulthood.
- Best practice from other metropolitan cities can be adopted by the City of Atlanta as a means to provide underserved communities with additional access to fruits and vegetables.

RECOMMENDATIONS

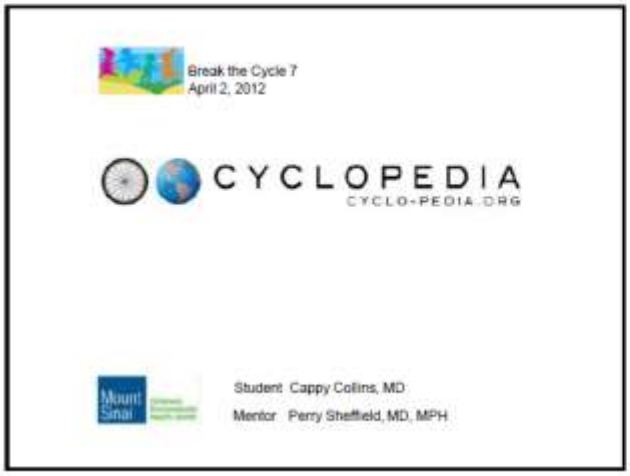
- Supermarket tax incentives can persuade chain stores to located in underserved areas.
- Food policy councils within the city can ensure that urban communities have access to healthy foods.
- Healthy snack carts at schools and afterschool programs can provide options for children.

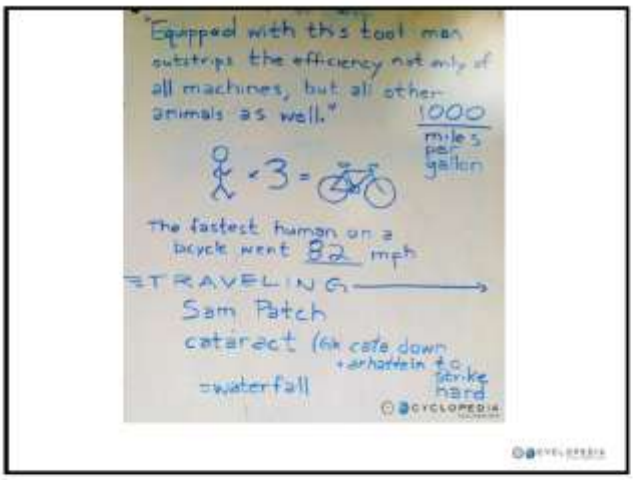
Cyclopedia: Improving Social Health Through a Positive Youth Development Bicycle Program

Mt. Sinai School of Medicine, Preventive Medicine

Geoffrey "Cappy" Collins, MD, student; Perry Sheffield, MD, MPH, faculty mentor

Urban, low-income and minority populations are disproportionally affected by numerous health disparities such as poorer school performance and higher rates of obesity in adolescents. Effective community-based positive youth development (PYD) initiatives may address their psychosocial root causes. The potential of bicycling programs, as a particular form of PYD programming, is great, but has not been evaluated. Cyclopedia is a 12 week program of rides, each with a lesson plan, and opportunities for self-expression in the form of writing and photography. We administered a locally-validated survey to assess program efficacy.




"Equipped with this tool man outstrips the efficiency not only of all machines, but all other animals as well."
1000 miles per gallon
<3 =
The fastest human on a bicycle went 82 mph
TRAVELING
Sam Patch
cataract (6ft cate down
+ arhaddein to strike hard
=waterfall
CYCLOPEDIA


Comments


CYCLOPEDIA
2010 Total Trip Mileage: 110
Charlotte


HIGHER YET!
Sam's Last Jump
There's no Mistake in
SAM PATCH


Cycle of Environmental
Health Disparities

Problem	Intervention	Outcome/ Measurement
Nature-Deficit Disorder		Healthy Children
Social Health		READY Survey
Obesity		BMI
Physical Fitness		Fitness Test
ADHD		Behavior Scoring
School Performance		Grades
Teen Pregnancy		No babies

	2010	2011
Participants	18 (boys)	50 (boys and girls)
Aggregate Miles	743.6	870.0
Miles/Rider	41.3	17.4
Aggregate Hours	N/A	365.0
Hours/Rider	N/A	7.3
Aggregate Posts	46.0	27.0
Posts/Rider	2.6	0.5
Aggregate Photos	N/A	1273.0
Photos/Rider	N/A	25.5

Collaborators

Shawn Brown (Boys and Girls Club)
Marc Lavender, MD (University of Rochester)
Andrew Aligne, MD (University of Rochester)

Thank You

Pediatric Environmental Health colleagues (MSSM)

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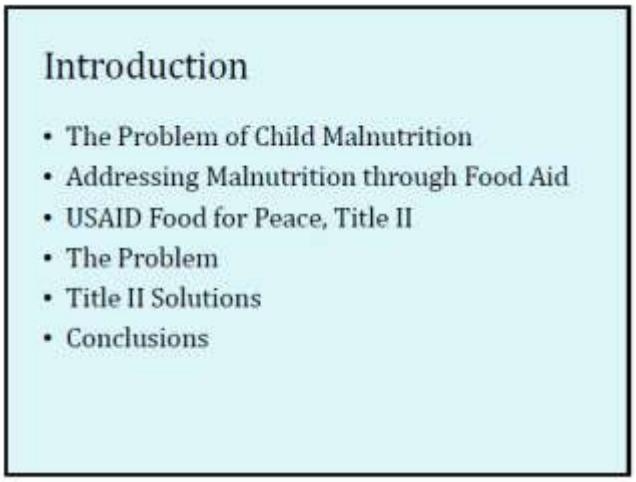
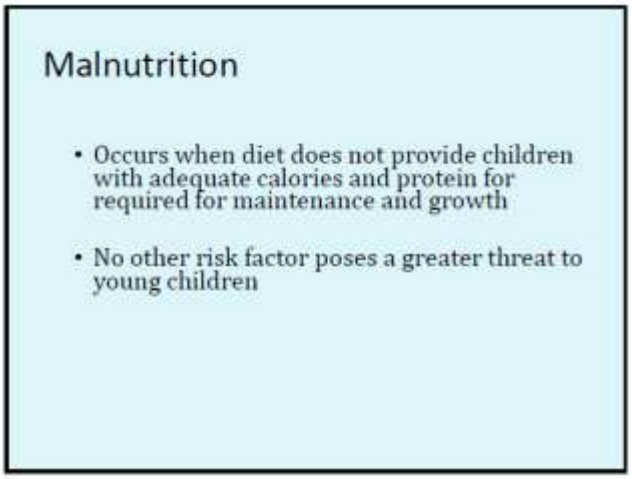
Effectiveness of Foreign Food Aid Initiatives in Addressing Child Malnutrition and Long-Term Impact on Children's Health

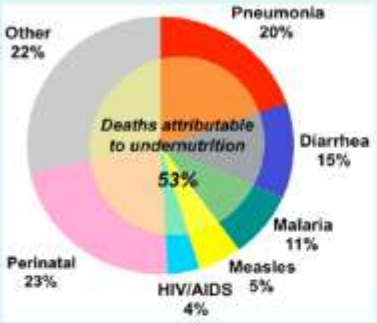
Tulane Law School

Vihra Groueva, Student; Colin Crawford, JD, faculty mentor

Child malnutrition is a major problem in the world. As current food aid initiatives are improved to more effectively address child malnutrition by including better sources of nutrition, we would anticipate a decrease in child malnutrition and an improvement in overall health outcomes. By comparing policies and methods of food aid in a country where there is short-term acute need and a country in constant need of aid, we anticipate that the difference in aid provided to a country in acute need will be more effective in improving health outcomes.







Impact on Children

- Children under two most vulnerable
  - 1000 day window
- Effects of malnutrition:
  - Mental and physical impairment
  - Micronutrient deficiencies
  - Reduced ability to achieve in school
  - Reduced earning potential
- Issue of diet quality as well as quantity!

Addressing Malnutrition through Food Aid

- Essential safety net
- Fortified Blended Foods (FBFs)
  - Cereal based fortified foods
    - Corn-soy blend (CSB)
    - Wheat-soy blend (WSB)
  - Value added products
    - Fortified vegetable oil (FVO)

Food Aid and Children's Nutritional Needs

- Appropriateness of using fortified blended foods to prevent and treat malnutrition in young children
  - Have smaller stomachs, making it more difficult for them to eat enough of the product to obtain sufficient nutrients
  - Food has anti-nutrient properties that inhibit the uptake of certain vitamins and minerals

New Products

- 2011 - new products introduced
- Aim to address the shortcomings of fortified blended foods
  - Lipid-based nutrient supplements, like Nutributter
  - Micronutrient powders
  - Enhanced versions of CSB

Cost? Efficacy?

Child eating new product Plumpy'nut

Source of Food Aid

- The U.S. is the biggest donor of food aid
- USAID, Food for Peace Act
  - Title II programming
  - 2010 budget for purchasing commodities approximately $1.7 billion
- Goals of the program

- In-kind food aid
  - Bulk of U.S. food aid
- Requirement under law
  - 75% of procurement, processing, bagging, and shipping handled in U.S. by U.S. firms
- Who benefits?

The Problem

- Adequately addressing the nutritional needs of children
  - Double standard
- Ineffective and inefficient aid
  - Cost
  - Delay in aid

Title II Solutions

- European Union/Canadian Model
- Proposed Changes for the U.S.
  - Call for more flexible system
    - Relaxing 75% requirement
    - More local purchasing
- Proposed use for money saved

Conclusions

- Meaningful long term alleviation of hunger is rooted in the alleviation of poverty
- Combating malnutrition in 140 million children is the best investment the U.S. and the world can make
- What the U.S. does matters!

Breaking the Cycle in Advance: Anticipating Future Challenges through Climate Adaptation Efforts

Perry Sheffield, MD, MPH

While the cycle of environmental disparities is well established, a changing global climate threatens to worsen the situation. Increasing global temperatures, shifting precipitation patterns, and rising sea levels negatively affect food production, render many populated coastal areas uninhabitable, and increase deadly extreme heat events in ever-growing urban centers around the world. This presentation reviews some of the climate change adaptation efforts that are taking place both within the United States and internationally that are striving to get a head start on what is likely to be a defining environmental hazard of the next century.

Future Climate Change May Increase Asthma Attacks in Children

NEW YORK
– August 30, 2011 /Press Release/ —-

Mount Sinai School of Medicine researchers have found that climate change may lead to more asthma-related health problems in children, and more emergency room (ER) visits in the next decade.

The data, published in the current issue of the American Journal of Preventive Medicine, found that changing levels of ozone could lead to a 7.3 percent increase in asthma-related emergency room visits by children, ages 0-17.

The research team, led by Perry Sheffield, MD, Assistant Professor of Preventive Medicine at Mount Sinai School of Medicine, used regional and atmospheric chemistry models to reach its calculations. They linked regional climate and air quality information to New York State Department of Health records of pediatric, asthma-related emergency room visits in 14 counties that are part of the New York City metropolitan area. Then they simulated ozone levels for June through August for five consecutive years in the 2020s, and compared them with 1990s levels. The researchers found a median increase of 7.3 percent in ozone-related asthma emergency department visits, with increases ranging from 5.2 percent to 10.2 percent per county.

"Our study shows that these assessment models are an effective way of evaluating the long-term impact of global climate change on a local level," said Dr. Sheffield. "This study is a jumping off point to evaluate other outcomes including cost utilization, doctors' visits, missed school days, and a general understanding of the overall burden of climate change on children with asthma."

Dr. Sheffield and her team plan to continue using these models to understand the specific impacts of climate change. The authors conclude that better measures to reduce carbon pollution that contributes to global climate change as well as pollution that forms ozone need to be implemented.

Funding for this study was provided by the National Institutes of Health Research Training Program in Environmental Pediatrics.

Summary of Academic Partnerships (2005 – 2012)

University Partners: (20) universities

- Clark Atlanta University, School of Social Work
- Duke University – Children's Environmental Health Initiative
- Duke University – Trinity College
- Emory University Barton Law Center
- Emory University Nell Hodgson Woodruff School of Nursing
- Emory University School of Public Health
- George Washington University School of Medicine & Health Sciences
- Georgia Institute of Technology, Department of Architecture
- Georgia State University Department of Educational Psychology and Special Education
- Georgia State University School of Law
- Mercer University School of Medicine, Department of Community Medicine
- Morehouse School of Medicine, Department of Community Health and Preventive Medicine
- Morehouse School of Medicine, Masters in Public Health
- Mt. Sinai School of Medicine, Preventive Medicine
- Spelman College, Department of Biology
- Tulane University Law School
- Tulane University, School of Public Health
- University of Florida in Jacksonville, College of Medicine and College of Public Health
- University of North Carolina-Chapel Hill, Gillings School of Global Public Health
- Wayne State University, School of Medicine

Students Mentored: 59

Fields of advanced degrees of students: public health, medicine, law, education, nursing, social work, architecture

Selected Comments from this Break the Cycle 7 Student Researchers:

The cycle of poverty is a pernicious and multifaceted problem that demands attention if we expect to fundamentally improve the lives of children. I'm honored to participate in Break the Cycle, a program that unites a diverse group of dedicated professionals in this critical goal.
Cappy Collins, MD; Mt. Sinai School of Medicine

BTC is one of the major highlights of my master's degree experience. On this project, I had the privilege of working closely with Dr. Wei (one of my academic heroes) on the most interesting topics I have encountered during the course of my MPH program. Additionally, the BTC team provided invaluable feedback as the project moved forward; without the conference calls, a lot more trial and error would have been involved on my part. I learned as much about research as I did about arsenic. I am fortunate to have found such a prestigious platform on which to study my favorite topic. I am proud of what I have learned and accomplished as a part of the team. Most of all, I am more excited than ever about my career in public health.
Gerald Blaney, Mercer University School of Medicine, Dept. of Community Medicine

Completing an individual research project through the Southeast Pediatric Health Specialty Unit's Break the Cycle Program has been an incredible opportunity to learn about how environmental health research is conducted, work with an engaging group of researchers, and delve into a new field of interest. The mentorship and support I have received from both the Southeast PEHSU and the Children's Environmental Health Initiative has been phenomenal. I am very grateful to have had this experience.
Hilary Henry, Duke University, Children's Environmental Health Initiative

SUMMARY

Children living in circumstances of social and economic disadvantage have long been at high risk for experiencing health problems caused or exacerbated by environmental factors. They are even more likely to be trapped in the cycle of environmental health disparity due to low parental health literacy, limited social capital, and lack of access to comprehensive healthcare and appropriate educational services. Given the current economic realities, it seems unlikely that many children and families will escape this cycle unless resources and public policies make children's environmental health a priority.

The Break the Cycle project is a replicable means by which to promote student and academic interest in addressing issues related to environmental health disparity. It serves as a catalyst through which academic mentors committed to issues of environmental justice can inform, guide, and inspire future professionals to become actively involved in finding creative solutions to environmental health dilemmas that the children of tomorrow will face.

This suggests that the incorporation of environmental health issues into various college curricula may play an important role in shaping future leaders who will be invested in breaking the cycle of environmental health disparities.

Resources

Executive Order no. 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." Federal Register 59 (1994), 7629.

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U.S. Environmental Protection Agency, Office of Policy, Economics, and Innovation. Evaluating the Use of Partnerships to Address Environmental Justice Issues. EPA/100-R-03-001. Washington, D.C.: Environmental Protection Agency, January 2003.

Are you interested in participating the next Break the Cycle Project 8?
APPLICATION 2012-2013

Title: Break the Cycle 8: Breaking the Cycle of Environmental Health Disparities in Children
Time Frame: October 2012 – June 2013
Deadline for Application: September 15, 2012
Tentative Date of Selection: October 15, 2012
Tentative Date of Conference: Late April - May 2013
Break the Cycle Team Director: Leslie Rubin, MD, lrubi01@emory.edu

Complete form and submit to BTC Team at lrubi01@emory.edu or jnodvin@emory.edu

Student(s) Name: _____

University: _____

Department: _____

Faculty Supervisor: _____

Abstract of Proposal for Break the Cycle Research Project (approximately 100 words describing the proposal and how it relates to children's environmental health):

- Background
- Hypothesis
- Method
- Discussion

Student Email:_____

Work Phone: _____ Cell Phone: _____

Student educational status: ☐ undergraduate ☐ graduate ☐ other

Faculty Supervisor Email: _____

Work Phone: _____ Cell Phone: _____