BREAK THE CYCLE 12
BREAK THE CYCLE OF ENVIRONMENTAL HEALTH DISPARITIES

Reducing Children’s Environmental Health Disparities and Promoting Health Equity for all Children

A Leadership Development Program of the Southeast PEHSU and friends:

[Logos and text of participating organizations]
Disclaimer

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A growing income gap in infant mortality

Cumulative probability of infant death per 1,000 live births, by infant age, in U.S.

- Disadvantaged mothers
- Wealthy mothers

Source: Alice Chen, Emily Oster and Heidi Williams
Who is Poor

- **Race:**
  - 37.1% of black children
  - 31.9% of Hispanic children
  - 12.3% of white children

- **Education:**
  - less than a high school degree, 57% are poor
  - some college education, 13% are poor

- **Employment:**
  - no parent works full-time, 48% are poor
  - 1 parent works full-time, 9% are poor

Mediators of Child Poverty Pascoe et al Pediatrics April 2016
The absence of fathers in the home is associated with a fourfold risk of poverty.
- 42% of single female-headed families are poor
- 12% for 2-parent families

Children of single mothers are at greater risk for:
- infant mortality
- child maltreatment
- failure to graduate from high school
- incarceration
Built Environment in Poor Communities

• Unsafe Neighborhoods due to: Traffic, Crime, Litter & Trash, Food Desert, Limited Green Space
  – 61% more likely to be Obese

• Older Houses in Poor Condition
  – 3.5x more likely to have lead toxicity

• Older Schools in Poor Condition
  – 50% less likely to graduate high school
  – 2x more likely to be unemployed
Children at most risk for adverse health and developmental outcomes

- Poverty
- Lead & other toxins
- Exposure to Tobacco Smoke
- Unsafe neighborhood
- Stressed Single Mother
- Experiencing Violence
- Insecurity & Anxiety
- Limited Access to Healthcare

Health Equity and Children's Rights Pediatrics; March 29, 2010;
Toxic Stress

- Strong, frequent, or prolonged activation of the body’s stress response systems
- Without the buffering protection of a supportive, adult relationship.
- Resulting in persistently elevated levels of stress hormones
- Which can disrupt its developing brain architecture
Long Term Outcomes

- School failure
- Unemployment
- Being single parents
- Poverty
- Homelessness
- Substance abuse
- Gang membership
- Violent crime
- Incarceration
Poor Health Outcomes

- Chronic stress alters immune function and increases inflammatory markers, increasing risk for:
  - obesity
  - diabetes
  - hypertension
  - stroke
  - early death

Pediatrics Volume 129, Number 1, January 2012
Cycle of Environmental Health Disparities

**Compounding Factors**
- Limited Educational Services
- Limited Health Care Services
- Limited Social Capital

**Social & Economic**
- Limited Education
- Limited Employment Options
- Limited Empowerment
- Limited Income

**Residential Options**
- Limited Choice
- Limited Infrastructure
- Limited Services

**Health Risk Factors**
- Pregnancy Vulnerability
  - Poor Prenatal Care
  - Intrauterine Insults
  - Low Birth Weight & Prematurity
- Physical Health
  - Neurodevelopmental Disorders
  - Asthma & Allergies
  - Obesity & Hypertension
- Mental Health
  - Toxic Stress & PTSD
  - Substance Abuse
  - Violence & Crime

**Residential Characteristics**
- Older Houses
- Adverse Environmental Factors
- Adverse Social Factors

**Environmental Impact**
- Increased Toxins
- Increased Stress
Can we make a Difference?

• Absolutely!!!!!
• Positively!!!!!!
a Low licking and grooming

- NGFI-A
- M
- Nr3c1
- ↓ GR expression
- High corticosterone levels
  - High anxiety
  - Low licking or grooming

b High licking and grooming

- NGFI-A
- Nr3c1
- ↑ GR expression
- Low corticosterone levels
  - Low anxiety
  - High licking or grooming
Home-Based Early Intervention: High Resource vs Low Resource Families

- 293 infants in India, Pakistan, and Zambia
- a randomized controlled trial of a home-based early intervention
- Examining Bayley Scales of Infant Development—from 12 to 36 months

Early Intervention and Cognitive Development PEDIATRICS 137:4, April 2016
The Perry Preschool Program

• Poor children with low IQ
• Beginning at age 3 and lasting 2 years:
  – 2.5-hour preschool program weekdays during the school year,
  – supplemented by weekly home visits by teachers
• Follow-up at ages 15, 19, 27, and 40
The Perry Preschool Program

A. Data from the Perry Program collected when the individuals were 27 years old (High/Scope). >10th percentile achievement indicates children who scored above the lowest 10% on the California Achievement Test (1970) at age 14; HS Grad indicates number of children who graduated High School on time.

• Raise Awareness of Children's Environmental Health
• Raise Awareness of Environmental Health Disparities
• Cultivate Future Leaders
Strategy

• Recruit bright and creative students to develop projects that will Break the Cycle
• Collaborate with the student mentor to see the project to completion
• Presentation of projects at this conference
• Write up project for publication in international peer-reviewed journal and chapter in a book
Home, Belonging and the Incarcerated Mother: A study on the effects of mass incarceration on children’s behavioral health outcomes

Urban Farming as a Model for Positive Youth Development

The effectiveness of a community-based program of nutrition education and physical activity to decrease health disparities of childhood obesity

The Role of Social Support and Adolescent's Mothers Breastfeeding Practices in North Carolina

Interactive Educational Lead Hazards Class to Children at the Boys and Girls Club in Metro Atlanta - Pilot

Factors affecting the length of stay in drug exposed infants admitted to the Neonatal Intensive Care Unit

Impact of early life housing on child behavior at age seven

A Silver Lining for High-Risk Infants: Coordinated Care for Children 0-32 Months

Neurodevelopmental Outcomes of recent exposure to DDT in children of selected communities of Zambia

Racial Disparities in Access to Municipal Water Supplies in the American South: Impacts on Children’s Health
Changes in Knowledge about Children’s Environmental Health

Before and After Participating in The Break the Cycle Program:

- **A. None**
- **B. Minimally aware**
- **C. Moderately familiar**
- **D. Very familiar**
- **E. Expert**

- **Response % Before**
- **Response % After**
Changes in Knowledge about Environmental Health Disparities

![Bar chart showing changes in knowledge levels](chart.png)

- A. None
- B. Minimally Aware
- C. Moderately familiar
- D. Very Familiar
- E. Expert

### Response % Before

- A. None: [Value]
- B. Minimally Aware: [Value]
- C. Moderately familiar: [Value]
- D. Very Familiar: [Value]
- E. Expert: [Value]

### Response % After

- A. None: [Value]
- B. Minimally Aware: [Value]
- C. Moderately familiar: [Value]
- D. Very Familiar: [Value]
- E. Expert: [Value]
Influence on Future Career
To Date:
- 11 annual programs
- 10 states in USA,
- Latin America, Europe & Africa
- 118 students
- 47 university departments

Publications
- 9 international journal supplements
- 9 books
• We may not be required to complete a task but we are not allowed to desist from undertaking the challenge