

# National Children's Study

“Improving the health and well-being of children”



# Funders

- U.S. Department of Health and Human Services
  - National Institutes of Health
  - Centers for Disease Control and Prevention
- U.S. Environmental Protection Agency



- Largest long-term study of children's health and development ever to be conducted in the U.S.
- Longitudinal study of children, their families, and their environment (before birth through age 21)
- Approximately 100,000 children enables study of important but less common outcomes



# Rationale of the NCS

- Compared to adults, children are especially vulnerable to environmental exposures
- Exposures to some agents demonstrate potential for serious developmental effects
- Current known exposures of high frequency
- Numerous high burden conditions with suspected environmental contribution- learning disabilities, autism, diabetes, asthma, birth defects, premature birth
- Existing research too limited in size and scope to answer the questions
- Life-course (longitudinal design needed to correctly link with multiple exposures and multiple outcomes.



# PL 106-310

## Children's Health Act of 2000

- Authorized NICHD to conduct a national longitudinal study of environmental influences on children's health and development



# Study Concepts

- Study high priority and burdensome conditions
- Hypothesis driven
- Exposure period begins with pregnancy
- Environment and genetic expression
- State of the art technology
- Consortium of multiple agencies
- Extensive public-private partnerships
- National resource for future studies

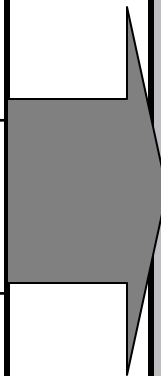


# Environment

- Natural and man-made environmental factors
- Biological and chemical factors
- Physical surroundings
- Social factors
- Behavioral influences and outcomes
- Genetics
- Cultural and family influences and differences
- Geographic locations



Priority Exposures	Examples
Physical Environment	Housing quality neighborhood
Chemical Exposures	Pesticides, phthalates, heavy metals
Biologic Environment	Infectious agents, endotoxins, diet
Genetics	Interaction between genes and environment
Psychosocial milieu	Family structure, socio-economic status, parenting style, social networks, exposure to media and violence.



Priority Health Outcomes	Examples
Pregnancy Outcomes	Preterm, birth defects
Neurodevelopment And Behavior	Autism, learning disabilities, schizophrenia, conduct and behavior problems
Injury	Head trauma, injuries requiring hospitalizations
Asthma	Asthma incidence and exacerbation
Obesity and Physical Development	Obesity, diabetes, altered puberty



# Examples of Hypotheses

- How is asthma incidence and severity influenced by the interaction of early life infection and air quality?
- Does impaired maternal glucose metabolism during pregnancy cause obesity in children?
- Does pre- and post- natal exposure to endocrine-active environmental agents alter age at onset, duration, and completion of puberty?



# Locations

- Counties from which participants will be recruited were selected by stratified probability sample
- 105 locations, 79 metro, 26 rural



# Pennsylvania Locations

## Map Legend

- A -Montgomery County, PA
- B -Philadelphia County, PA \*
- C -Schuylkill County, PA
- D -Westmoreland County, PA



New Castle County, DE



# New Jersey Locations

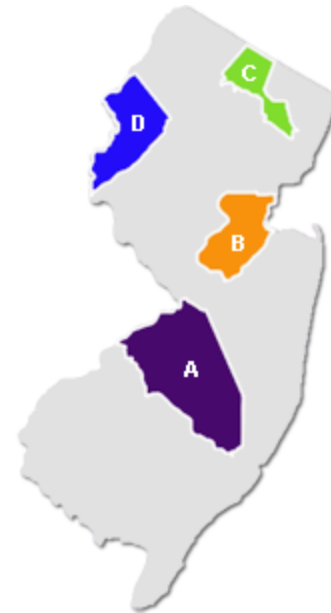
## Map Legend

A -Burlington County, NJ \*

B -Middlesex County, NJ \*

C -Passaic County, NJ \*

D -Warren County, NJ \*



# Neighborhood Segments

- Not selected by county study teams
- Chosen by
  - Census boundaries
  - Neighborhood boundaries
  - School catchment areas



# Recruitment

- Household Recruitment Approach
- Supplemented by
  - Prenatal care providers
  - Community campaigns
  - Births



# Study Participation

- Recruit from pre-conception/early pregnancy
- Diverse populations
- Minimum of 16 in-person home and clinic-based visits
- Contact every 3 months until age 5, then yearly



# Data Collection

- Environmental (air, water, soil, dust) samples from child's environment (home, school, daycare)
- Psychosocial, demographic, neurodevelopment, neighborhood and contextual data
- Biological samples from mother, father, child



# Study Milestones

- 2000-present: Planning
- 2008: OMB, peer reviews, IRB reviews and approvals in progress
- 2008-9: Begin pilot cohort at Vanguard Centers
- 2010: Begin full study for Wave I locations
- 2011: First study results available
- 2016: Full data set outcomes for pregnancies



# Funding

- 2000-06: \$50 m
- 2007: \$69 m appropriated
- 2008: \$110.9 m appropriated
- To conduct full study: FY08-34 ~ \$3 B



# So, the NCS will provide.....

- Answer concerns about known exposures during childhood to potential toxicants
- Power to determine absence of effects or benefits of exposures to various products
- Causal factors for a number of diseases
- How multiple causes interact to result in multiple outcomes
- Large sample size to apply knowledge of human genome and multi-factoral genetic conditions
- Identify early life factors that contribute to adult conditions
- National resource to answer future questions



# Contact Information

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