Long Term Cohort Studies on Children's Health and the Environment in Developing Countries

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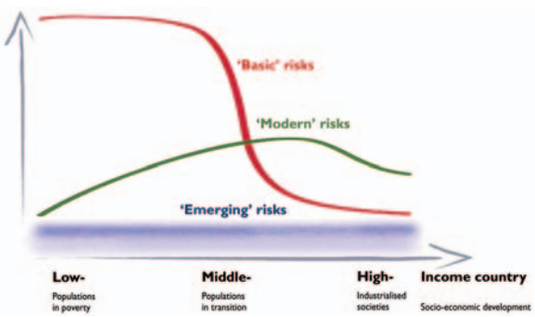
Children in Developing Countries: Their Particular Sensitivity to Environmental Threats

In developing countries, unhealthy environments account for a significant proportion of children's morbidity and mortality, confounded by malnutrition and infectious diseases.

All children face challenges arising from a changing environment: rapid urban growth, industrialization, dietary changes, increased production and use of chemicals and hazardous waste.

Children in developing countries are facing a double or a triple-burden of disease linked to:

- Persistent or "traditional" problems: diseases linked to unsafe water and food, indoor air pollution, vector proliferation, and degraded environments
- Emerging epidemics of non-communicable diseases and "modern" risks: asthma, injuries, cancer, endocrine and immune effects, neurodevelopmental problems
- Underlying confounders: poverty and malnutrition



Environmental Health Risk Transition

Basic risks: "Traditional" or pre-existing the industrial impact: unsafe water and food, indoor air pollution, vector-borne diseases…

Modern risks: Unsafe use of chemicals, traffic and industry related effects, environmental degradation...

Emerging or "future" risks": Climate change, ozone depletion, nano-particles, persistent organic pollutants (POPs)...

National Children's Study International Interest Group (IIG)

Established in 2002 to stimulate exchange of information and explore opportunities for collaboration and harmonization among existing and new LTCS.

Co-Chairs: D. Krotoski, NICHD, and J. Pronczuk, WHO

WHO Informal Consultations (4)

Co-Sponsored by NCS-IIG, CDC, and USEPA

1st Consultation in Glion, Switzerland (Oct 2003)
Identified the feasibility of undertaking LTS in developing countries, identified challenges, and stated the benefits for countries, health care systems, and the children.

2nd Consultation at PAHO, USA (Jul 2004)
Identified the key issues for harmonized international work and proposed the preparation of guidelines for developing common hypotheses and protocols.

3rd Consultation in Cuernavaca, Mexico (Nov 2004)
Discussed and proposed core hypotheses on: respiratory effects, pregnancy outcome, neurodevelopment, growth, birth defects, and cancer.

4th Consultation in Bangkok, Thailand (Aug 2005)
A preliminary set of measurements were proposed as well as a matrix to be used in the preparation of the core protocols for studies to be undertaken in low and middle income countries.

Consultation Recommendations*

- Establish a multi-country approach to provide sufficient size to facilitate the investigation of the less common conditions.
- Encourage harmonization across studies; develop internationally agreed systems for data collection, sampling, and storage; develop analytical and measurement methods; maintain copies of data and results centrally as well as in each individual country, considering all ethical issues involved.
- Countries should have a coherent and accurate process for collecting health records; little outward migration; a public education system that will cooperate with assessing and recording pupils' competence and behaviour.
- Partners should come from academia, national and international organizations, NGOs, the private sector, and the participating communities.

Benefits for the Children, for the Health Care System, for the Countries

Although LTCS in developing countries represent a challenge, they offer substantial benefits, as evidenced by the success of studies undertaken in China, Guatemala, India, South Africa, Thailand, and other countries.

New LTCS will incorporate environmental influences – physical, chemical, biological, and psychosocial – on children's health.

Establishing LTCS in developing countries will bring collateral benefits:

- Improving children's health care
- Strengthening surveillance services
- Transferring new technologies
- Improving data management
- Building/coordinating research capacity

Mother and child recruited in a long term study in the northern provinces in Thailand – 2003.

International Partners

Colleagues from academia, national and international organizations, centers of excellence, institutes, and ongoing cohort studies in both industrialized and developing countries are contributing to this effort.

*Consultation Participants:

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Implementing the National Children's Study: Scientific Progress, Challenges, and Opportunities

Study Assembly Meeting

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THE NATIONAL CHILDREN'S STUDY
HEALTH GROWTH ENVIRONMENT