Coordination and Harmonization of the Next Generation of Large-scale Birth Cohorts

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NEED TO KNOW ABOUT EMERGING ISSUES

New or "re-emerging" threats to children's health and development

- **Persistent organic pollutants**
- **Radiation**
- **Ozone depletion**
- **Endocrine disruption**
- **Obesity**
- **Others…**

WHO

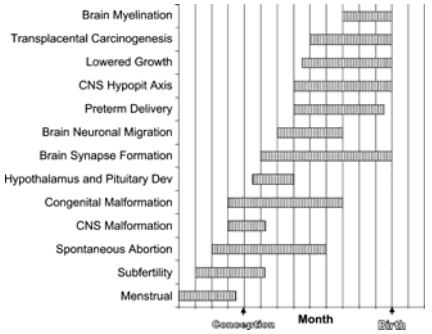
WHO

"*Guide to Undertaking a Birth Cohort Study*"

A six-year WHO effort led by Professor Jean Golding at University of Bristol in the UK

- **WHO consultation in Montreux, Switzerland in Oct 2003**
- **WHO consultation in Washington, DC in August 2004**
- **WHO consultation in Cuernavaca, Mexico in November 2004**
- **WHO consultation in Bangkok, Thailand in August 2005**
- **Final publication in July 2009**

Schematic of the development of the relationship between the timing of an environmental insult (from preconception through birth) and "windows" of susceptibility by system.



From Silbergeld and Patrick, 2005

"Window of susceptibility" for the next generation of birth cohort studies

- Protocols are being shaped
- Biomarkers are being selected
- Measurements are being validated

- This window will close soon and the opportunity to influence their development will disappear

What are the advantages of coordinating birth cohort studies?

- Common protocol elements will enable data to be combined to look at rare childhood diseases
- Even large cohorts (100,000 children) cannot study very rare diseases
- Common protocol elements will allow comparison of results

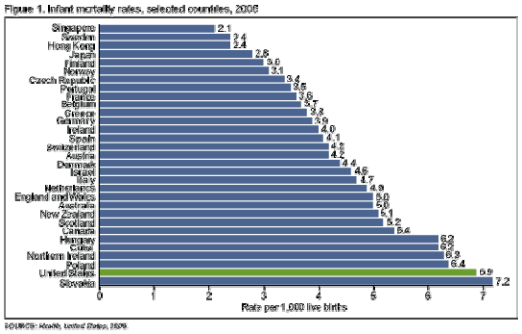
Comparison of results

There are striking difference in some child health outcomes between countries

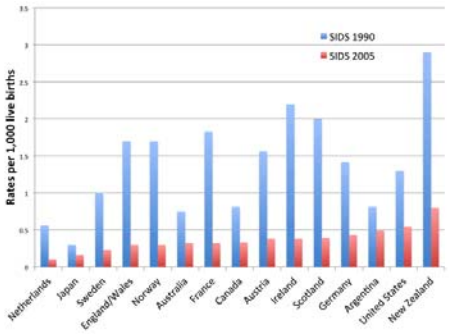
Examples:

- Infant Mortality
- Sudden Infant Death Syndrome

Infant Mortality Rates, selected countries, 2005



Sudden Infant Death Syndrome Rates for 15 countries



Problem of small numbers

Japan: 0.16 per 1000	16 deaths in 100,000
Germany: 0.43 per 1000	43 deaths in 100,000
USA: 0.54 per 1000	54 deaths in 100,000
Total SIDS	113 deaths in 300,000

Need for Coordination

- Case definitions of SIDS are not uniform
  - More than 3 "accepted" definitions of SIDS
  - Some require infant autopsy, some do not
  - Some require death scene investigation
- Age of inclusion is not uniform
  - Japan: birth to 1 year +
  - Germany: 1 week to 1 year
  - USA and France: birth to 1 year

Individual Studies Differ

- Measurement of exposure to tobacco smoke
  - Single question about maternal smoking during pregnancy
  - Questions about any smoking by mother / father in the home after birth
  - Thiocyanate or cotinine in maternal / paternal serum
  - Cotinine in infant urine or hair
  - Different laboratory analytic methods
- Makes it difficult to pool results of different studies

Comparison of Results

- Need for set of “core” measurements
  - Specific questions and biomarkers of exposure
  - Measured at same time period in infant's life
  - Using same case definition
  - Using same age of inclusion
  - Using similar analytical methods

What are the advantages of coordinating birth cohort studies?

Huge burden with regard to choice of protocols, biological and environmental measurements, experience in piloting and validation, reviewing the literature

What are the advantages of coordinating birth cohort studies?

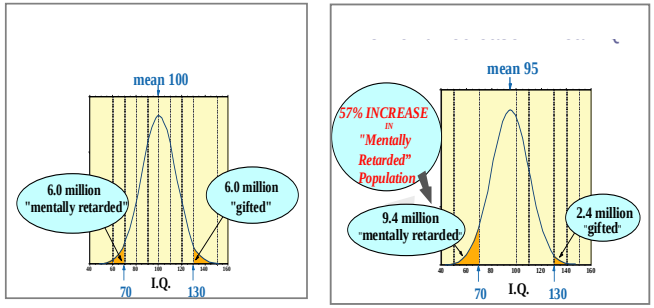
- Most experience in the industrialized countries
- Great need in low and middle income countries
- Need to share experience

Launching an effort to bring together large-scale cohorts from many parts of the world

Japan
Germany
France
USA
Shanghai, China

CHILDREN REPRESENT THE FUTURE OF OUR SOCIETIES

SIGNIFICANCE OF 5 POINT IQ REDUCTION



www.preventingharm.org/execsum.html

Schettler, 2000

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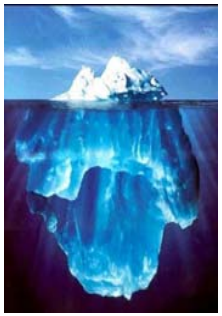
Death and disability from environmental causes is preventable

- There is much we still do not understand about the effects of chemicals in the environment on child health and development
- Longitudinal cohort studies can help us to learn more
- Harmonized studies will be most efficient use of resources



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