

# A Population Health Perspective on Birth Defects Research and Prevention

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# Summary

Birth defects research and prevention must include a population health perspective

Individual-level behavioral and clinical interventions are important – but not enough

We need to learn about:

- *Population determinants* associated with birth outcomes
- *Population approaches* to improve birth outcomes
- Methods for *measurement and research* at a population level

We also need to be aware of the limitations of a population health perspective



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“It is unreasonable to expect that people will change their behavior easily when so many forces in the social, cultural, and physical environment conspire against such change. If successful programs are to be developed to prevent disease and improve health, attention must be given not only to the behavior of individuals, but also to the environmental context within which people live.”



IOM, 2000. *Promoting Health: Intervention Strategies from Social and Behavioral Research*



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# Population vs. High Risk Strategies

“...a large number of people at a small risk may give rise to more cases of disease than the small number who are at a high risk.”

Geoffrey Rose, 1985



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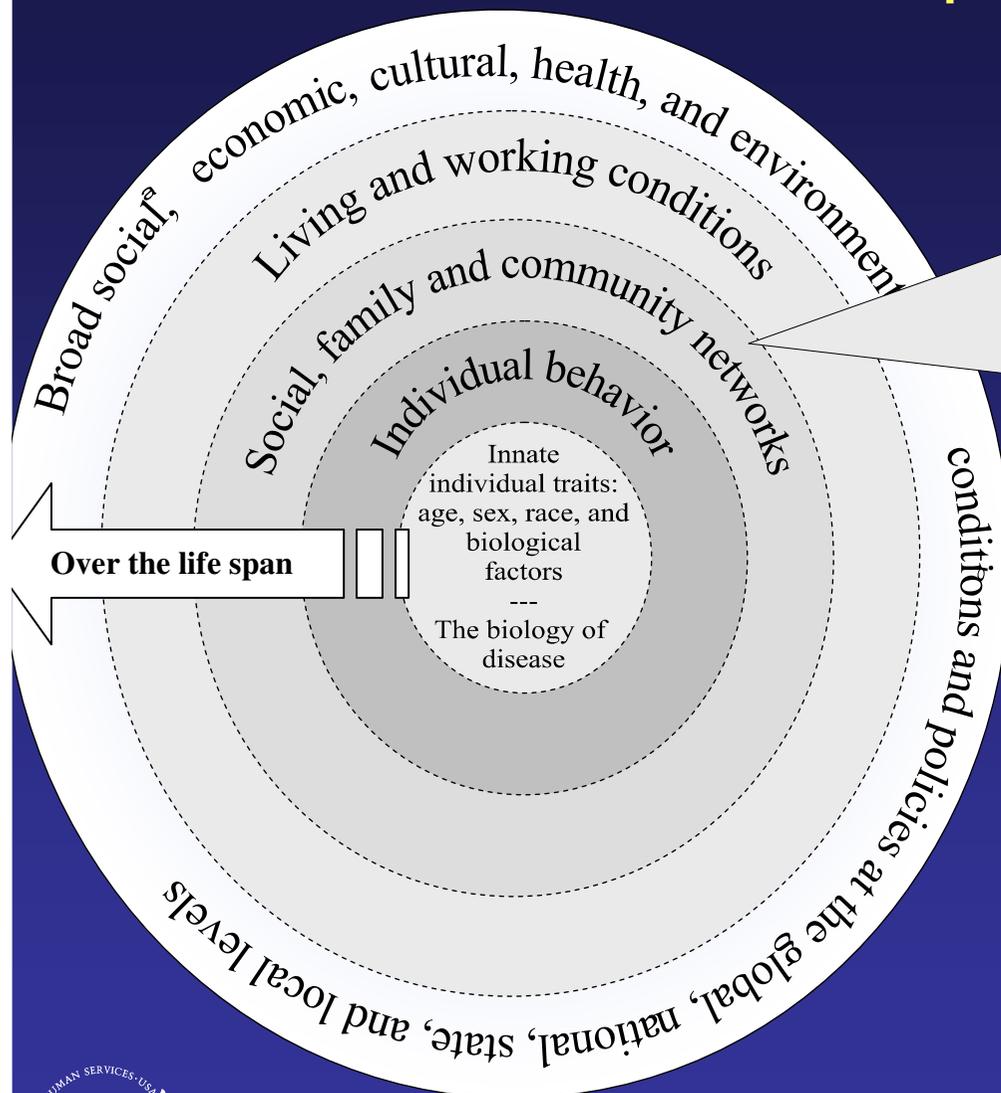
Determinants and Approaches  
Examples  
Strengths & Limitations  
Actions



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# Determinants of population health



Living and working conditions may include:

- Psychosocial factors
- Employment status and occupational factors
- Socioeconomic status (income, education, occupation)
- The natural and built environments
- Public health services
- Health care services

NOTES: Adapted from Dahlgren and Whitehead, 1991. The dotted lines denote interaction effects between and among the various levels of health determinants.



Source: IOM, 2003. *The Future of the Public's Health in the 21st Century*

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# Approaches to Population Health



Maintain and improve the health of the *entire population* and reduce inequalities in health between population groups.\*

To improve health through *policies, systems, or the environment* rather than strategies focused solely on individuals. \*\*

\* Health Canada, *Taking Action on Population Health*, 1998

\*\* Milbank Memorial Fund & CDC, *Improving Population Health*, 2007



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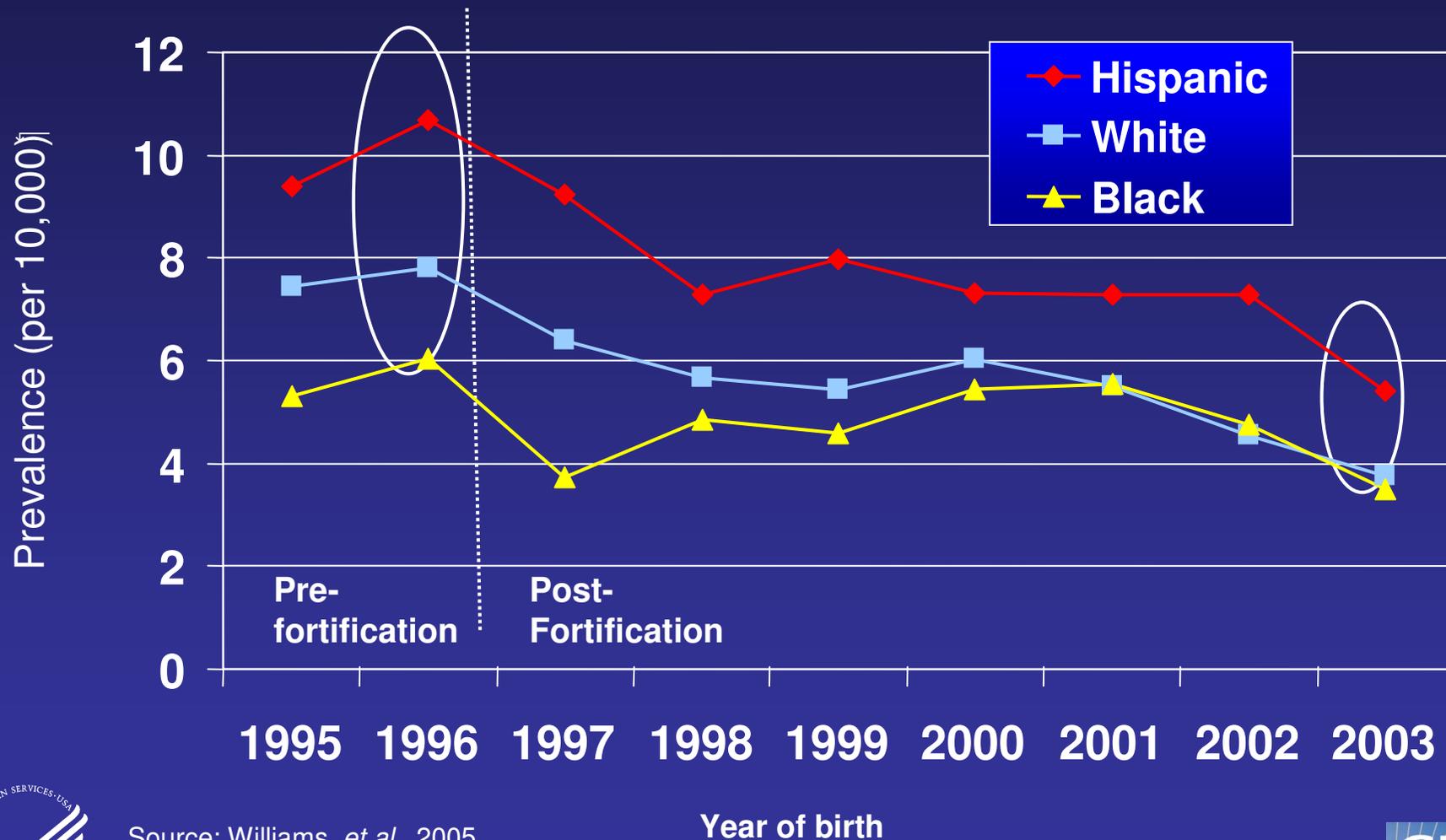
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# U.S. Government Policy on Folic Acid Fortification: Impact of Fortification by Race/Ethnicity (Prevalence of Spina Bifida and Anencephaly)



Source: Williams, et al., 2005

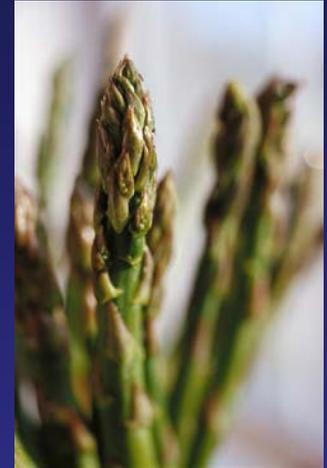


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# National Policies

- Immunization
- Fortification: folic acid, iodine, iron,
- Elimination of lead products
- Tobacco control and taxation
- Newborn screening
- National guidelines and recommendations



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# Cross-Government Collaboration

## Central American Micronutrient Initiative

- Promote harmonization of policies, standards, and regulations in participating countries
- Establish regional legislation and regulation
- Implement reciprocal quality control of foods
- Establish regional surveillance of NTDs and folate
- Establish regional reference laboratory

Personal communication: Jorge Rosenthal, CDC



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# Cross-Sector Collaboration

## University of Nebraska – Lincoln Program to Reduce Student Alcohol Use

### Target

- At-risk drinkers, student population, local community

### Strategies

- Legislation of locations of liquor retailers
- Media campaigns
- Web-based training for hospitality and retail workers
- Involvement of student organizations, community leaders, police, bar owners, prevention specialists, educators, parents

Outcome: Binge drinking dropped from 62% to 47%



Sources: Milbank Memorial Fund, CDC, 2007; Newman *et al.*, 2006

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# Cross Sector Integration

- Health = public good
- Government has fundamental, statutory duty to assure the health of the public, **but**
- Government cannot do it alone
- Need for intersectoral engagement in partnership with government.
- Health = social goal of many sectors and communities

Source: IOM, 2003. *The Future of the Public's Health in the 21st Century*



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# Legal Intervention

## Provision of Antiretroviral Drugs to Pregnant HIV-positive Women in South African

- Constitution assures the right of access to health care for children and pregnant women
- Government limited nevirapine to research sites
- AIDS advocacy group argued that nevirapine is required to assure the child's right to health
- 2002 constitutional court case ruled that government must work towards provision of drugs to prevent mother-to-child transmission

Source: Singh, *et al.*, 2007



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# Advantages and Disadvantages to a Population Health Approach

## Advantages

- Large potential for impact
- Potential to ameliorate if not prevent poor health outcomes

## Disadvantages

- Limited individual benefits but broad social benefits
- Limited motivation for change among health care providers

Source: Rose, 1985



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## Barriers to a Population Health Approach

- Difficult to identify and measure population-level determinants
- Difficult to evaluate and implement effective population-level interventions
- Difficult to establish causality
- Not traditional public health
- Not traditional epidemiology
- Challenges role of individual choice
- Challenges role of individual responsibility



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# Getting There: Creating a Population Health Approach

## Prerequisites for Change

- Leadership
- Incentives
- Science

## Creating Political Will

- Knowledge base
- Strategies for action



Sources: McGinnis *et al.*, 2002; Lezine & Reed, 2007



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# Reasons for Optimism

- Increasing interest
- A few good examples
- Recognized need for innovations in research
- Recognized need for innovative approaches to reduce birth defects



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# Areas for Action

Development of research methods

Studies of population-health approaches

Education of decision makers  
and development of political will

Communication

Collaboration

Coordination

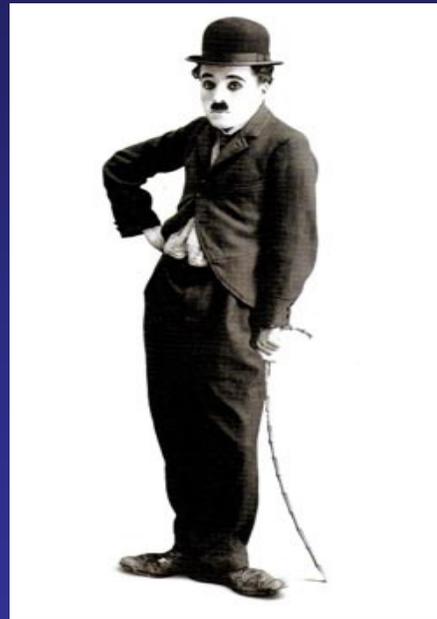


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# The Challenge

What can you do?



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The End

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*The findings and conclusions in this report are those of the author and do not necessarily represent the official position of the Centers for Disease Control and Prevention.*

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