Preconception Care: Preventing and Managing Risks Before Pregnancy to Improve Perinatal Outcomes

National Healthy Start Association
"Ask the Expert" Webinar
March 10, 2015

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Department of Family Medicine

BU School of Medicine/

Boston Medical Center

BOSTON UNIVERSITY SCHOOL of Medicine

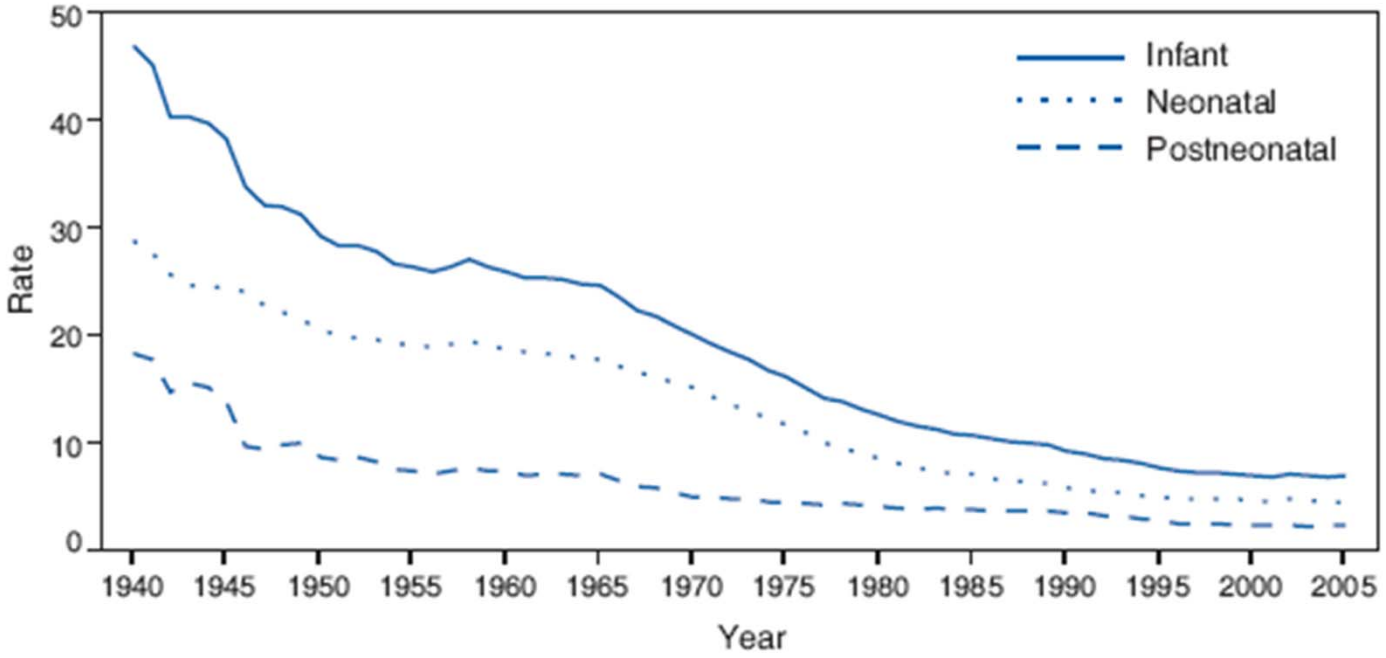
BOSTON MEDICAL CENTER

EXCEPTIONAL CARE. WITHOUT EXCEPTION.

Objectives

- Present rationale for preconception care (PCC)
- Review the CDC PCC Initiative
- Discuss the content of PCC
- Introduce a new health IT system called “Gabby”

Infant, Neonatal, and Postneonatal Annual Mortality Rates* US, 1940-2005

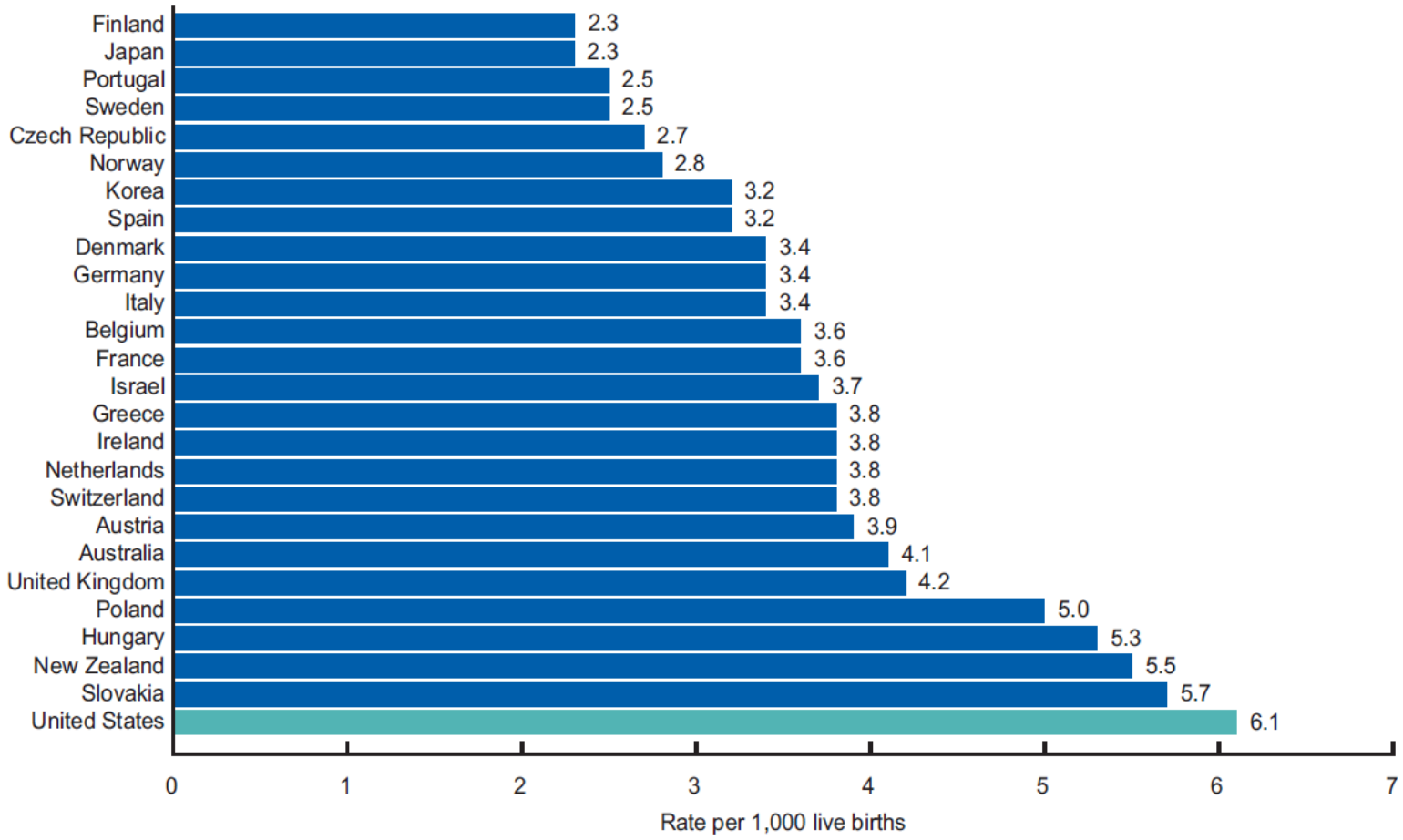


•Per 1,000 live births for each group: infant (<1 year), neonatal (0-27 days), and postneonatal (28 days to <1 year).

From 1940 to 2005 infant, nenonatal, and postneonatal annual mortality rates in the US declined substantially.
The infant mortality rate decreased 85%, from 47 in 1940 to 6.9 in 2005.
The neonatal rate decreased 84%, from 28.8 to 4.54.
The postneonatal rate decreased 87%, from 18.3 to 2.34.

SOURCE: Kung HC, Hoyert DL, Xu J, Murphy SL. Deaths: final data for 2005. Natl Vital Stat Rep 2008;56(10).

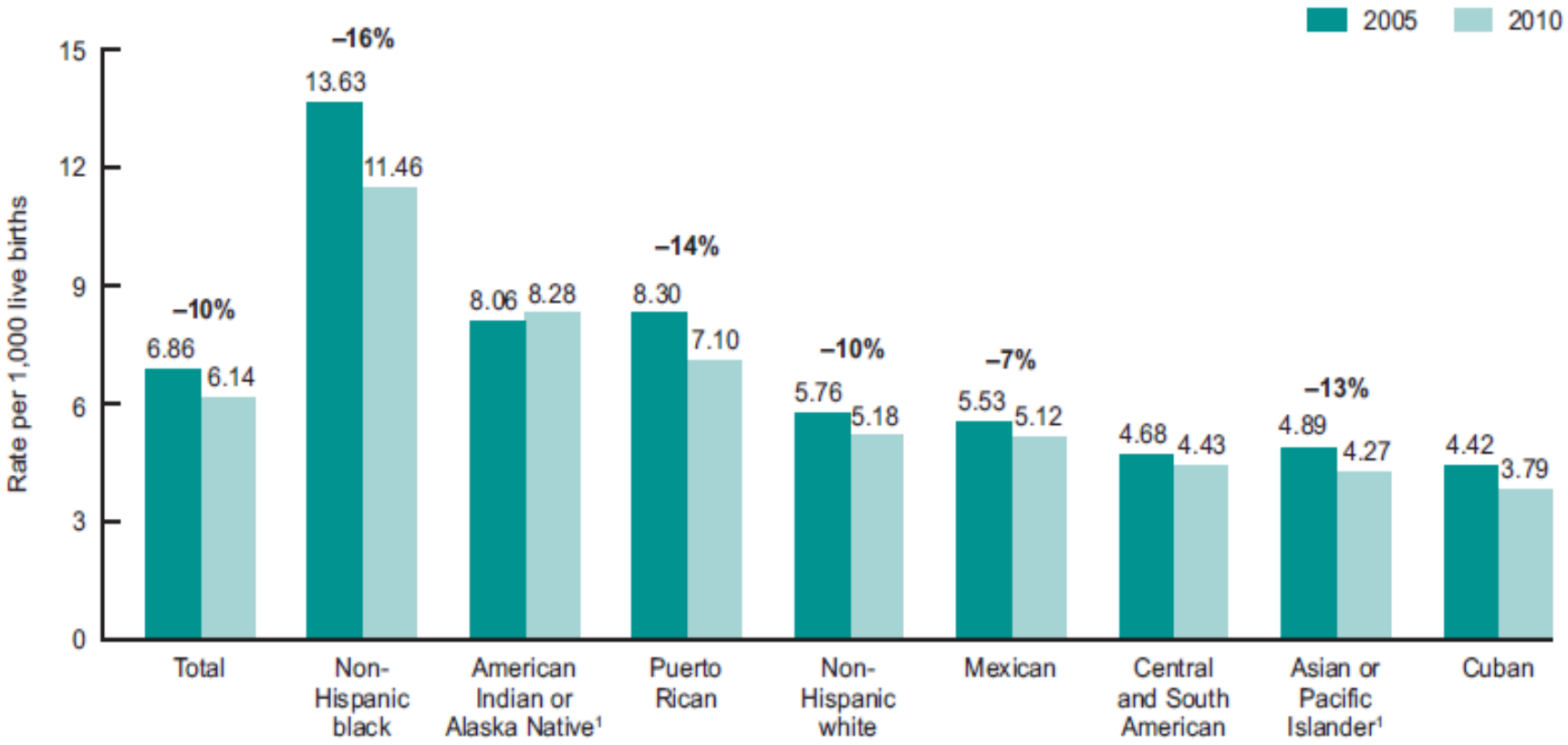
International Ranking of IMRs



NOTES: Canada's 2010 data were not available from the Organisation for Economic Co-operation and Development (OECD) at the time of manuscript preparation. The 2009 infant mortality rate for Canada was 4.9. If the 2010 data for Canada had been available, the U.S. ranking may have changed. Deaths at all gestational ages are included, but countries may vary in completeness of reporting events at younger gestational ages.
SOURCES: CDC/NCHS, linked birth/infant death data set (U.S. data); and OECD 2014 (all other data). Data are available from: http://www.oecd.org.

Figure 1. Infant mortality rates: Selected Organisation for Economic Co-operation and Development countries, 2010

Infant Mortality Rates Vary Greatly By Race and Ethnicity US, 2005 and 2010



[1]Includes persons of Hispanic and non-Hispanic origin.
NOTE: Percent change indicates significant change between 2005 and 2010.
SOURCE: CDC/NCHS, National Vital Statistics System.

Risk Factors Are Common

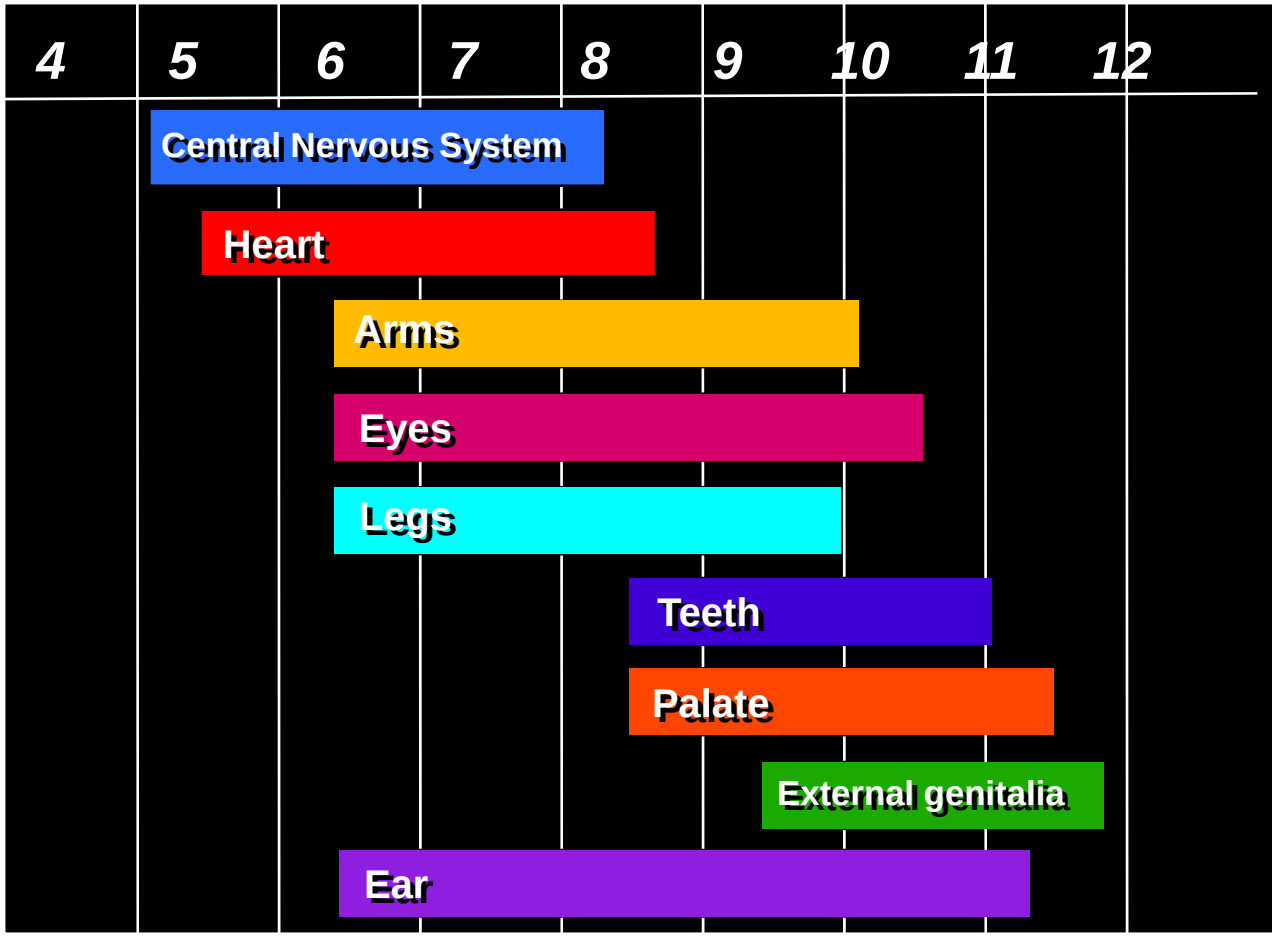
At birth	Smoked during pregnancy	11.0%
	Consumed alcohol in pregnancy	10.1%
	Preexisting medical conditions	4.1%
	Rubella seronegative	7.1%
	HIV/AIDS	0.2%
	Received inadequate prenatal care	15.9%
At risk of getting pregnant	Cardiac Disease	3%
	Hypertension	3%
	Asthma	6%
	Dental caries or oral disease (women 20-39)	>80%
	Diabetic	9%
	On teratogenic drugs	2.6%
	Overweight or Obese	50%
	Not taking Folic Acid	69.0%

CDC Preconception Health and Health Care Initiative

We Currently Intervene Too Late
Critical Periods of Development

Weeks gestation from LMP

Most susceptible time for major malformation

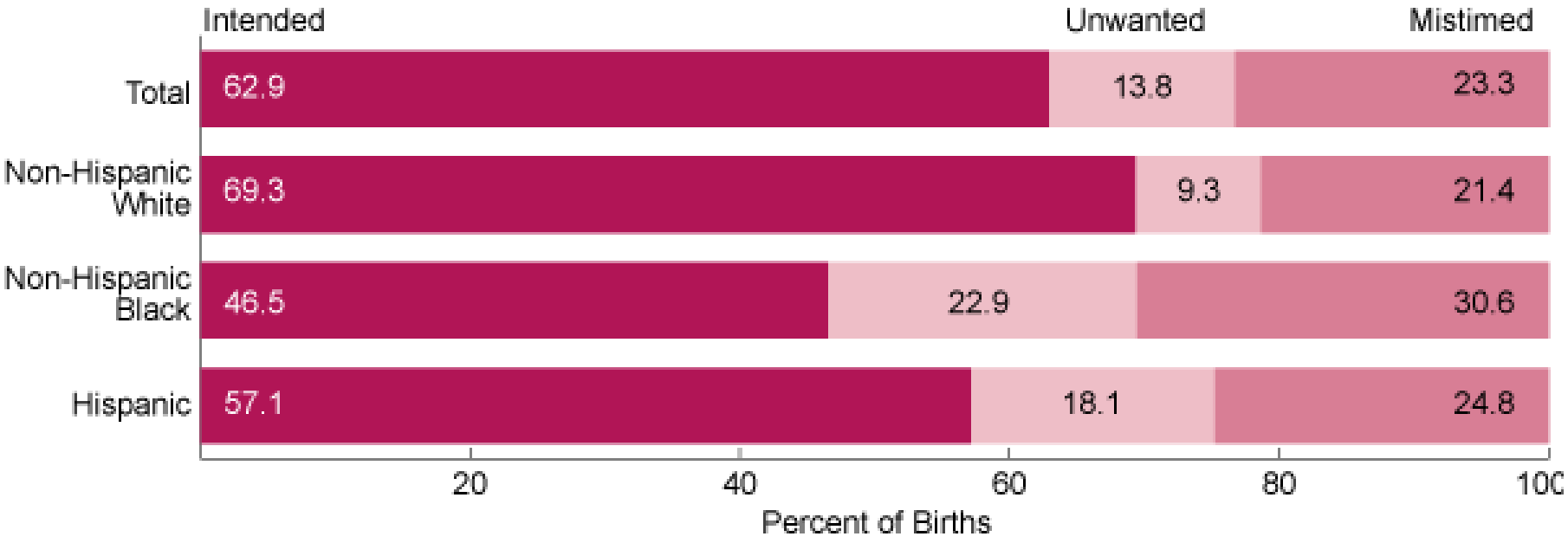


Missed Period

Mean Entry into Prenatal Care

About Half of All Pregnancies are not Planned

Intendedness of Births at Conception* Among Women Aged 15–44, by Race/Ethnicity,** 2006–2010



Source: Mosher WD, Jones J, Abma JC. Intended and unintended births in the United States: 1982–2010. National health statistics reports; no 55. Hyattsville, MD: National Center for Health Statistics. 2012.

Why Preconception Care?

- **Poor pregnancy outcomes continue to be unacceptably high**
- **There are many risk factors for poor pregnancy outcome that can be identified before pregnancy**
- **We currently intervene too late**
- **Not all pregnancies are planned, therefore PCC should be delivered to all women**

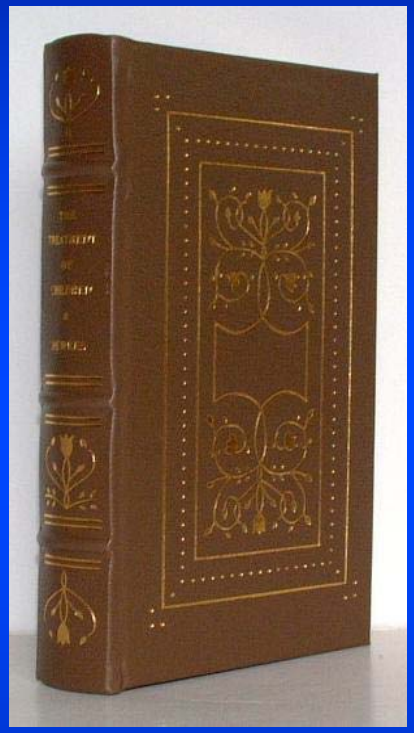
There is evidence that intervening before pregnancy will improve outcomes!

Preconception Health (PCH)
(including Interconception Health)

Preconception health and health care focuses on taking steps now to protect the health of a baby in the future. However, preconception health is important for all women and men, whether or not they plan to have a baby one day.

CDC. Preconception Health and Health Care. Retrieved March 27, 2014, from: http://www.cdc.gov/preconception/index.html

Not a New Concept



THE PHYSICAL AND MEDICAL TREATMENT OF CHILDREN
The Classics of Pediatrics Library
Gryphon Editions

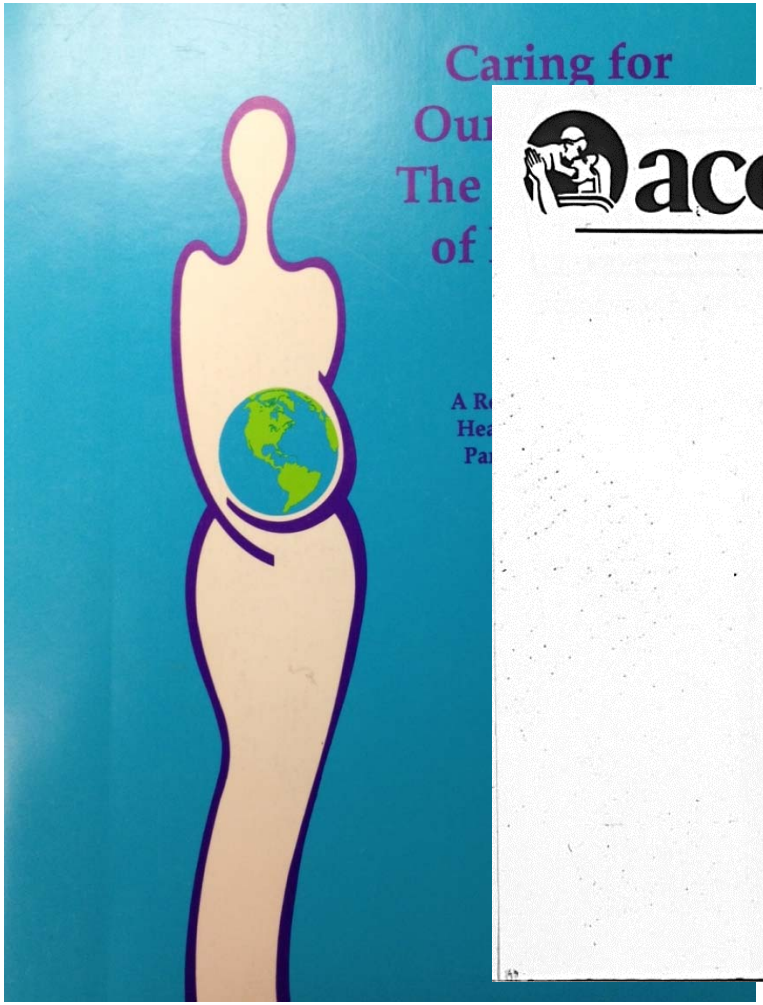
Author: William P. Dewees, M. D. (1768-1841) credited with having written the first American pediatric textbook

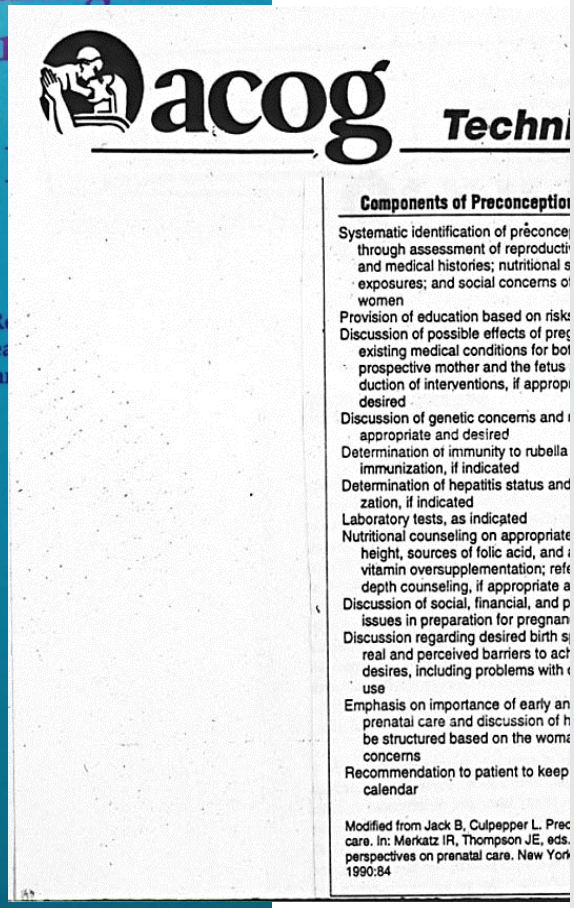
"The physical treatment of children should begin as far as may be practicable, with the earliest formation of the embryo; it will, therefore, necessarily involve the conduct of the mother, even before her marriage, as well as during her pregnancy."

William Potts Dewees 1825

first American textbook on Pediatrics

Some History

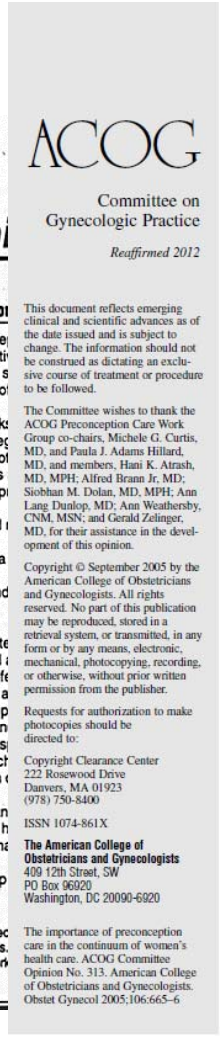



acog Techni

Components of Preconceptio

Systematic identification of preconce through assessment of reproducti and medical histories; nutritional s exposures; and social concerns o women
Provision of education based on risk
Discussion of possible effects of pre existing medical conditions for bo prospective mother and the fetus duction of interventions, if appropr desired
Discussion of genetic concerns and appropriate and desired
Determination of immunity to rubella immunization, if indicated
Determination of hepatitis status and zation, if indicated
Laboratory tests, as indicated
Nutritional counseling on appropriate height, sources of folic acid, and vitamin oversupplementation; refe depth counseling, if appropriate a
Discussion of social, financial, and p issues in preparation for pregnan
Discussion regarding desired birth s real and perceived barriers to act desires, including problems with use
Emphasis on importance of early an prenatal care and discussion of h be structured based on the woma concerns
Recommendation to patient to keep calendar

Modified from Jack B, Culpepper L. Prec care. In: Merkatz IR, Thompson JE, eds. perspectives on prenatal care. New York 1990:84


ACOG

Committee on Gynecologic Practice

Reaffirmed 2012

This document reflects emerging clinical and scientific advances as of the date issued and is subject to change. The information should not be construed as dictating an exclusive course of treatment or procedure to be followed.

The Committee wishes to thank the ACOG Preconception Care Work Group co-chairs, Michele G. Curtis, MD, and Paula J. Adams Hillard, MD, and members, Hani K. Atrash, MD, MPH; Alfred Brann Jr, MD; Siobhan M. Dolan, MD, MPH; Ann Lang Dunlop, MD; Ann Weathersby, CNM, MSN; and Gerald Zelinger, MD, for their assistance in the development of this opinion.

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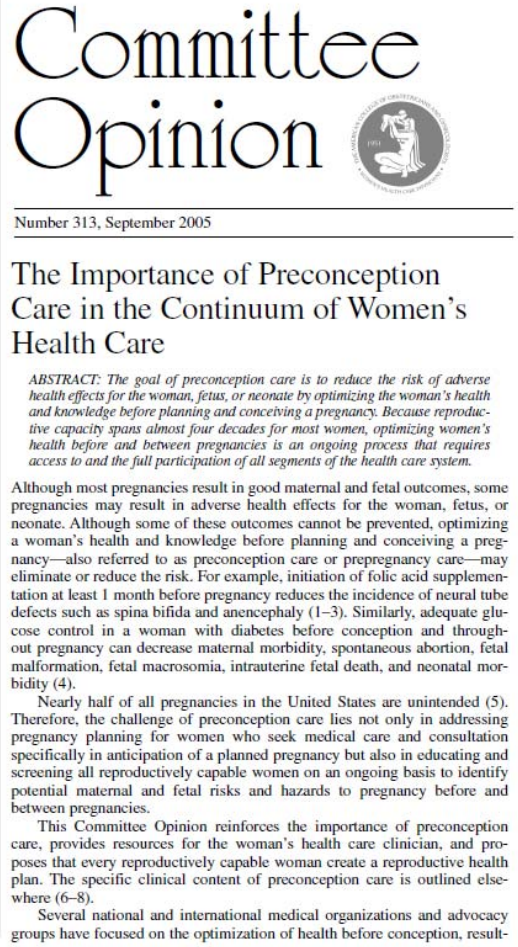
The importance of preconception care in the continuum of women's health care. ACOG Committee Opinion No. 313. American College of Obstetricians and Gynecologists. Obstet Gynecol 2005;106:665–6


Committee Opinion

Number 313, September 2005

The Importance of Preconception Care in the Continuum of Women's Health Care

ABSTRACT: The goal of preconception care is to reduce the risk of adverse health effects for the woman, fetus, or neonate by optimizing the woman's health and knowledge before planning and conceiving a pregnancy. Because reproductive capacity spans almost four decades for most women, optimizing women's health before and between pregnancies is an ongoing process that requires access to and the full participation of all segments of the health care system.

Although most pregnancies result in good maternal and fetal outcomes, some pregnancies may result in adverse health effects for the woman, fetus, or neonate. Although some of these outcomes cannot be prevented, optimizing a woman's health and knowledge before planning and conceiving a pregnancy—also referred to as preconception care or prepregnancy care—may eliminate or reduce the risk. For example, initiation of folic acid supplementation at least 1 month before pregnancy reduces the incidence of neural tube defects such as spina bifida and anencephaly (1–3). Similarly, adequate glucose control in a woman with diabetes before conception and throughout pregnancy can decrease maternal morbidity, spontaneous abortion, fetal malformation, fetal macrosomia, intrauterine fetal death, and neonatal morbidity (4).

Nearly half of all pregnancies in the United States are unintended (5). Therefore, the challenge of preconception care lies not only in addressing pregnancy planning for women who seek medical care and consultation specifically in anticipation of a planned pregnancy but also in educating and screening all reproductively capable women on an ongoing basis to identify potential maternal and fetal risks and hazards to pregnancy before and between pregnancies.

This Committee Opinion reinforces the importance of preconception care, provides resources for the woman's health care clinician, and proposes that every reproductively capable woman create a reproductive health plan. The specific clinical content of preconception care is outlined elsewhere (6–8).

Several national and international medical organizations and advocacy groups have focused on the optimization of health before conception, result-

1995

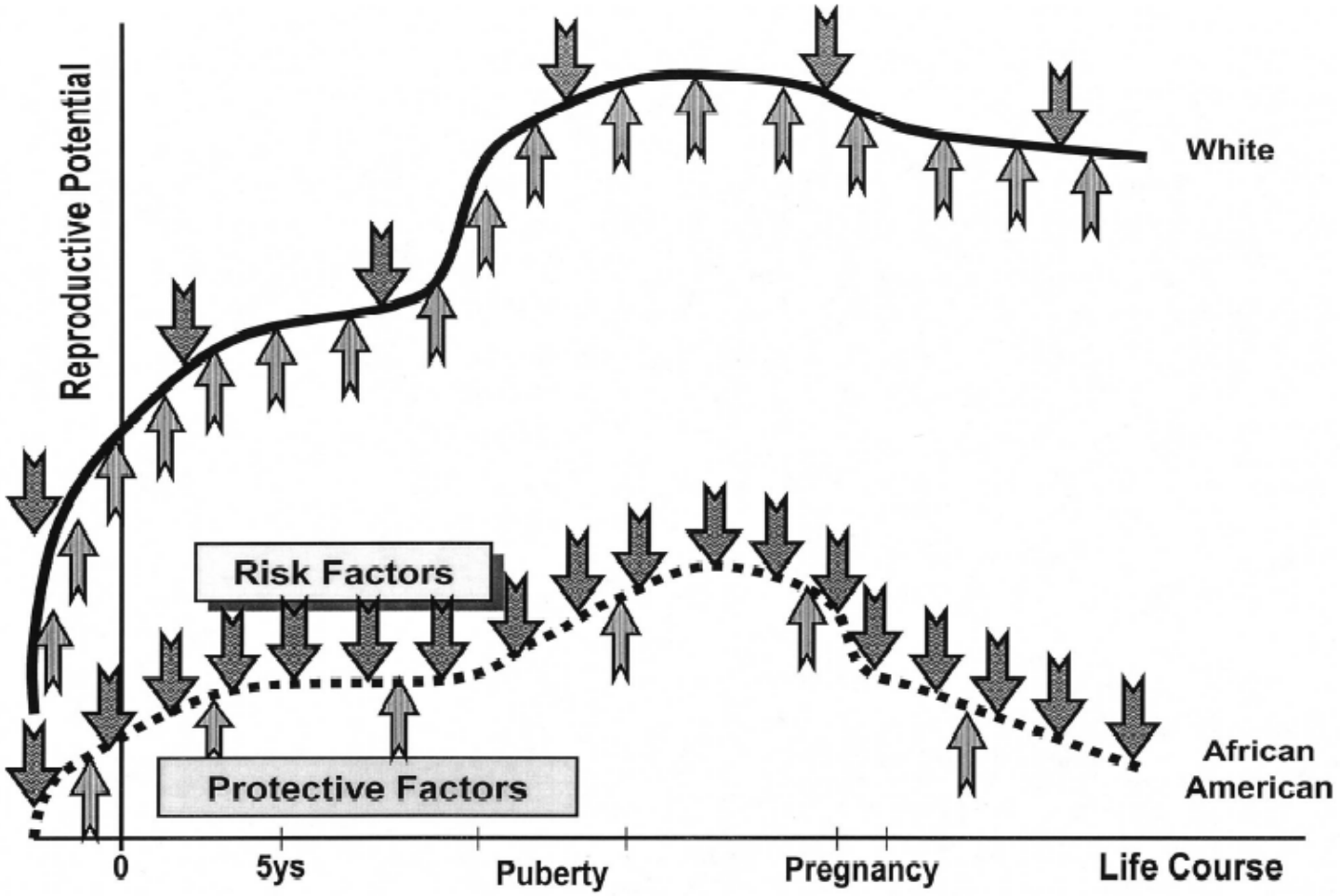
2005 and reaffirmed 2012

Why such slow progress in PCC?

1. those most in need of services are those least likely to receive them
2. provision of services is often badly fragmented
3. there is a lack of available treatment services for high-risk behaviors
4. reimbursement for risk assessment and health promotion activities in inadequate
5. health promotion messages are not effective unless received by a motivated couple
6. for only a few condition is are there data that intervention prior to conception is better that intervention early in pregnancy
7. many clinical training programs do not emphasize risk assessment and health promotion skills.

Jack and Culpepper. JAMA 1990; 264:479.

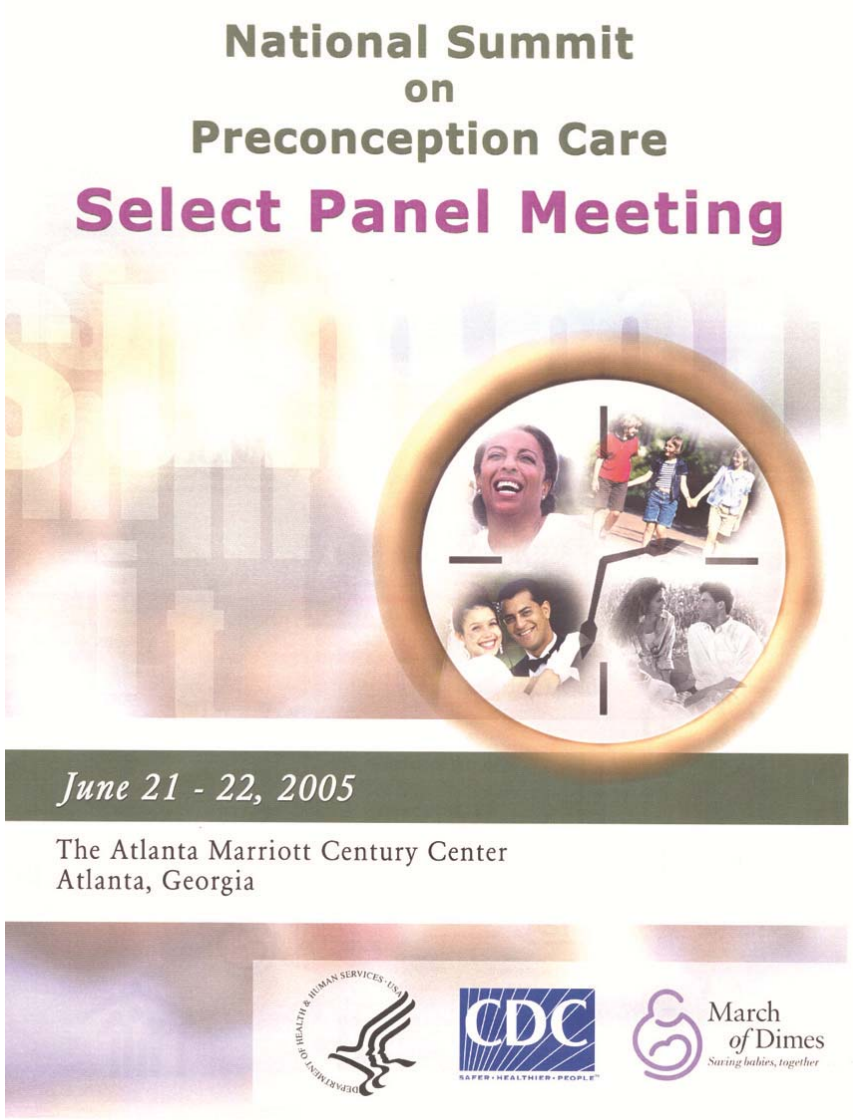
Life Course Perspective

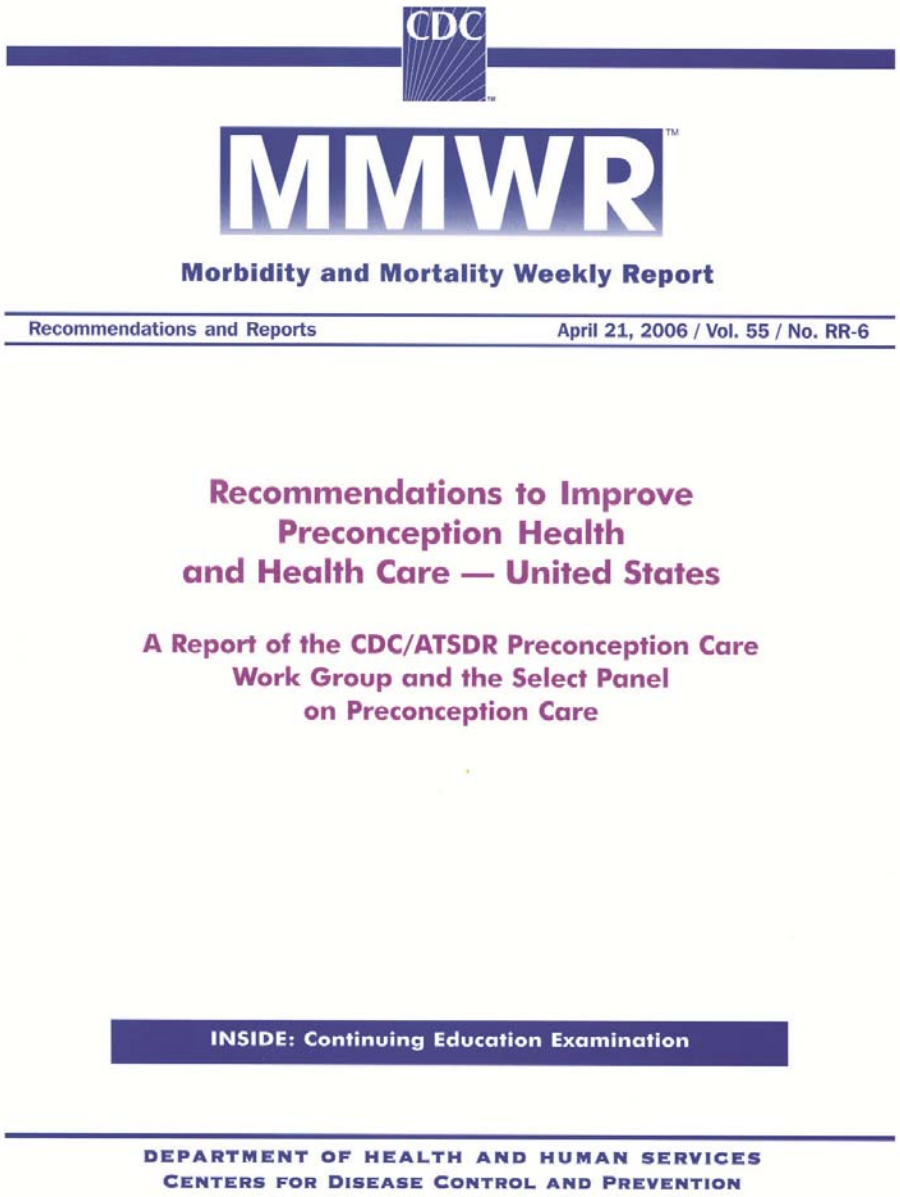


Lu MC, Halfon N. Racial and ethnic disparities in birth outcomes: a life-course perspective.Matern Child Health J. 2003;7:13-30.

U.S. Centers for Disease Control and Prevention, Department of Health and Human Services
2005

Select Panel on Preconception Health and Health Care





- 3 national preconception summits
- In 2006, the CDC Select Panel put forth 4 goals, 10 recommendations, and more than 50 action steps for the national preconception initiative.

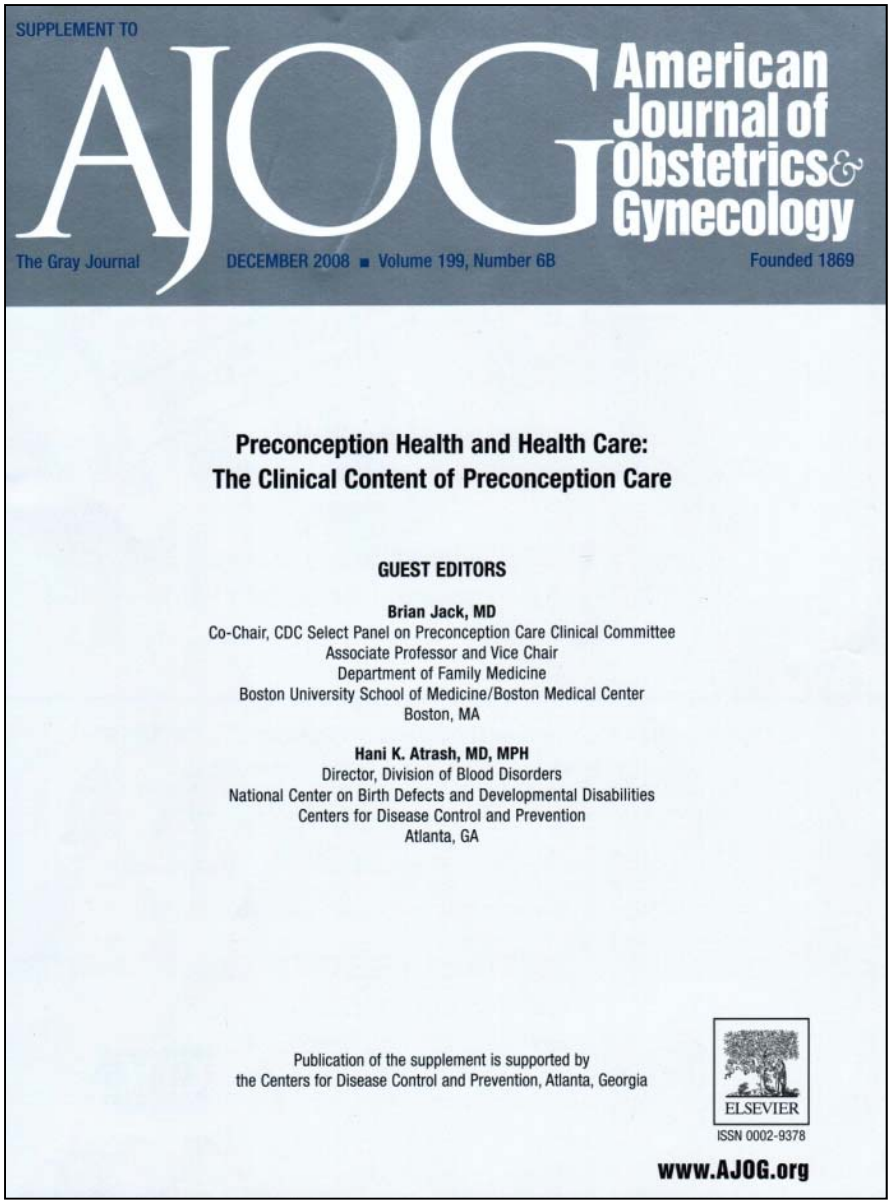
<u>Workgroups</u>

- Clinical
- Public Health
- Consumer
- Policy/Finance
- Research and Surveillance

Focus of the CDC Clinical Work Group - June 2005 - present

1. What clinical conditions should be addressed as part of PCC?
2. What is the evidence?
3. How can the conditions be best identified?
4. What interventions are available?
5. How can we deliver this material in clinical practice?

Content of Preconception Care: 2008



Health promotion

Immunization

Infectious disease

Medical conditions

Psychiatric conditions

Parental exposure

Family and genetic history

Nutrition

Environmental exposure

Psychosocial risk

Medication

Reproductive history

Special populations

Preconception Interventions Reviewed

Category	Potential Components of Preconception Care
Family planning	Physical Activity, Weight Status, Nutrient Intake, Folate, Immunizations, Substance Use, Sexually Transmitted Infections, Human Papillomavirus (HPV), Hepatitis B, Varicella, Measles/ Mumps/Rubella, Influenza, Diphtheria/Tetanus/Pertussis (DTaP)
Infectious diseases	HIV, Hepatitis C, Tuberculosis, Toxoplasmosis, CMV, Listerosis, Parvovirus, Malaria, Gonorrhea, Chlamydia, Syphilis, History of Genital Herpes, Asymptomatic bacteruria Periodontal disease, Bacterial Vaginosis, Group B Strep
Medical conditions	Diabetes, Thyroid Disease, PKU, Seizures, Hypertension, Rheumatoid Arthritis, Lupus, Renal Disease, Cardiovascular, Thrombophelia, Asthma
Psychiatric	Depression/Anxiety, Bipolar disease, Schizophrenia
Exposures	Alcohol, Tobacco, Illicit Substances
Family History	All Individuals, Ethnicity-based, Family history, Personal history
Nutrition	Dietary Supplements, Vitamin A, Folic Acid, Multivitamins, Vitamin D, Calcium, Iron, Essential Fatty Acids, Iodine, Underweight, Overweight, Eating Disorders
Environmental	Mercury, Lead, Soil and Water Hazards, Workplace Exposure, Household Exposure
Psychosocial Risks	Inadequate Financial Resources, Access to Care, Physical / Sexual Abuse
Medications	Prescription, Over-the-counter, Medication, Dietary Supplements
Reproductive History	Prior Preterm Birth Infant, Prior C-Section, Prior Miscarriage), Prior Stillbirth, Uterine Anomalies
Special Populations	Women with Disabilities, Immigrant and Refugee Populations, Cancer

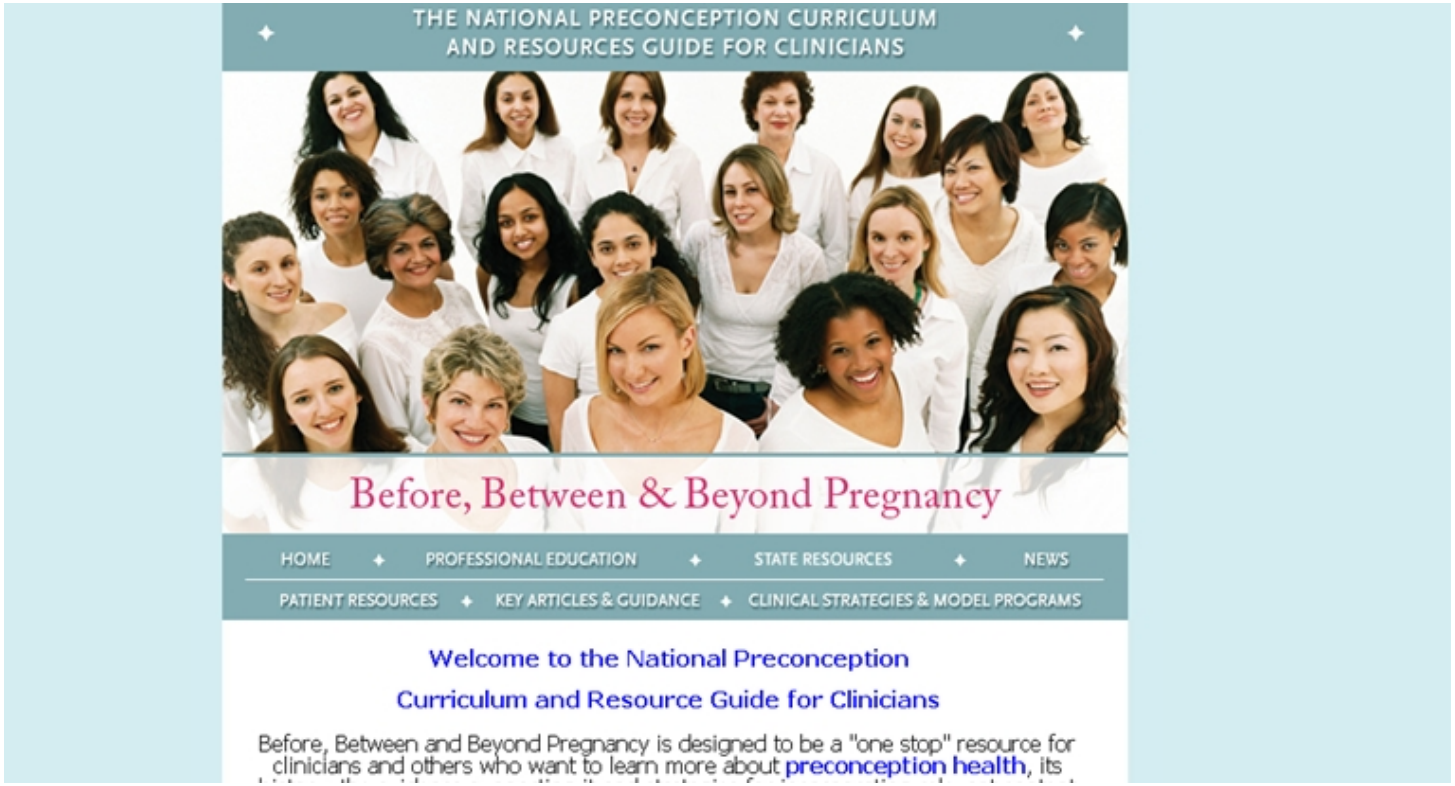
Each Component Presented in a Standard Format

- Burden of suffering
- How to identify
- Description of effective treatments
- Impact of treating in the preconception period.
- Recommendation
- Related recommendations by other groups.
- Strength of Recommendation + Quality of Evidence

Am J Obstet Gynecol Volume 199, Issue 6, 2008

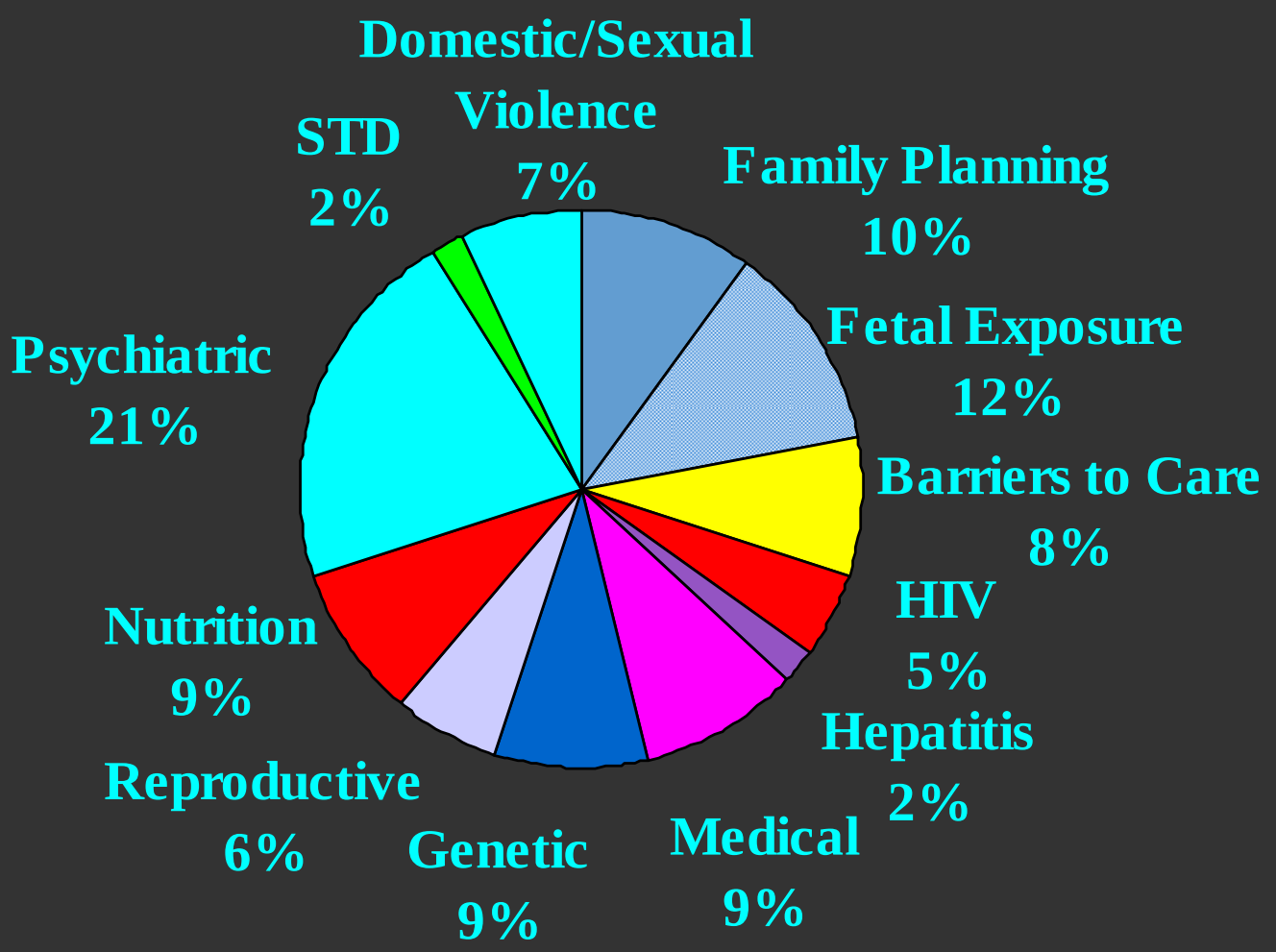
Available as a full text and free download at:

http://www.beforeandbeyond.org/



http://www.beforeandbeyond.org/

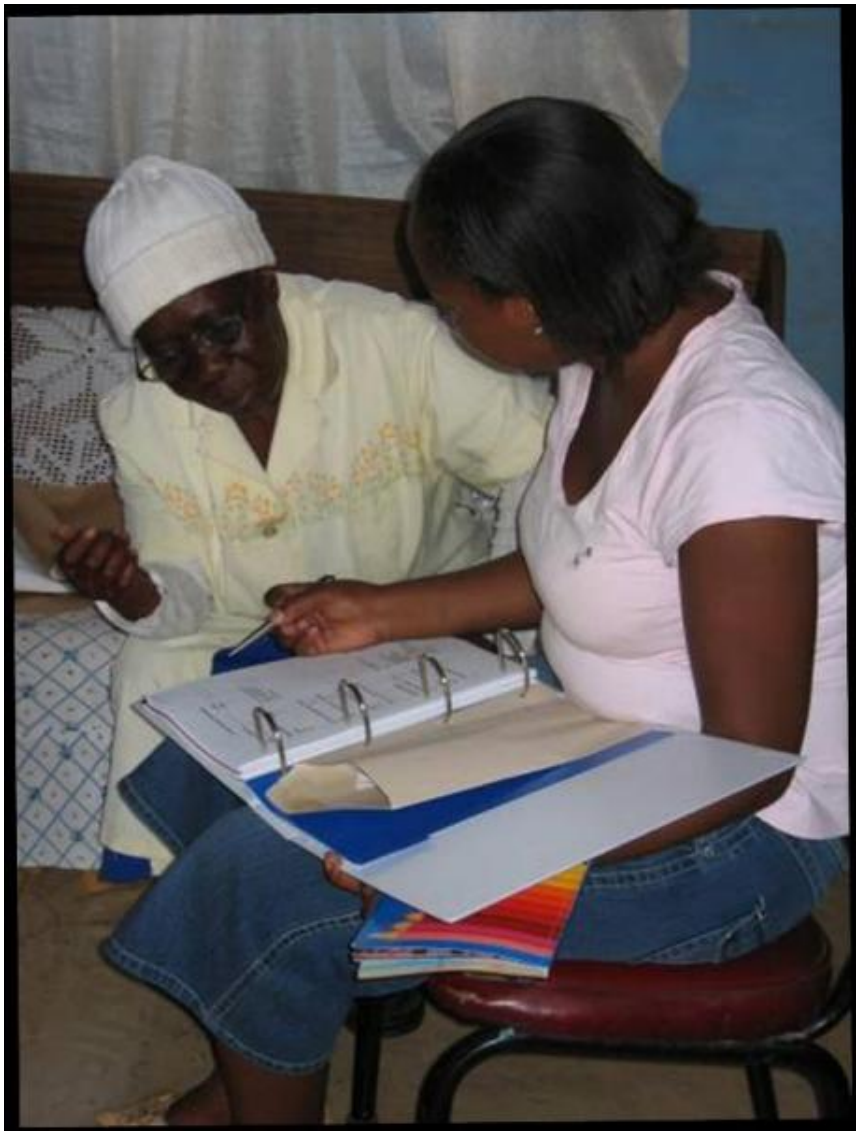
Preconception Risk Identified at the Time of a Negative Pregnancy Test



Jack B, Campanile C, McQuade W, Kogan M. Arch Fam Med 1995:4:340-45

Preconception Interventions Work

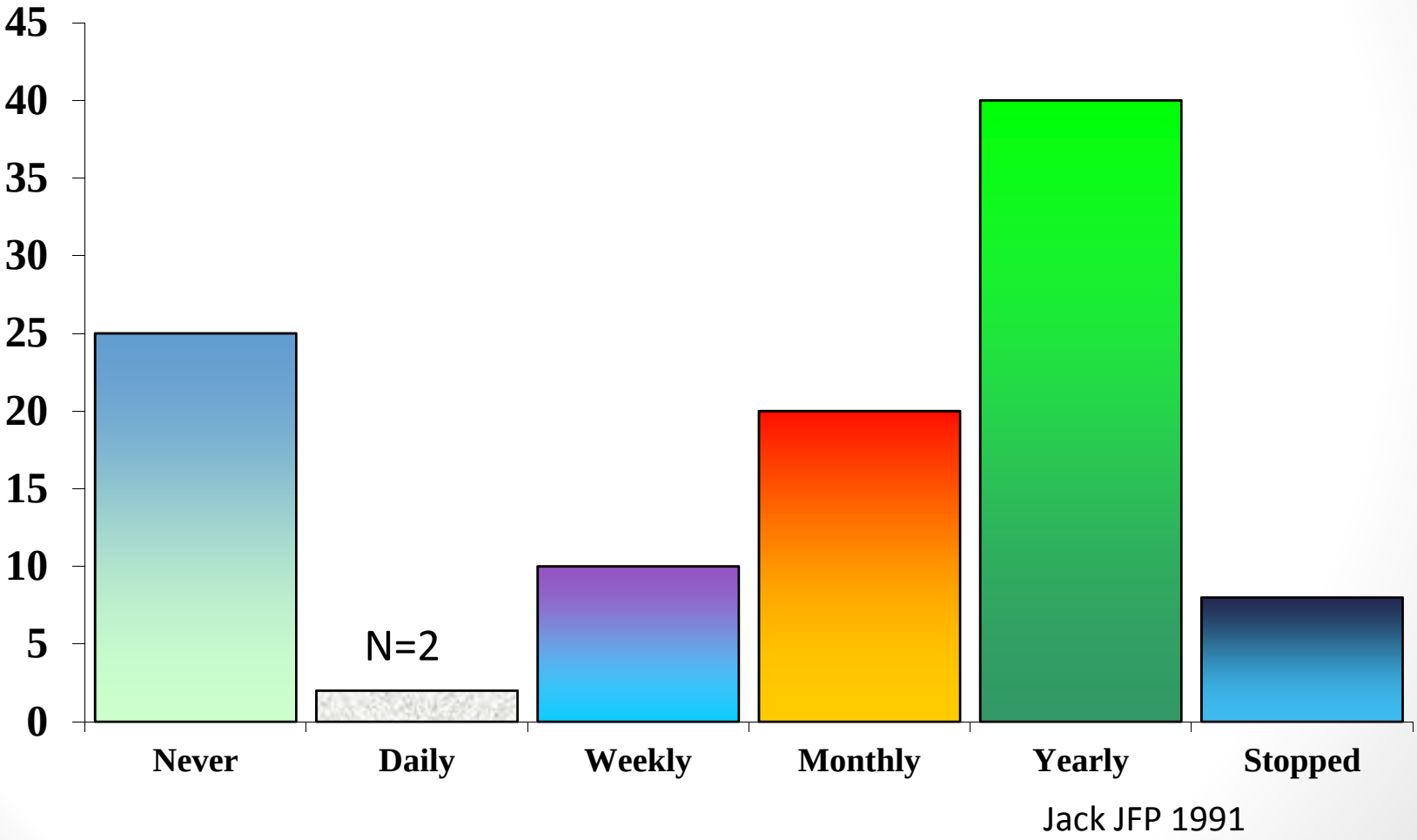
- Smoking
- Alcohol
- Diabetes
- Medications
- NTDs
- HIV
- Rubella
- Family Planning



The Effect of Maternal Cigarette Smoking on Pregnancy Complications

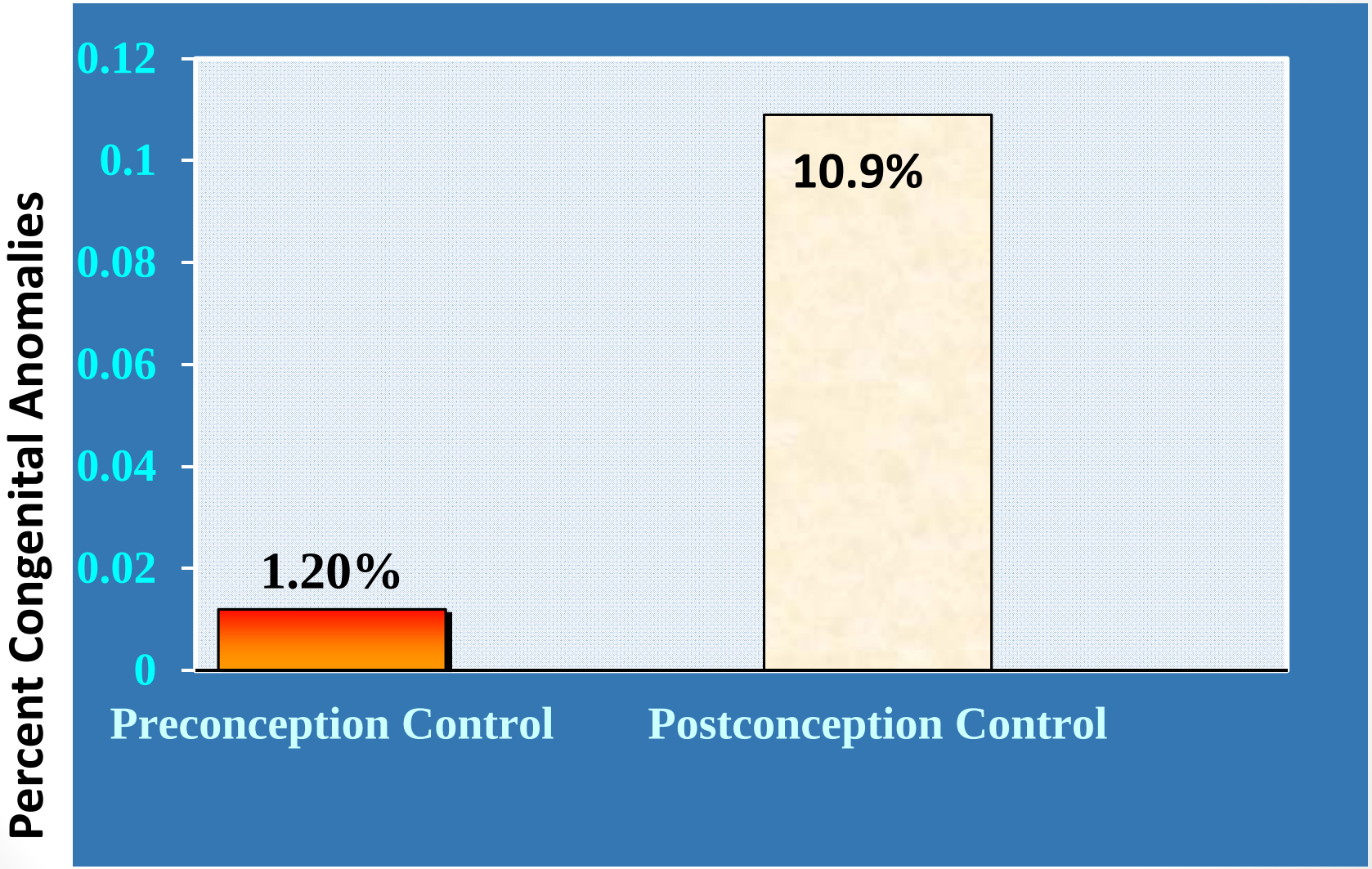
Fetal/Infant Outcome	No. of Studies	Pooled Risk	CI	P - value	% of All Cases	No. of Cases
Spontaneous abortion	7 6	1.24 1.32	1.19-1.30 1.18-1.48	<.001 <.001	3-8	19,000-141.00
Low birthweight	22 1	1.82 1.99	1.67-1.97 1.74-2.28	<.001 <.001	11-21	32,000-61,000
Perinatal morality	23 2	1.26 1.23	1.19-1.34 1.12-1.41	<.001 <.001	3-8	1,900-4,800

Frequency of Alcohol Consumption Among Patients with a Negative Pregnancy Test n=136



Jack JFP 1991

Congenital Anomalies in Infant's of Women with Preconception Control of Diabetes vs. Postconception Control



Kitzmiller JL et. al. JAMA 1991:245;731-734

Exposure to Teratogens

Occupational Exposures

heavy metals – lead, mercury
inorganic solvents

Medications

Gold
Lithium
Isotretinoin (Acutane)
Valproic acid
ACE inhibitors
Quinolones
Tetracycline
Warfarin

Nutrition

- Overweight or Underweight
- Availability
- Eating Disorders
- Pica
- NTDs

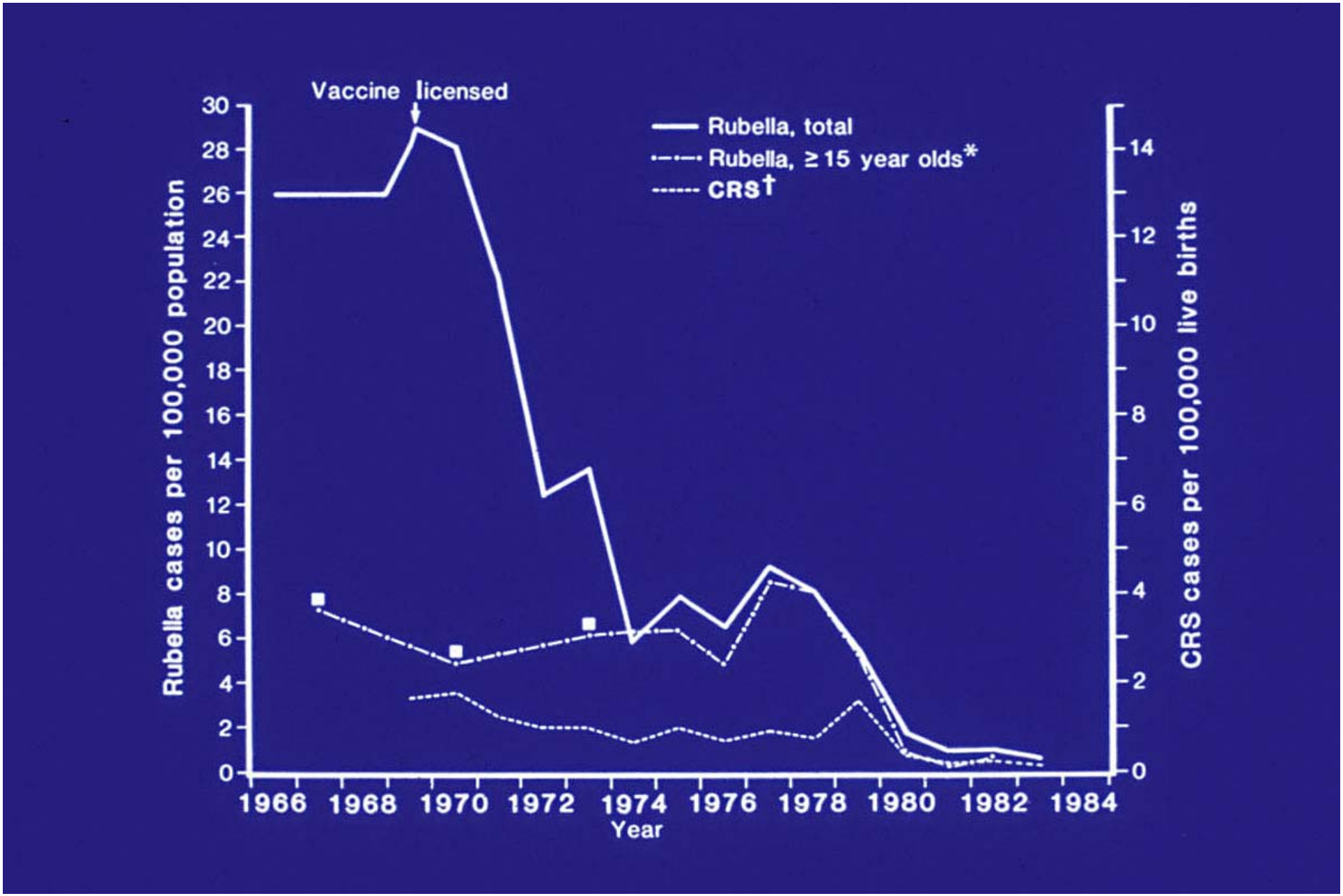
“All women of child bearing age in the United States who are capable of becoming pregnant should consume 0.4 mg of folic acid per day for the purpose of reducing their risk of having a pregnancy affected with spina bifida or other NTDs”

US Public Health Service

Infectious Disease History

- HIV
- HBV
- Toxoplasmosis
- Rubella
- Varicella
- STDs

Rubella


Vaccine licensed
Rubella, total
Rubella, ≥15 year olds*
CRS†
Rubella cases per 100,000 population
CRS cases per 100,000 live births
Year
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
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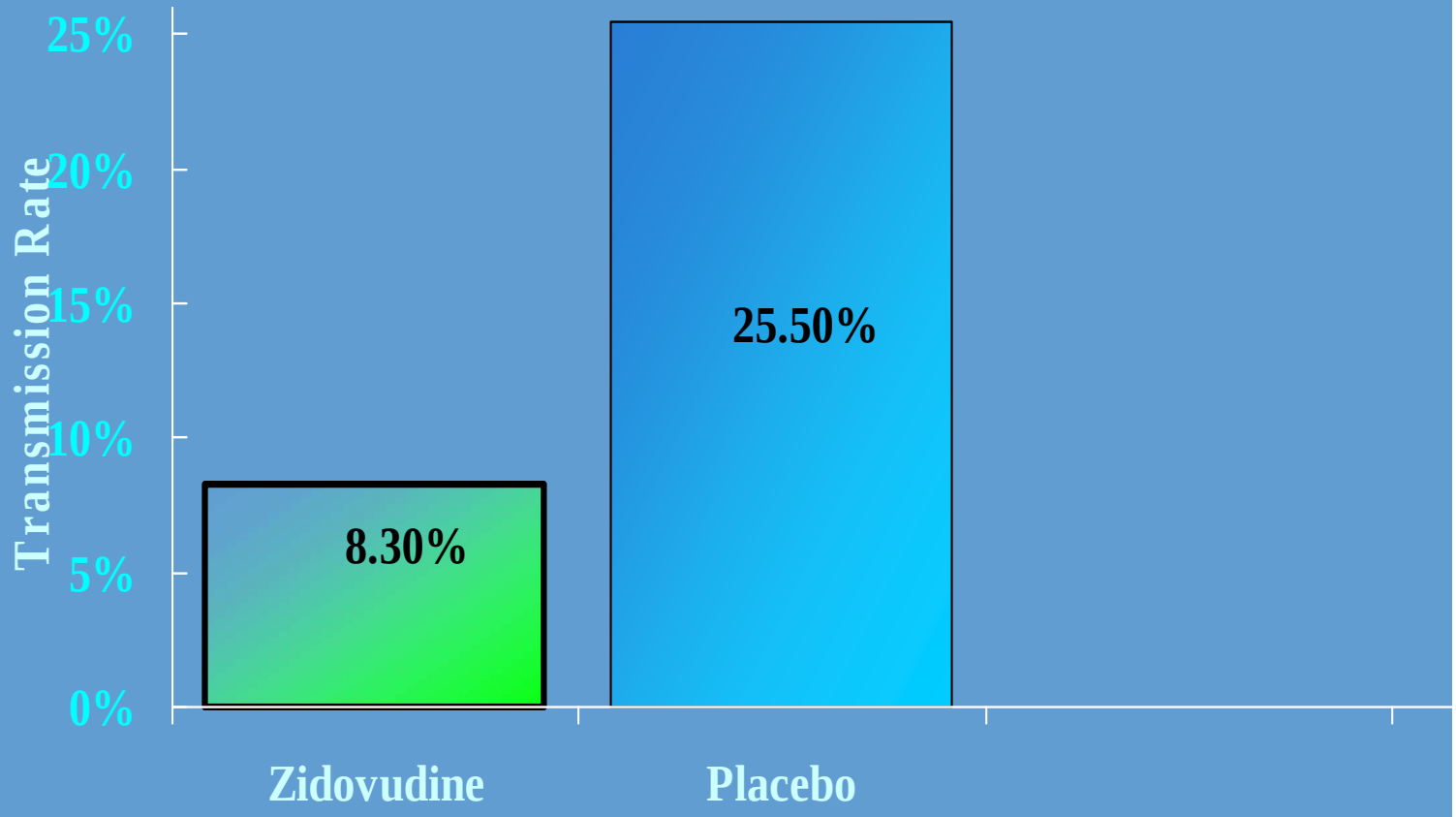
1966
1968
1970
1972
1974
1976
1978
1980
1982
1984

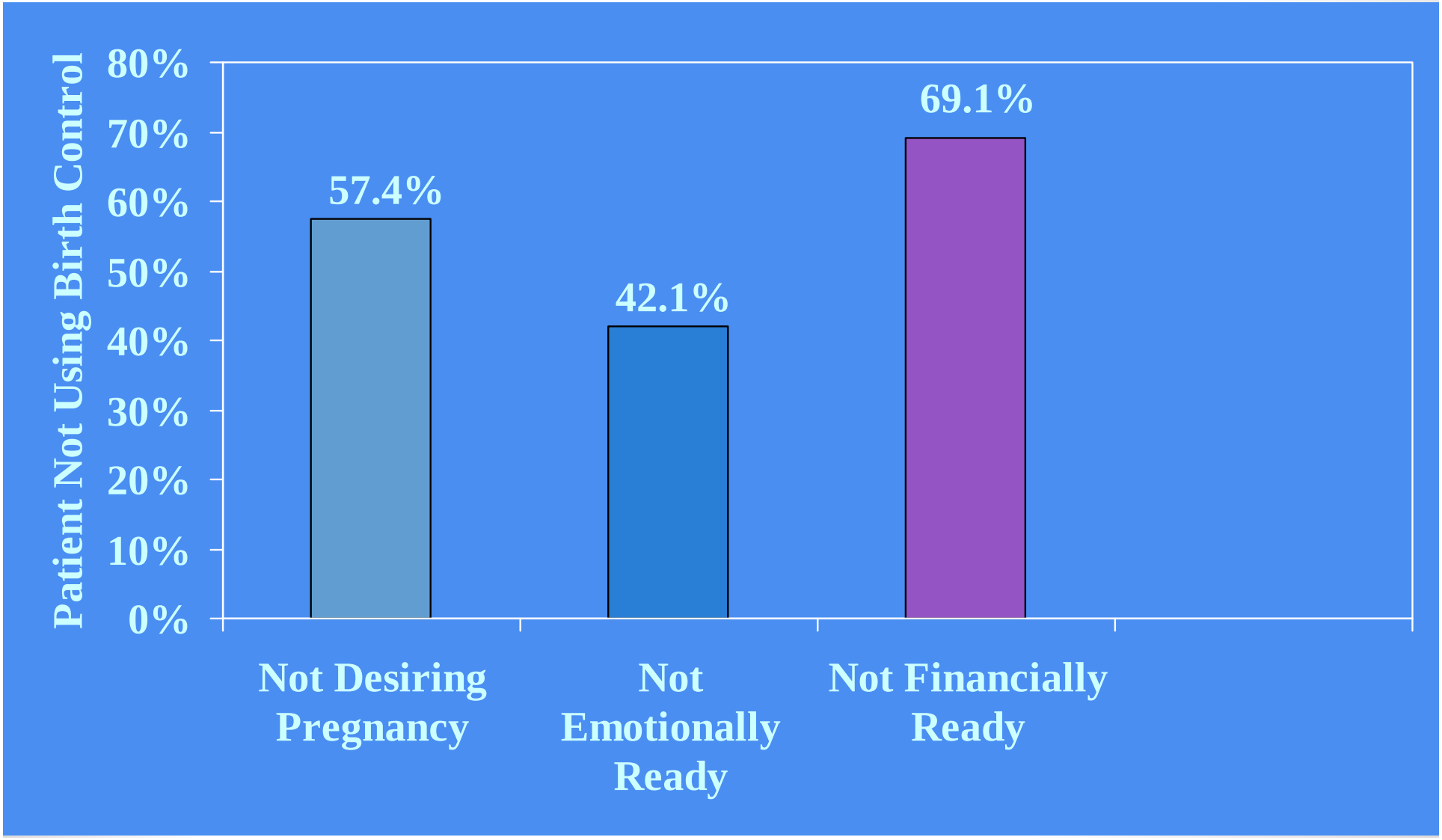
Probability of Vertical Transmission of HIV According to Treatment Group



Connor EM et.al. NEJM 1994:331;1173-80

Family Planning

Patients Not Using BC and Not Ready for Pregnancy with a Negative Pregnancy Test



The Dilemma

How can we possibly do all of this?

One Key Question ® (OKQ) Campaign

- Will be launched by BPHC in 2015
- Part of the Boston Healthy Start Initiative (BHSI)
- To be asked of all women 18-50 as a routine part of care

"Would you like to become pregnant in the next year?"

www.onekeyquestion.org

The need

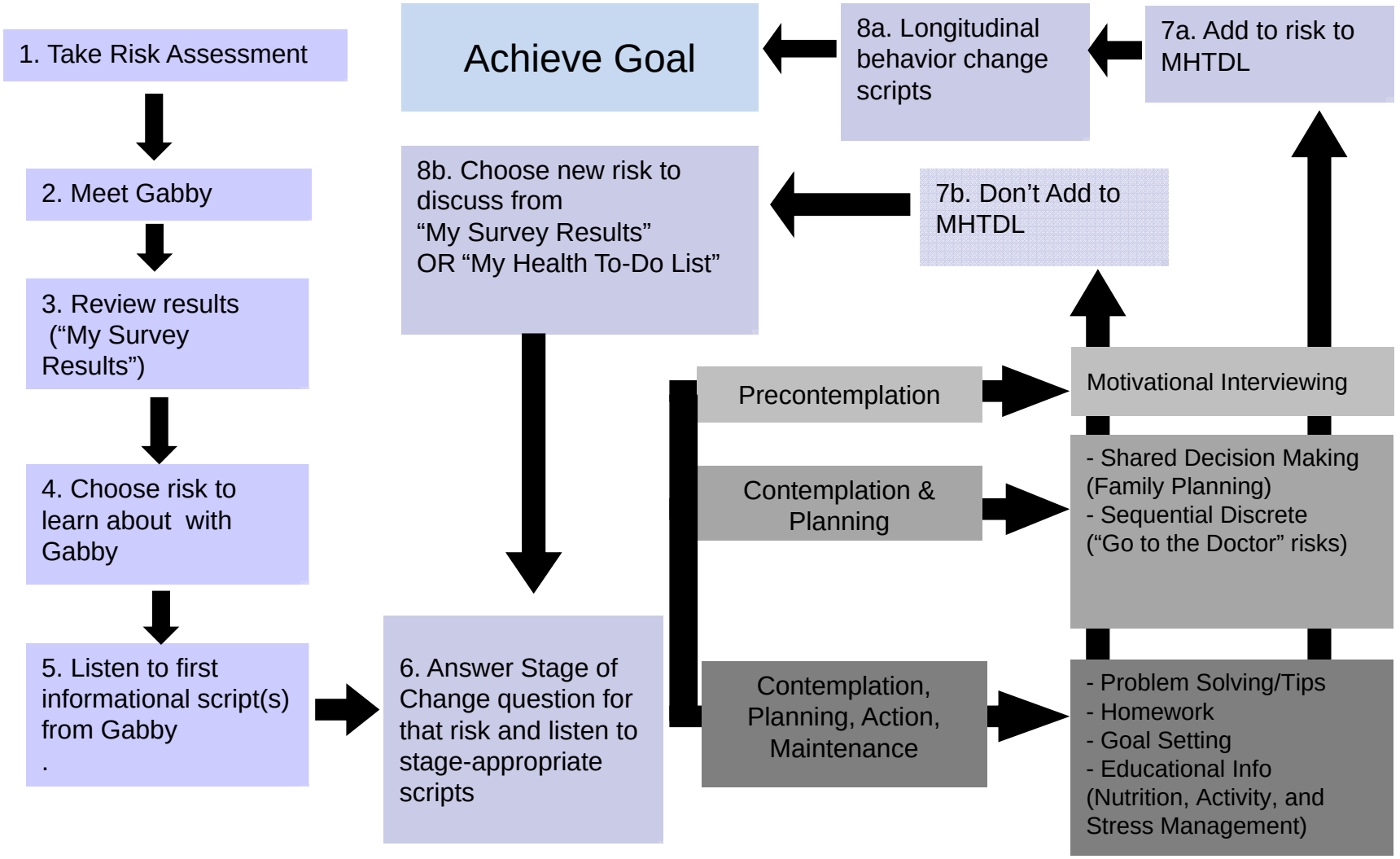
There is a need for an efficient way to assess a woman's preconception risks, in order to prioritize valuable appointment time with a provider, and to support the woman in taking action to minimize her risks.

Now Introducing: Gabby

Video: Meet Gabby

http://www.bu.edu/familymed/programs-and-research/project-preconception-care/meet-gabby/

Gabby Version 2



Gabby Projects

RCT of 530 participants (NIMHD, R01MD006213)

- Enrollment began March 2014
- National sample, enrolled via phone
- One-year intervention period

Kellogg Foundation (P3024018) – 2 years of development to Prepare for Implementation at Healthy Start Sites

- Comprehensive content overview and update
- Expand Family Planning Discussion
- Make connections between risks to leverage past success

PCC for Men – Administrative Supplement from HRSA-BMCH

- Created a Men's Health Survey; focus groups (n=17); pilot testing (n=29)
- Create Gabe

How you can help us recruit!

Be part of a Women's Health Research Study

Help us test a computer program and learn more about your health

What is it?

We are inviting African American women to be a part of a study about an online women's health program, called **The Gabby Project**. It's all about being healthy for yourself *now*, and also to help you have a healthier pregnancy and baby in the *future*.

What will you do?

There will be about 530 women in the study. About half will use the online program for one year, and the other half will not. The group you will be in will be chosen at random. After 6 months and 12 months we will call the women from both groups to talk about their health status and ask the group that used the online program for feedback.

Are you eligible?

You may be eligible if you speak English and are:

- 18-34 years old
- Black or African American
- Not currently pregnant

All participants are eligible to receive **$50 in gift cards** for completing both the 6-month and 12-month follow up phone calls. You may also be eligible to win **$100 gift card(s)** in a monthly raffle. Feel free to share this information with friends who might also be eligible and want to participate. Thank you!

For more information contact our research team at:
pccstudy@bmc.org
Or text GabbyStudy to: 857-293-9874

Gabby

BU
Boston University School of Medicine

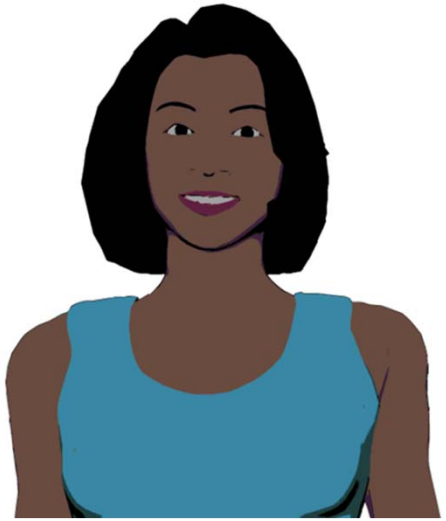
CENTER
BOSTON MEDICAL

Preconception Care: Baby of the Future

Final Comments

- Societal need to improve reproductive outcomes
- Preconception Care offers an opportunity to impact outcomes
- HIT offers a way to provide this care
- Gabby shown to engage women and reduce health risk – more to come in upcoming webinar!

Thank you!



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Final Comment About Preconception Care