PRECONCEPTIONAL HEALTH
Thoughts on What We Know, What We Don't . . . And Where We Go From Here

Indiana Perinatal Network

March 19, 2007

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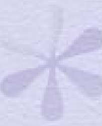
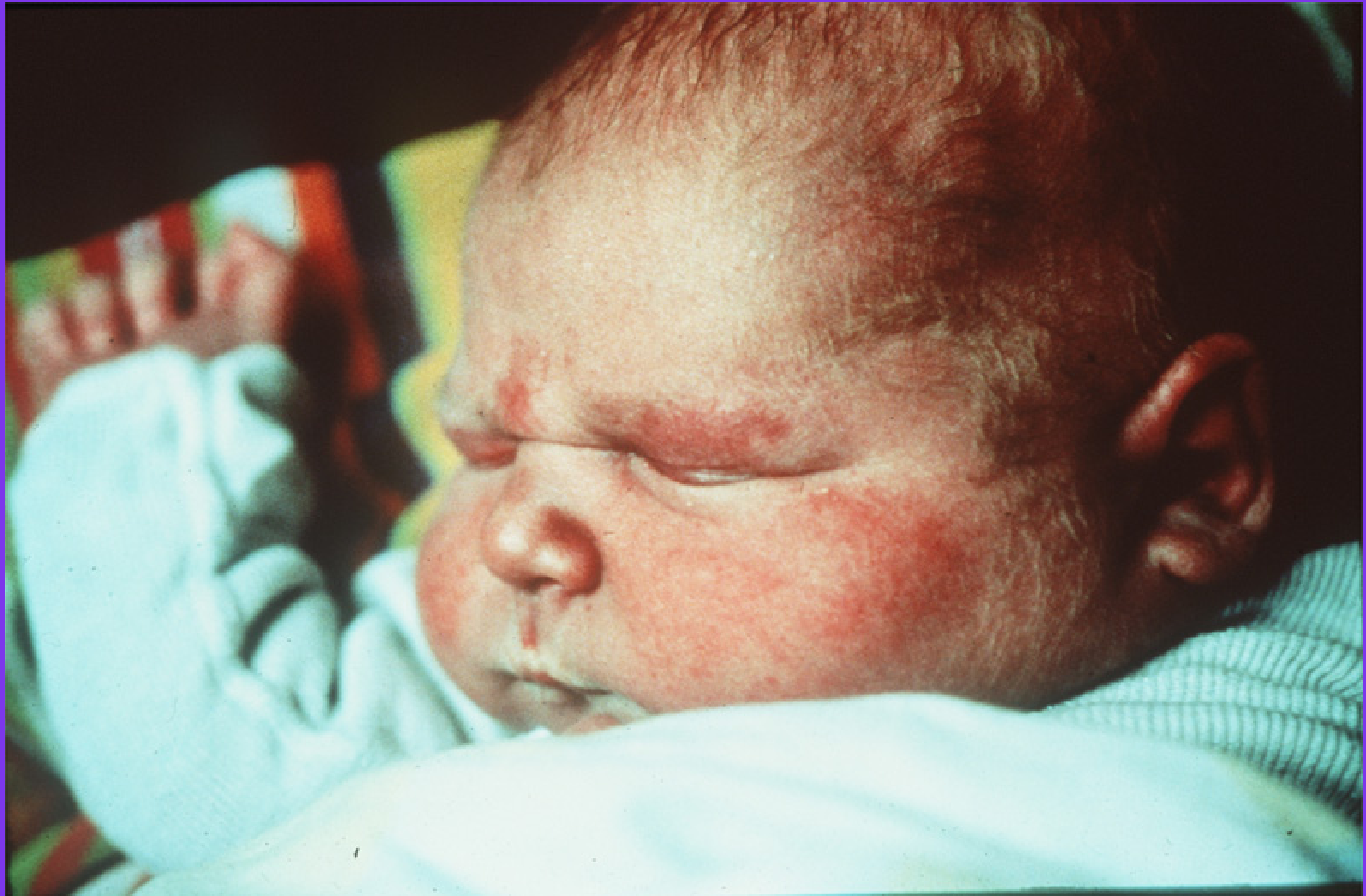


Objectives

- Explain the rationale for changing the perinatal prevention paradigm to include an emphasis on preconceptional health
- Link major threats to women's health with major threats to pregnancy outcomes
- Identify three tiers for promoting high levels of preconceptional wellness in populations of childbearing age.
- Begin to develop strategies to view every encounter with a woman of childbearing age as an opportunity for health promotion and disease prevention through the life cycle.

Disclosure Statement

- I have had no financial relationships with commercial interests related to this topic in the last twelve months



darling one has
gone from us
forgotten

Incidence of Adverse Pregnancy Outcomes, 2004

Spontaneous abortion	20%
Infant Mortality	6.8/1000 live births (2003)
Fetal Mortality	6.2/1000 live births plus fetal deaths (2003)
Major birth defects	3.3%
Low Birth Weight	8.1%
Preterm Delivery	12.5%
Complications of pregnancy	30.7%
Unintended pregnancies	49% (2001)
Unintended births	31% (2001)

Infant Mortality
United States, 1915-2000

Rate per 1,000 live births

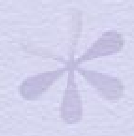
120
100
80
60
40
20
0

1915 1925 1935 1945 1955 1965 1975 1985 1995

March of Dimes
Saving babies, together

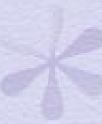
Source: National Center for Health Statistics, final mortality data
Prepared by March of Dimes Perinatal Data Center, 2002

INTERNATIONAL COMPARISONS OF INFANT MORTALITY RATES,2003



Rank	Country	Rate
1	Hong Kong	2.3
2	Singapore	2.5
7	Czech Republic	3.9
17	Greece	4.8
25	Canada	5.3
27	Cuba	6.3
28	**United States**	**6.9**

http://www.marchofdimes.com/peristats

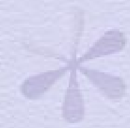


Selected Reproductive Outcomes

Indiana, 2004

Spontaneous Abortion	20.0%	
Infant Mortality Rate	**7.9%**	**(7.0)**
Low Birth Weight Rate	**8.1%**	**(7.8)**
Preterm Birth Rate	**13.2%**	**(12.1%)**
Congenital Anomalies	3-6%	

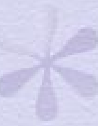
Source: Peristats (MOD)



HEALTHY PEOPLE 2010

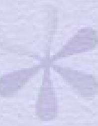
- Reduce infant deaths to 4.5 (per 1000 live births) **Indiana 7.9 (2004)**
- Reduce fetal deaths to no more than 4.1 (per 1,000 live births plus fetal deaths) **Indiana 5.71 (2003)**
- Reduce preterm births to no more than 7.6% **Indiana 13.2 (2004)**

Source: Peristats (MOD)
Source: CDC. Fetal and Perinatal Mortality, United States, 2003. National Vital Statistics Report. Volume 55, Number 6



In obstetrics. . .

most of our outcomes or their determinants are already present before we ever meet our patients

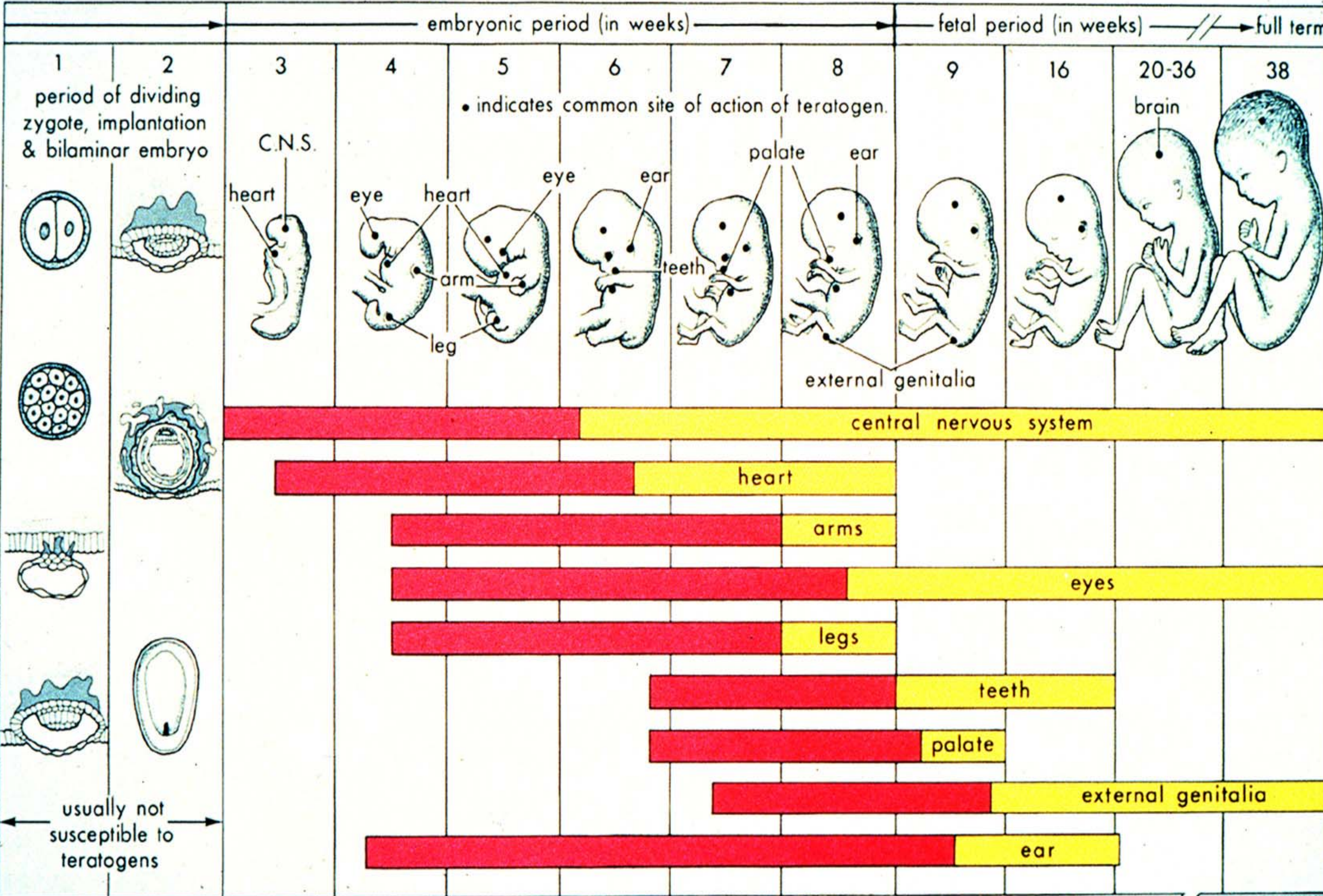


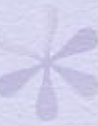
Important Examples

- Intendedness of conception
- Interpregnancy interval
- Maternal age
- Exposure ART/ovulation stimulation
- Spontaneous abortion
- Abnormal placentation
- Chronic disease control
- Congenital anomalies
- Timing of entry into prenatal care

IMPORTANCE OF
FIRST TRIMESTER
ON
PREGNANCY OUTCOMES

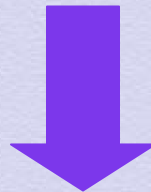
CRITICAL PERIODS OF DEVELOPMENT
(RED DENOTES HIGHLY SENSITIVE PERIODS)



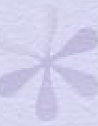


Over time, it has come to be realized that

Preconceptional Health Promotion provides a pathway to



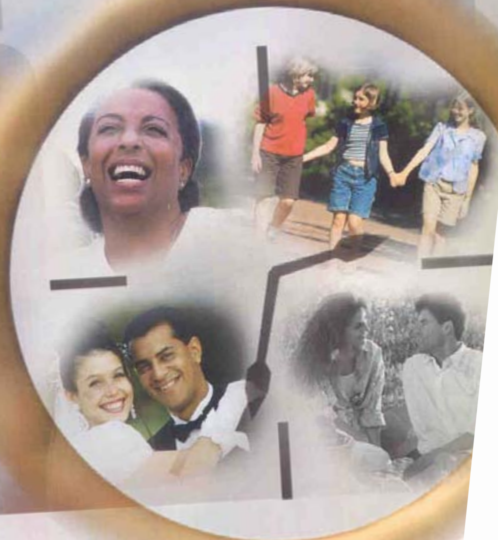
the **Primary Prevention** of many poor pregnancy outcomes beyond that available through traditional prenatal care



Preconception health promotion and health care are not new concepts; they have been gaining momentum for the last three decades.

Freda, Moos & Curtis. MCHJ, 2006;10:S43

National Summit on Preconception Care



June 21 - 22, 2005

The Atlanta Marriott Century Center
Atlanta, Georgia

MMWR
Morbidity and Mortality Weekly Report
Recommendations and Reports
April 21, 2006 / Vol. 55 / No. RR-6

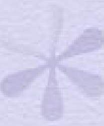
Recommendations to Improve Preconception Health and Health Care — United States

A Report of the CDC/ATSDR Preconception Care Work Group and the Select Panel on Preconception Care

INSIDE: Continuing Education Examination

DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENTERS FOR DISEASE CONTROL AND PREVENTION

Preconception Care Framework



Vision

Improve health and pregnancy outcomes

Goals

Coverage – Risk Reduction

Empowerment – Disparity Reduction

Recommendations

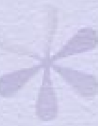
Individual Responsibility - Service Provision

Access – Quality – Information – Quality Assurance

Action Steps

Research – Surveillance – Clinical interventions

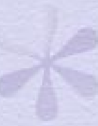
Financing – Marketing – Education and training



CDC Definition

- Preconception care is a set of interventions that aim to identify and modify biomedical, behavioral and social risks to a woman's health or pregnancy outcome through prevention and management
- It is more than a single visit and less than all well-woman care

CDC and Select Panel, 2006

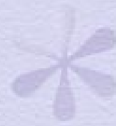


Foundation for CDC Initiative

Evidence-base clinical guidelines exists for:

- Folic acid
- Rubella seronegativity
- Diabetes
- PKU
- Oral anticoagulants
- Anti-epileptic treatments
- Isotretinoins
- Alcohol use
- STDs
- etc

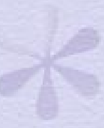
Common Definitions and Uncommon Usage



- **Preconception**
  - Health status and risks before first pregnancy; health status shortly before any pregnancy
- **Periconception**
  - Immediately before conception through organogenesis
- **Interconception**
  - Period between pregnancies

Goals for Improving Preconception Health

- Goal 1: Improve the knowledge, attitudes and behaviors of men and women related to preconception health
- Goal 2: Assure that all US women of childbearing age receive preconception care services—screening, health promotion and interventions- that will enable them to enter pregnancy in optimal health
- Goal 3: To reduce risks indicated by a prior adverse pregnancy outcome through interventions in the interconception period
- Goal 4: Reduce disparities in adverse pregnancy outcomes



Physical Environment

Social Service System

Health Care System

Behaviors & Lifestyle

Economic Environment

Family & Social Support

Schools

Community & Culture

Physical

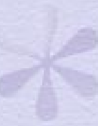
Emotional

Social

Cognitive

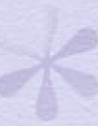
Healthy Women

Used with permission of The Nemours Foundation, Division of Health and Prevention Services. Adapted from the 2005 Delaware Children’s Health Chartbook.



What Is Preconception Care?

- Giving protection
- Managing conditions
- Avoiding exposures known to be teratogenic



Giving Protection

- **Examples of giving protection**
  - Folic acid supplementation to protect against neural tube defects and other congenital anomalies
  - Protection against infectious diseases
    - Rubella
    - Varicella
    - Hepatitis B
    - HIV/AIDs

Managing Conditions

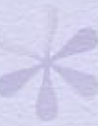
- **Examples of conditions known to be detrimental to reproductive outcomes if in poor control before conception**
  - Diabetes
  - Maternal PKU
  - Obesity
  - Hypothyroidism
  - Sexually transmitted infections

Avoiding Exposures

- **Examples of exposures known to be teratogenic or otherwise harmful in early pregnancy**
  - Medications
    - Many antiseizure medications
    - Oral anticoagulants
    - Accutane
    - etc
  - Alcohol
  - Tobacco

Examples of what we know. . . and what we don’t in the clinical sphere:*

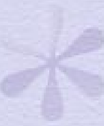
*Bottom Line: Little has changed in the last 20+ years



What We Know: Diabetes

- Tight control of diabetes in periconception period results in decreased incidence of congenital anomalies

- **What We Don’t Know**:
  - How to reach all women with diabetes with this prevention opportunity



Process Measures and Diabetes

- Managed Care Study:
  - 52% of women of reproductive age with pregestational diabetes recalled being counseled about blood sugars and conception
  - 37% reported discussion about using contraceptive method until optimal glucose control achieved

Kim, et al AJOG, 199, 227-232, 2005

Diabetic Women and Periconceptional Behavior N=85 PP Diabetic Women

- Periconceptional behaviors in women with pregestational diabetes
  - 79% knew advantages of optimizing blood sugar
  - 41% had "planned" pregnancies
  - 10.6% had no knowledge of relationship of diabetes in pregnancy
  - Association of provider attitudes on planning status

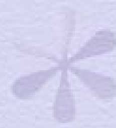
Holing, et al. Diabetes Care 21: 880-895, 1998

Factors impacting preconception glucose control

- Prospective study of factors associated with optimal glucose control found the following women had the poorest control:
  - Women who reported no specific advice prior to gestation
  - Women who had a previous poor pregnancy outcome or complicated pregnancy

Casele & Laifer, Arch Int Med, 158, 1321-1324, 1998

What We Know: Phenylketonuria

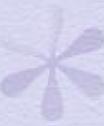


- High phenylalanine levels associated with poorer reproductive outcomes—reductions associated with improved outcomes

What We Don't Know:

- How to engage specialists in preconceptional education and interventions; how to engage women in difficult regimens

What We Know: Drug Exposures

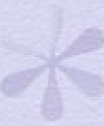


- The risks of teratogenic drug exposures can be reduced by periconceptional alterations in drug regimens

What We Don’t Know:

- How to reach women with the appropriate warnings
- How to successfully explain risk
- How to prevent unintended pregnancies

What We Know: NTDs



- Folic Acid protects against neural tube defects
- Impact far lower than prevention potential of 50-70% reduction

What We Don't Know:

- How to translate what is known into prevention opportunities for individual women
- How to avoid over-promising or instilling guilt
- Whether energy and resources should be directed toward population-based prevention strategies (i.e. fortification) rather than individual behaviors

COMPARISON KNOWLEDGE/USE OF FOLIC ACID TO PREVENT BIRTH DEFECTS—Women of childbearing age

Year	Knowledge about ↓ NTDs	Knowledge take before pregnant	Non-Pregnant women who take
1995	4%	2%	25%
2000	14%	10%	32%
2004	24%	12%	37%
2005	19%	7%	31%

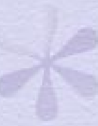
MODs, 1995, 2000,2004, 2005

What We Know: Intendedness of Conception

- Nearly 50% of pregnancies are unintended

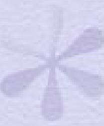
What We Don’t Know

- The relationship between pregnancy intention, pregnancy planning and positive periconceptional behaviors
- Whether a health care emphasis on preconception impacts rates of intendedness, planning or positive behaviors



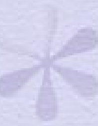
What We Know: Women's Health Status

- Major determinants of poor health status in women are also important risk factors for poor pregnancy outcomes



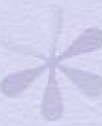
"As attractive and relatively inexpensive as prenatal care is, a medical model directed at a 6-8 month interval in a woman's life cannot erase the influence of years of social, economic, [physical] and emotional distress and hardship."

Dillard, RG NCMJ 65:3 p147 (2004)



The nation's approach to women's health care may be at the tipping point for redefining the perinatal period to include women's wellness across the reproductive life span as an appropriate and favored approach to improve reproductive outcomes

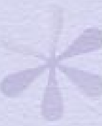
Examining the Evidence of Link between Women’s Health Status and Reproductive Outcomes



What We Know: Obesity

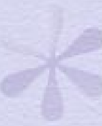
- Obesity and Women's Health:
  - Diabetes
  - Hypertension
  - Cardiovascular disease
  - Disabilities

- Obesity and Pregnancy:
  - Glucose intolerance of pregnancy
  - Pregnancy induced hypertension
  - Thrombophlebitis
  - Neural tube defects
  - Prematurity



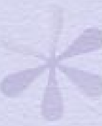
NUTRITIONAL STATUS: Underweight

- Underweight and Women's Health:
  - Risk of osteoporosis in later life
  - Fragile health status
  - Disordered eating
- Underweight and Reproductive Outcomes:
  - Infertility
  - Low birth weight and prematurity



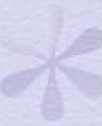
NUTRITIONAL STATUS: Specific nutrients

- Inadequate folic acid intake and Women's Health:
  - Heart disease
  - ? Colon cancer
  - ? Breast cancer
  - ? Some forms of dementia
- Inadequate maternal folic acid intake and reproductive outcomes:
  - Increased incidence of neural tube defects
  - Increased incidence of other birth defects
  - Some anemias—mother and infant



SUBSTANCE USE: Alcohol

- Alcohol Use: Women's Health
  - Risk for MV and other accidents
  - Risk for unintended pregnancy
  - Risk for addiction
  - Risk for nutritional depletions and inadequacies
- Alcohol Use: Reproductive Health
  - Increased risk of delayed fertility
  - Increased SABs
  - FAS (only occurs with use days 17-56 of gestation)
  - FAE



SUBSTANCE USE: Tobacco

- Tobacco Use and Women's Health:
  - Implicated in most of the leading causes of death for women:
    - Heart disease (1)
    - Stroke (2)
    - Lung cancer (3)
    - Lung disease (4)

- Tobacco Use and Reproductive Health:
  - Leading preventable cause of infant mortality
  - Preventable cause of low birth weight and prematurity
  - Associated with placental abnormalities

PERIODONTAL DISEASE

- Periodontal disease Women's Health:
  - Heart disease
  - Stroke
  - Serious threat to women with diabetes, respiratory diseases, osteoporosis
- Periodontal disease and Reproductive Health:
  - Preventable cause of prematurity

What We Know: Women Are Not Getting Comprehensive Services

Points of Assessment During Routine GYN Care

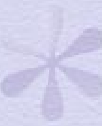
•Prescription drug use	30%
•Medical history	15%
•OTC drug use	10%
•Domestic violence	10%
•Nutritional assessment	9%
•Dietary supplements	3%

Bernstein, et al. J Repr Med 45, 546-552, 2000

Missed Opportunities May Abound

- 1996 report (Wynn & Yu)
  - 50% of women received preventive services every year
- 2001 report (NCHS)
  - Women ages 15-44 average 3.8 medical visits annually

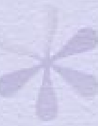
Missed Opportunities May Abound



- In 2005 KFF report:
  - Just over 50% of women surveyed had talked to a health care professional in the last 3 years about diet, exercise or nutrition
  - Fewer than 50% had talked about calcium intake (43%), smoking (33%) and alcohol (20%)
  - Only 31% of women ages 18-44 had talked with a provider about their sexual history in the preceding three years.

Discussion of more specific topics was even more rare:

- STDs (28%)
- HIV/AIDS (31%)
- Emergency contraception (14%)
- Domestic and dating violence (12%)



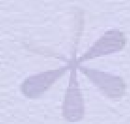
Women’s Health Status

- **What We Don’t Know:**
  - Will framing the preconception movement as a women’s health agenda diminish the charges of pronatalism which have surfaced? (“Always almost pregnant”’ “Forever Pregnant”)
  - Will an emphasis on women’s wellness impact unintendedness rates and/or the associated risks?
  - Can we effectively alter lifestyle and other risks prior to conception to positively impact a woman’s long term health status as well as risks to pregnancies, should she conceive?
  - How disparities will be affected?

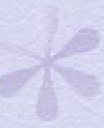
Where Do We Go From Here?

Selected strategies for moving the agenda forward

Dominant Perinatal Prevention Paradigm



- Features categorical focus with little integration with woman’s preexisting care or with her future health needs
- Initiated at first prenatal visit with
  - Risk assessment
  - Health promotion and disease prevention education
  - Prescription for prenatal vitamins
- Ends with the postpartum visit



Reproductive Health
“Business As Usual”

Examples of Fragmentation

- Prenatal/Intrapartum/Postpartum record keeping/sharing
- Postpartum visits (in 2003, 80.3% of those with commercial plans and 55.3% of those with Medicaid obtained these visits)
- Follow-up for GIP (in 2005 report only 37% of women underwent testing recommended by ADA in pp period)
- Follow-up of poor pregnancy outcomes

An Illustration

- SW is g1 p1 who had a 1500 gm infant 7 months ago who is presenting for a new ob visit. During her previous pregnancy she was noted to be
  - Underweight (BMI 17.5)
  - Smoker at 1 ppd
  - Experiencing an unintended pregnancy
  - Depressed

As you review her record you note that none of these issues has been revisited since her last delivery—despite a routine postpartum visit

An Integrative Model

- Builds on a continuum
- Emphasis on health promotion throughout the lifespan
- Emphasis on primary and secondary disease prevention
- Emphasis on woman, first, rather than her reproductive status

An integrated continuum model

Pregnancy/**Well Woman**/Family Planning

Childbirth/ Family Planning/ **Well-Woman**

Postpartum/Family Planning/**Well-Woman**

Well-Woman/ Family planning/ Preconceptional

menarche

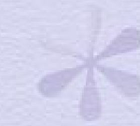
Promoting Integrated Services

- A meaningful integration or continuum of service must be conceptualized and operationalized to overcome traditional boundaries

Traditional Silos

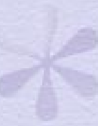
- Maternity related care
- Family planning services
- Chronic disease care
- Well woman care
- Inpatient/outpatient care
- Specialty services
- Nutrition services

Some Thoughts on Changing the Reproductive Prevention Paradigm to include the Preconception Period



Three Tier Approach to Achieve Higher Levels of Well Woman/Preconception Wellness

- General Awareness (Social marketing)
- Routine Health Promotion ("Every woman, Every time")
- Specialty care

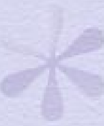


The Three Tier Approach to Achieve the Preconception Agenda

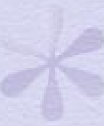
- General Awareness (Social marketing)
- Routine Health Promotion (“Every woman, Every time”)
- Specialty care

These tiers are intertwined and interdependent—all three are necessary to move the agenda forward successfully and systematically

Issues in General Awareness



- The concept "preconceptional" means nothing to the general public
- Few (professionals, patients, men, future grandmothers, etc.) understand how important the earliest weeks of pregnancy are
- Women most in need of preconceptional health promotion are often those least likely to have intended conceptions



Issues in Routine Health Promotion

What We Don't Need. . .

A new categorical service called the

"Preconception visit"

Routine Health Promotion

What We *Do* Need. . .

Reorientation of services to

“Every Woman. . .Every Time”

For *Every Woman* of Childbearing Potential *Every Time* She is Seen

- Identify modifiable and nonmodifiable risk factors for poor health and poor pregnancy outcomes before conception
- Provide timely counseling about risks and strategies to reduce the potential impact of the risks
- Provide risk reduction strategies consistent with best practices.

"Every Woman—Every Time" is Opportunistic Care

- Takes advantage of all health care encounters to stress prevention opportunities throughout the lifespan
- Recognizes that in almost all cases preconceptional wellness results in good health for women, irrespective of pregnancy intentions
- Addresses conception and contraception choices at every encounter
- Involves all medical specialties—not only those directly involved in reproductive health

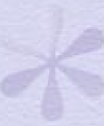
Routine Health Promotion: Individualizing Care through Promotion of a Reproductive Life Plan

1. Do you hope to have any (more) children?
2. How many children do you hope to have?
3. How long do you plan to wait until you (next) become pregnant?
4. How much space do you plan to have between your pregnancies?
5. What do you plan to do until you are ready to become pregnant?
6. What can I do today to help you achieve your plan?

Potential Benefits of Including Reproductive Life Plan Assessments into Routine Care

- Empowers women (and men, if included in their care)
- Reframes pregnancy from chance to choice
- Encourages individualized counseling (e.g. contraceptive options, interconceptional lengths, fertility considerations, etc)
- May result in higher percentage of pregnancies identified as intended

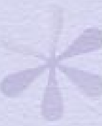
- Does **every** woman (including the 13 year old, the 45 year old and everyone in between) leave your unit/practice with a clear message of the benefits of exogenous folic acid? And a clear message to start taking **NOW**?



What about clear messages on:

- Intentions regarding becoming pregnant
- Nutritional status (are you calculating and explaining BMIs on every woman at every visit—and offering meaningful strategies to impact?)
- Tobacco cessation
- Other substance use and exposures
- Exercise habits
- Calcium intake
- Periodontal disease
- STI Risks

Reframe the Annual Visit to Underscore Prevention Agenda for Providers and for Women



- Promote the “well woman visit” (to replace the “annual visit”)
  - Use the well established and well respected “well child visit” as the model
  - Expectation of well child visit includes extension beyond the traditional medical model, a focus on prevention, an assessment of milestones and anticipatory guidance.

WOMEN'S WELLNESS Rx
(because not all habits are bad!)

Name ______________ Date ______

BP ________ Next Pap smear due ________

Next mammography due ________

- ☐ Self breast exam monthly
- ☐ 30 minutes of exercise most days of the week
- ☐ Sunscreen daily
- ☐ 1200 mg calcium daily, or other ________
- ☐ 5-9 servings fruits and vegetables daily
- ✔ Take a **Multivitamin DAILY** with 400 mcg **FOLIC ACID**

signature ______________

FOLIC ACID | GET IT NOW www.getfolic.com

Prescription for a Healthy Future™

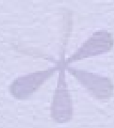
Patient Name ______________ Date ______

Address ______________

- ___Take a multivitamin with 400 micrograms (mcg) of folic acid every day.
- ___Be active and get to a healthy weight.
- ___Eat a variety of healthy foods and drink plenty of water.
- ___Quit smoking and avoid secondhand smoke.
- ___Get help for any drug and/or alcohol problems.
- ___Get any health problems under control.
- ___Get regular mental, dental, and health check-ups.
- ___Keep yourself safe.
- ___Plan for a healthy pregnancy when and if you want a baby.

Signature ______________

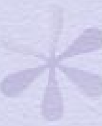
Look on the back of this prescription for where to find more information about each of the prescription items.



Potential Advantages of Regularly Addressing Issues with Every Woman Who Might *Some*day Conceive

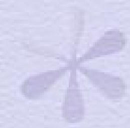
- Higher levels of wellness for the woman
- Higher levels of preconceptional health should a woman become pregnant
- Improved pregnancy outcomes
- Likely higher rates of pregnancy intendedness for those who become pregnant

Issues in Specialty Services



- Identify women with high risk conditions (e.g. medical conditions, history of poor pregnancy outcomes, etc.) and provide information on the nature of the risks
- Provide women with appropriate evidence based care or refer her to a specialist or subspecialist prepared to offer consultation or to assume management of the woman’s condition
- Specialists and subspecialists need to consider lifespan issues beyond their own specialty so that the woman receives comprehensive assessments
- Care regimens and recommendations must be coordinated between referring and referral providers to avoid patient confusion

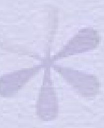
How Does the Clinician Fit Preconceptional Health Promotion into an Encounter?



If you take care of women of reproductive potential . . .“It’s not a question of whether you provide preconception care, rather it’s a question of what kind of preconception care you are providing.”

Joseph Stanford

Public Policy and Systems Initiatives



The California Initiative

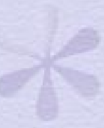
every woman, every time

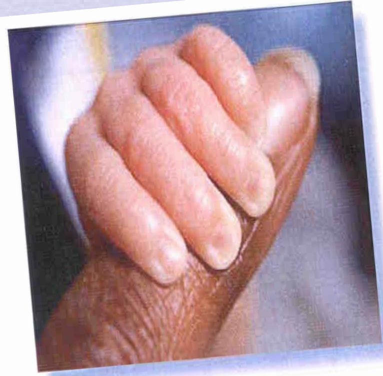
California Preconception Care Initiative

Every Woman, Every Time

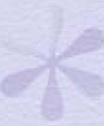
March of Dimes

Funded through a grant from the March of Dimes to Sutter Medical Center Sacramento



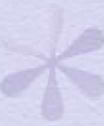


INFANT DEATH IN OUR COMMUNITY



Promoting Partnerships

- Cross the silos:
- Authorize WIC to include interconceptional messages in all counseling to postpartum women
- Expand expectations of well baby visits to promote advantages of interconceptional spacing; to promote targeted interconceptional care for mothers of special needs infants
- Engage pharmacists in more active “outreach” to women with known risks for poor pregnancy outcomes

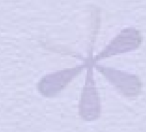


Promoting Women’s Wellness

- Tie reimbursement for well woman exam to demonstrations of health promotion and disease prevention counseling
- Start expectations with federal and state insurance plans
- Build in audit measures to assure progress is being made in meeting benchmarks of “well woman care”
- Close gaps in access: For instance, what is financial access for family planning waiver patients to specialty care?

Next Actions of CDC Select Panel on Preconceptional Health Clinical Work Group

- Compile and disseminate clinical guidelines
- Develop uniform curriculum for professional education
- Gather and disseminate practice supports (health appraisals, educational materials, etc)

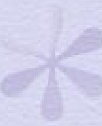


But It All Starts with You and with Local Action:

What strategies can you use to reframe the prevention paradigm for:

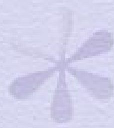
- The population-at-large?
- Providers?
- Insurers?

What three actions can you take to "work smarter—not harder" to make a difference for your patients, your practice and your agency?



Summary

- There is good rationale for the preconceptional health promotion agenda
- Research supports the benefits of preconceptional health promotion; the quality of research spans Levels A to C
- We know relatively little about successful strategies for promoting high levels of preconceptional wellness
- Promoting high levels of health in all women is likely to result in preconceptional health promotion for those who become pregnant
- It is possible to work smart without working harder



The Goal: Making a Difference in the Life Course

Promotion of Lifelong Wellness

Promotion of Desired and Healthy Future Pregnancies

Promotion of Healthy Future Offspring