

Preconception & Interconception Care: Clinical Components

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Reducing Infant Mortality in Michigan Summit
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Case Study

- Woman with hx of severe preeclampsia x 2
-

What Is Preconception Care?

What is Preconception Care?

- 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.

Clinical Components of Preconception Care

- Risk Assessment
 - Health Promotion
 - Medical and Psychosocial Interventions
-

Content of Preconception Care

Risk Assessment

- Reproductive Life Plan
 - A set of personal goals about having (or not having) children based on personal values and resources
 - A plan to achieve those goals

Content of Preconception Care

Risk Assessment

- Past Pregnancy History
 - Review old records
 - Determine cause of prior adverse outcome
 - Address ongoing biobehavioral risks to prevent recurrence

Content of Preconception Care

Risk Assessment

- Medical Assessment
 - Ongoing medical conditions
 - e.g. hypertension, diabetes, hypothyroidism, cardiac diseases, thrombophilia
 - Medications
 - e.g. Accutane, Warfarin, ACE inhibitors. Statins
-

Content of Preconception Care

Risk Assessment

Category A	Adequate and well-controlled studies have failed to demonstrate a risk to the fetus in the first trimester of pregnancy (and there is no evidence of risk in later trimesters).
Category B	Animal reproduction studies have failed to demonstrate a risk to the fetus and there are no adequate and well-controlled studies in pregnant women OR Animal studies have shown an adverse effect, but adequate and well-controlled studies in pregnant women have failed to demonstrate a risk to the fetus in any trimester.
Category C	Animal reproduction studies have shown an adverse effect on the fetus and there are no adequate and well-controlled studies in humans, but potential benefits may warrant use of the drug in pregnant women despite potential risks.
Category D	There is positive evidence of human fetal risk based on adverse reaction data from investigational or marketing experience or studies in humans, but potential benefits may warrant use of the drug in pregnant women despite potential risks.
Category X	Studies in animals or humans have demonstrated fetal abnormalities and/or there is positive evidence of human fetal risk based on adverse reaction data from investigational or marketing experience, and the risks involved in use of the drug in pregnant women clearly outweigh potential benefits.

Food and Drug Administration

Content of Preconception Care

Risk Assessment

- **Medical Assessment**
 - Infections
 - RTI
 - UTI
 - STI
 - Periodontal disease
 - Immunizations
 - Tdap
 - Hepatitis B
 - Influenza
 - Measles, Mumps and Rubella
 - Varicella
 - HPV
-

Content of Preconception Care

Risk Assessment

- **Family history and genetic risks**
 - Family history
 - Age
 - Ethnic background
 - **“Ashkenazi Jewish Panel”**
 - Gaucher disease Type 1,
 - Tay-Sachs,
 - Cystic fibrosis,
 - Familial dysautonomia (Riley-Day syndrome),
 - Canavan disease,
 - Niemann-Pick disease,
 - Fanconi anemia group C,
 - Bloom syndrome
 - Mucopolysaccharidosis IV
 - Known genetic disorder (e.g. PKU)
-

Content of Preconception Care

Risk Assessment

- Social Assessment
 - Family violence, partner support
 - Home, occupational, environmental exposures
 - e.g. air quality, water quality, pesticides, solvents
 - Social, financial, psychological stressors
-

Content of Preconception Care

Risk Assessment

- Behavior
 - Smoking
 - Alcohol
 - Drugs
 - Nutrition
 - Anthropometry
 - Biochemical
 - Clinical
 - Dietary
-

Content of Preconception Care

Risk Assessment

- Assessment of Mental Health
 - Depression
 - Anxiety
 - Stress & Support
-

Content of Preconception Care

Risk Assessment

- **Depression Screening**
 - Beck Depression Inventory (BDI)
 - Center for Epidemiologic Studies Depression Scale
 - Postpartum Depression Screening Scale (PDSS)
 - Edinburgh Postnatal Depression Scale (EPDS),
-

Content of Preconception Care

Risk Assessment

- **Depression**

Box 7.6 Diagnostic Criteria for Major Depression

- **Depressed mood (feeling sad, depressed, hopeless, blue) most of the day,**
 - **Loss of interest or pleasure in almost all activities,**
 - **Recurrent thoughts of death or suicide, or making a suicide attempt**
 - Significant weight loss or weight gain (as a result of change in appetite)
 - Insomnia or sleepiness nearly every day
 - Slowed thinking, speech or body movement or restless and agitation
 - Fatigue or loss of energy nearly every day
 - Feelings of worthlessness or excessive guilt
 - Problems with clear thinking, concentration, and decision-making
 - Recurrent thoughts of death or suicide, or making a suicide attempt
-

Content of Preconception Care

Risk Assessment

- **Anxiety**

Box 7.7 Diagnostic Criteria for Anxiety Disorders

- Excessive anxiety or worry
 - Difficulty in controlling your worry
 - restlessness or feeling keyed up or on edge
 - being easily fatigued
 - difficulty concentrating or mind going blank
 - irritability
 - muscle tension
 - sleep disturbance (difficulty falling or staying asleep, or restless, unsatisfying sleep)
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Content of Preconception Care

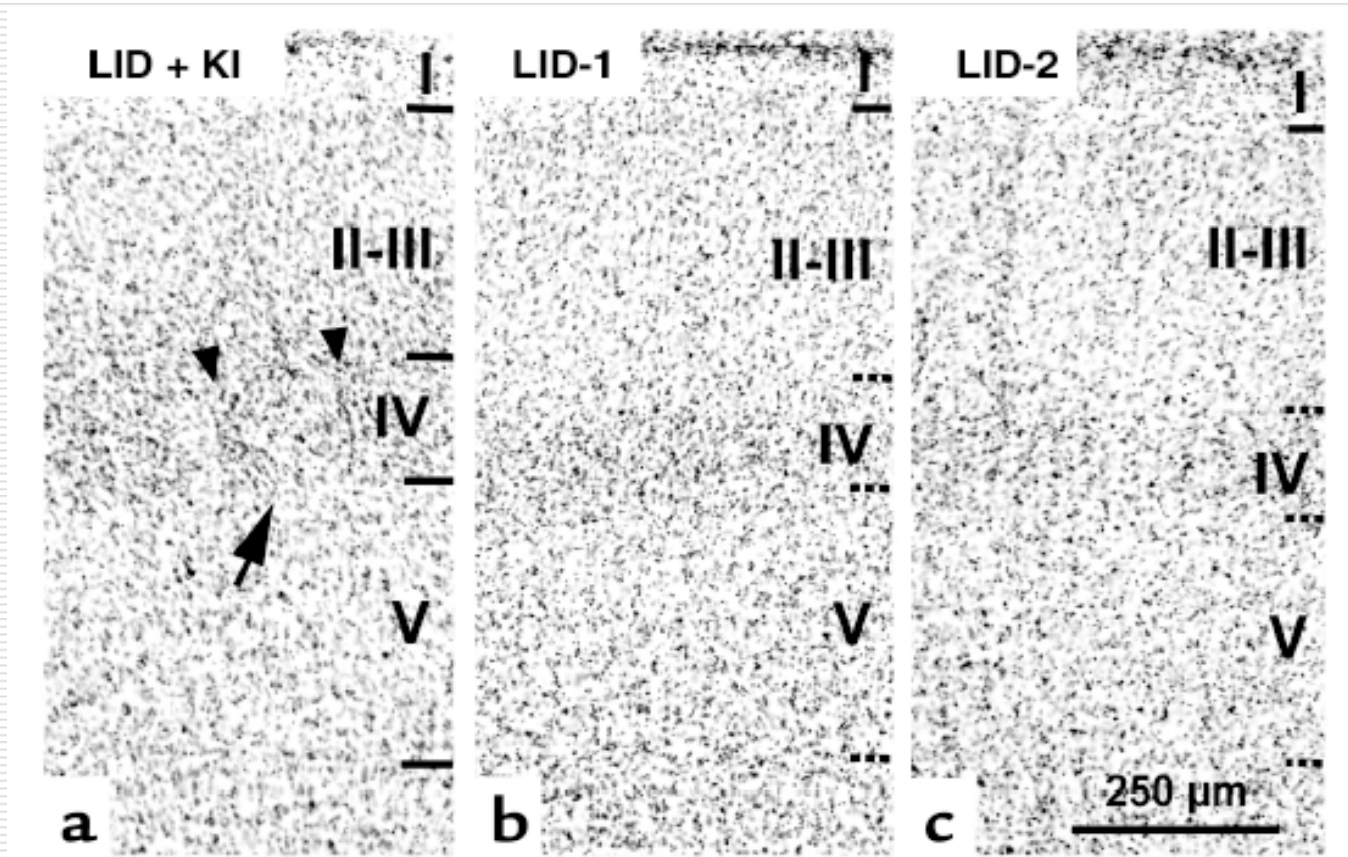
Risk Assessment

- **Laboratory tests**
 - **CBC**
 - **Type & screen**
 - **Rubella immunity**
 - **Hepatitis B surface antigen**
 - **HIV**
 - **VDRL**
 - **Urine testing**
 - **Pap smear**
 - **Cystic fibrosis**
 - **Thyroid stimulating hormone (TSH)**
 - **Glycosylated hemoglobin**
-

Maternal Hypothyroidism & Fetal Brain Development

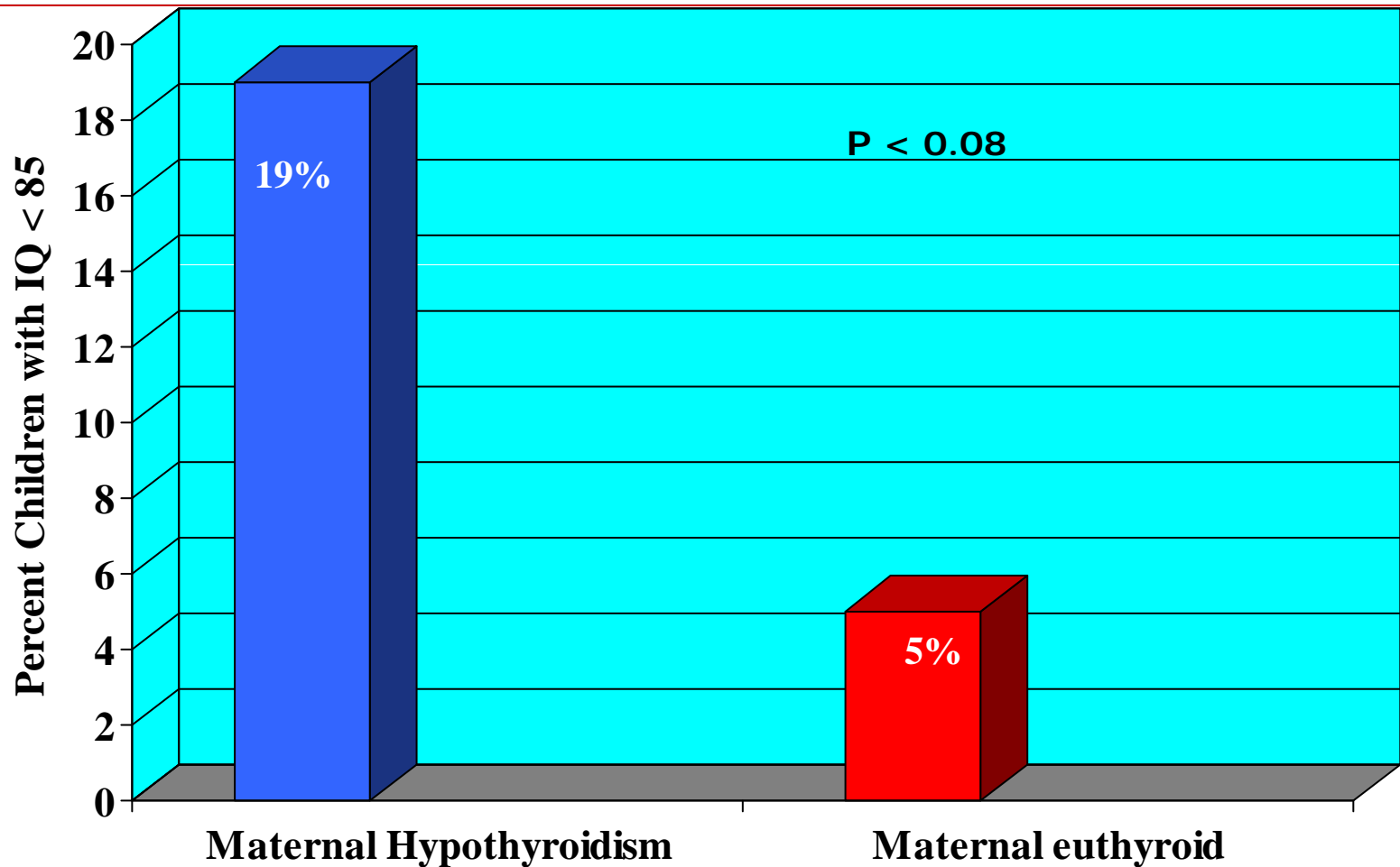
- ❑ Fetal thyroid active by 12 weeks
 - ❑ Before 12 weeks the mother is the sole source of thyroid hormones
 - ❑ Maternal hypothyroidism disrupts neuron migration
 - Lavado-Autric R, et al. Early maternal hypothyroxinemia alters histogenesis and cerebralCortex cytoarchitecture of the progeny. J Clin Invest 2003;111: 1073-82.
 - ❑ Maternal hypothyroidism alters expression of reelin-dab signaling system
 - Alvarez-Dolado M et al. Thyroid hormone regulates reelin and dab 1 expression during brain development. J Neurosci 1999;19:6979-93.
-

Maternal Hypothyroidism & Fetal Brain Development



Lavado-Autric R, et al. Early maternal hypothyroxinemia alters histogenesis and cerebral Cortex cytoarchitecture of the progeny. *J Clin Invest* 2003;111:1073-82.

Maternal Hypothyroidism & Child IQ



Haddow JE, Palomaki GE, Allan WC, et al. Maternal thyroid deficiency during pregnancy and Subsequent neuropsychological development of the child. N Engl J Med 1999;341:549-55.

Content of Preconception Care

Health Promotion

- Family planning
 - Nutritional preparedness
 - Stress resilience
 - Immune allostasis
 - Healthy environment
 - Fatherhood readiness
-

What Can Family Planning Do?

Family planning services are necessary for the widespread adoption of preconception care for two reasons. First, preconception care is more likely if pregnancies are planned, and family planning services encourage pregnancy planning. Second, family planning services usually include counseling, and counseling provides an opportunity to discuss the advantages of preconception care.

Nutritional Preparedness

1. Achieve a healthy weight
 2. Eat a balanced diet everyday
 3. Plan out your meals and snacks
 4. Go low on glycemic load
 5. Load up on smart fats
 6. Dump the dumb fats
 7. Eat high quality proteins
 8. Eat a rainbow of fruits and vegetables
 9. Take a daily multivitamin with folic acid
 10. Eat more superfoods; avoid toxic foods
-

Superfoods

- Beans
 - Eggs
 - Nuts & seeds
 - Olive oil
 - Alaskan wild salmon
 - Yogurt & kefir
 - Whole grains
 - Spinach, collards, kale & broccoli
 - Prunes, raisin, blueberries
 - Oranges, red bell pepper, tomato
-

Foods to avoid

Swordfish, shark, king mackerel and tile fish

Soft cheese and unpasteurized milk

Hot dogs, luncheon meats, deli meats, raw or smoked seafood

Raw or undercooked meat

Unwashed vegetables, raw vegetable sprouts, and unpasteurized juices

Liver

Saturated fats, *trans* fats, and partially hydrogenated oils

Added sugars

Refined flour

Herbal preparations

Stress Resilience

1. Exercise
 2. Eat right
 3. Get a good night's sleep
 4. Learn to relax
 5. Learn to prevent stress
 6. Learn to problem solve
 7. Learn to resolve conflicts
 8. Develop positive mental health
 9. Get connected
 10. Get help
-

Stress Resilience

- ❑ Develop Positive Mental Health
 - ❑ Find your purpose
 - ❑ Use your strengths
 - ❑ Count your blessings
 - ❑ Live in gratitude
 - ❑ Learn to forgive
 - ❑ Savor life's joy
 - ❑ Spend time with friends and families
 - ❑ Practice daily acts of kindness
 - ❑ Learn to be optimistic
-

Immune Tune-Up

1. Brush, floss, & see your dentist
 2. Get checkup for STI, RTI, UTI
 3. Don't get burnt by the TORCH
 4. Eat safe
 5. Quit smoking
 6. Avoid environmental triggers
 7. Get immunized
 8. Eat right
 9. Exercise
 10. Reduce stress
-

Healthy Environments

1. Make your home a lead-free zone
 2. Drink clean water
 3. Breathe clean air
 4. Detoxify your home
 5. Start nesting
 6. Survey your neighborhood
 7. Choose a cleaner commute
 8. Avoid harmful exposures at work
 9. Know your rights
 10. UNLESS
-

Fatherhood Readiness

- Make a reproductive life plan
 - Go see your doctor for preconception care
 - Give up your biggest vices
 - Manage your stress
 - Eat right
 - Protect your DNA
 - Learn to give emotional support
 - Bring home the bacon AND cook it, too
 - Reprioritize
 - Stay faithful
-

Content of Preconception Care

Medical & Psychosocial Interventions

- Height and weight measurements**
 - every 3-5 years
 - Blood pressure**
 - every 2 years
 - Total skin examination**
 - every 1-3 years
 - Papanicolau smear and pelvic examination**
 - every 1-3 years
 - Clinical breast examination**
 - Every 3 year beginning at age 20
 - Screening mammography**
 - every 1-2 years beginning at age 40
 - Access to social support services**
 - Public assistance
 - Childcare
 - Housing
 - Literacy programs
 - Professional clinical support**
 - Mental health services
 - Services for intimate partner violence
 - Marital and sexual counseling
 - Parenting support**
 - Mothers groups
 - Parenting classes
-

What Is Interconception Care?

Definitions

Internatal Care

- From the birth of one child to the birth of the next child

Interconceptional Care

- From the conception of one pregnancy to the conception of the next pregnancy

Interpregnancy Care

- From the termination of one pregnancy to the beginning of the next pregnancy
-

Goals

- ❑ To increase access to women's healthcare
 - ❑ To reduce infant mortality
 - ❑ To reduce disparities in maternal & child health outcomes
-

Contents of Interconception Care

- Core Contents
 - Enhanced Contents
-

CORE CONTENTS: Risk Assessment

- Family violence
 - Infections/Immunizations
 - Nutrition
 - Depression
 - Stress
-

CORE CONTENTS: Health Promotion

- B**reastfeeding
 - B**ack-to-sleep
 - E**xercise
 - E**xposures
 - F**olate
 - F**amily planning
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CORE CONTENTS:

Clinical & Psychosocial Interventions

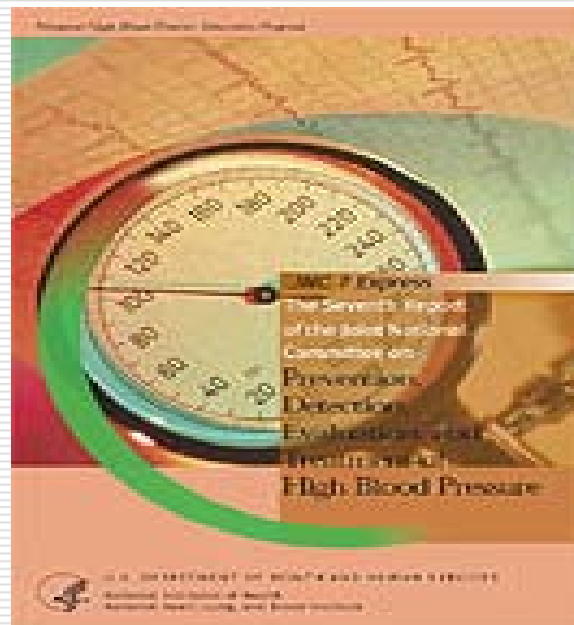
- Clinical Interventions
 - Psychosocial Support
 - Access to social support services
 - Public assistance
 - Childcare
 - Housing
 - Literacy programs
 - Professional clinical support
 - Mental health services
 - Services for intimate partner violence
 - Marital and sexual counseling
 - Parenting support
 - Mothers groups
 - Parenting classes
-

Enhanced Contents

- Women with medical problems before or during pregnancy
 - Hypertensive disorders
 - Diabetes mellitus
 - Underweight, overweight or obesity
 - Smoking, alcohol or drug problems

 - Women who had a preterm birth
 - Women who had a stillbirth
-

Hypertensive Disorders



Chobanian AV, Bakris GL, Black HR, Cushman WC, Green LA, Izzo JL Jr, Jones DW, Materson BJ, Oparil S, Wright JT Jr, Roccella EJ. Seventh report of the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure. *Hypertension* 2003;42:1206-52.

Hypertensive Disorders



National Heart, Lung, and Blood Institute. National High Blood Pressure Education Program Working Group Report on High Blood Pressure in Pregnancy. Bethesda (MD): National High Blood Pressure Education Program, National Heart, Lung, and Blood Institute, National Institutes of Health, 2000.

Hypertensive Disorders

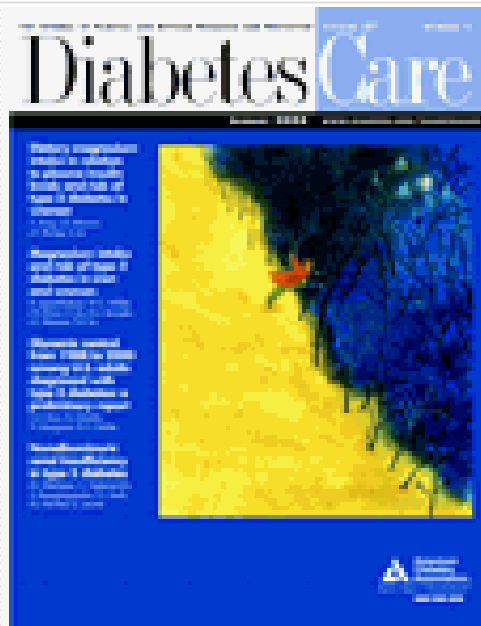
Risk Assessment

- Review medical history, including “compelling indications” (e.g. chronic kidney disease)
 - Perform physical examination
 - Height and weight
 - Fundoscopic examination
 - Cardiac examination
 - Peripheral vascular examination
 - Laboratory testing and diagnostic procedures
 - Renal function (serum potassium, creatinine, calcium, urinalysis, consider albumin excretion)
 - Fasting lipoprotein profile (including HDL, LDL, and triglycerides)
 - Electrocardiogram (EKG)
-

Hypertensive Disorders

- Health promotion
 - Weight reduction
 - DASH eating plan
 - Dietary sodium reduction
 - Physical activities
 - Moderation of alcohol
 - Smoking cessation
 - Clinical interventions
 - Pharmacologic therapy
 - During internatal period, for stages 1 and 2 hypertension & prehypertension with compelling indications
 - During subsequent pregnancy, only for severe hypertension
 - ACE inhibitors, ARBs and atenolol should not be used
 - Fetal surveillance is indicated for chronic hypertension complicated by intrauterine growth restriction in a subsequent pregnancy
-

Diabetes Mellitus



Diabetes Mellitus

- Pregestational diabetes mellitus
 - Risk Assessment
 - Review of medical history, including concomitant diseases (e.g. renal disease)
 - Perform physical examination
 - Fundoscopic examination
 - Cardiac examination
 - Peripheral vascular examination
 - Neurological examination
 - Laboratory evaluation and diagnostic procedures
 - Glycosylated hemoglobin
 - Renal functions (serum creatinine, urinary excretion of albumin or total protein)
 - Thyroid stimulating hormones
 - Electrocardiogram (EKG) if diabetes is long-standing

Diabetes Mellitus

- Health promotion
 - Appropriate meal plan (ADA diet)
 - Self-monitoring of blood glucose
 - Self-administration of insulin and self-adjustment of insulin doses
 - Self or family recognition and treatment of hypoglycemia
 - Physical activities
 - Stress reduction
 - Effective contraception and optimal glycemic control before next pregnancy
- Clinical interventions
 - Pharmacologic therapy
 - Oral hypoglycemics or insulin during the internatal period
 - Insulin should be used during subsequent pregnancy
 - Follow-up should be every 1-2 month interval until stable glycemic control; frequent phone contacts are advised

Diabetes Mellitus

- Gestational diabetes mellitus
 - 75-g oral glucose tolerance test at the 6-week prenatal visit
 - Fasting glucose annually
 - Early testing of glucose tolerance during next pregnancy, repeat in mid-pregnancy
 - Second generation oral hypoglycemics (i.e. glibenclamide) may be used in subsequent pregnancy

Overweight or Obese



National Heart, Lung, and Blood Institute. Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults. Washington, DC: National Heart, Lung, and Blood Institute, National Institutes of Health, 2000. NIH Publication No. 98-4083. 1998.

Overweight or Obese

CLINICAL GUIDELINES

Screening and Interventions for Obesity in Adults: Summary of the Evidence for the U.S. Preventive Services Task Force

Kathleen M. McTigue, MD, MPH; Russell Harris, MD, MPH; Brian Hanrahan, MD, MPH; Udo Luu, MFA; Sonya Sattou, PhD; Auckin J. Farias, PhD; and Kathleen H. Lohr, PhD

Background: Obesity poses a considerable and growing health burden. This review examines evidence for screening and treating obesity in adults.

Data Sources: MEDLINE and Cochrane Library (January 1994 through February 2002).

Study Selection: Systematic reviews, randomized, controlled trials; and observational studies of obesity's health outcomes or efficacy of obesity treatment.

Data Extraction: Two reviewers independently abstracted data on study design, sample, sample size, treatment, outcomes, and quality.

Data Synthesis: No trials evaluated mass screening for obesity, so the authors evaluated indirect evidence for efficacy. Pharmacotherapy or counseling interventions prevented modest (generally 2 to 5 kg) weight loss over at least 6 or 12 months, respectively. Counseling was most effective when intensive and combined with behavioral therapy. Maintenance strategies helped retain weight loss. Selected surgical patients lost substantial weight (10 to 15

kg over 1 to 5 years). Weight reduction improved blood pressure, lipid levels, and glucose metabolism and decreased diabetes incidence. The internal validity of the treatment trials was fair to good, and external validity was limited by the minimal ethnic or gender diversity of volunteer participants. No trials evaluated counseling hours. Fitness adverse drug effects included hypertension with sibutramine (mean increase, 9 mm Hg to 2.5 mm Hg) and gastrointestinal distress with orlistat (1% to 27% of patients). Fewer than 1% (pooled samples) of surgical patients died; up to 25% needed reoperation again over 5 years.

Conclusions: Counseling and pharmacotherapy can promote modest sustained weight loss, improving clinical outcomes. Pharmacotherapy appears safe in the short term; long-term safety has not been as strongly established. In selected patients, surgery provides large amounts of weight loss with rare but sometimes severe complications.

Ann Intern Med 2003;139:930-2.
For author disclosures, see end of text.
See related article on pp 920-922.

www.annals.org

Obesity is an increasingly significant U.S. health problem. Over a decade, the prevalence of obesity (a body mass index [BMI] ≥ 30 kg/m²) has increased from 13% to 20% in adults and the prevalence of overweight (a BMI of 25 to 29.9 kg/m²) has increased from 31% to 34% (1). Concurrent increases occurred in adolescents and children (2-4). Obesity is especially common in African-American persons, some Hispanic persons, and Native American persons, and some health sequelae reflect similar ethnic differences (5, 6). Obesity is more common in women, and overweight is more common in men (5). Obesity is a risk factor for major causes of death, including cardiovascular disease, numerous types of cancer, and diabetes (7), and is linked with markedly diminished life expectancy (8, 9). Osteoarthritis, gall bladder disease, sleep apnea, respiratory impairment, diminished mobility, and social stigmatization are associated with obesity (10).

Health risk is better established for obese persons than for overweight persons. However, overweight status also carries risk (11). Even mild to moderate overweight in young adults predicts subsequent obesity (12), and weight gain is associated with adverse outcomes (13). Visceral fat versus subcutaneous fat is particularly linked with adverse cardiovascular profile in diverse ethnic and racial groups (14-20). Body composition varies with age and ethnicity. For example, Asian persons may be more likely (21) and African-American persons may be less likely to accumulate visceral fat than white persons (15, 22, 23). Health implications may also vary (14-20).

www.annals.org

Estimated direct obesity costs are 5.7% of total U.S. health expenditures (24). Expected lifetime costs for cardiovascular disease and its risk factors increase by 20% with mild obesity, by 50% with moderate obesity, and by nearly 200% with severe obesity (25).

We reviewed the medical literature to determine the effectiveness of adult obesity screening—the conscious measurement of weight mass to clinically address body weight—and treatment. Although obesity may seem to be an obvious condition, only 42% of obese U.S. adults report that health care professionals have advised them to lose weight (26). In 1996, the U.S. Preventive Services Task Force (USPSTF) recommended periodic height and weight measurement (7). Because of increased obesity prevalence, therapeutic changes, and accumulating evidence of associated health risk, this recommendation needed to be updated. The Research Triangle Institute-University of North Carolina Evidence-based Practice Center developed a systematic review of evidence to assist the USPSTF in this process.

METHODS

We developed an analytic framework of obesity screening components with key questions and eligibility criteria (Appendix Table 1, available at www.annals.org). Randomized, controlled trials (RCTs) or systematic reviews of RCTs were preferred evidence. When these were lacking, we evaluated cohort and nonrandomized con-

1 December 2003 | *Journal of Internal Medicine* | Volume 253 | Number 6 | 933

U.S. Preventive Services Task Force. Screening for obesity in adults: recommendations and rationale. *Ann Intern Med* 2003;139:930-2.

Overweight or Obese

□ Risk Assessment

- Assess body-mass index (BMI) at every prenatal visit
- Assess potential causes or risk factors
 - e.g. eating disorders, food insecurity for women who are underweight
 - e.g. other concomitant medical disorders for women who are overweight

□ Health promotion

- Discuss weight loss goal for women who are overweight or obese
- Promote low-calorie diet (safe for postpartum and nursing mothers and their infants)
- Physical activity
- Behavior therapy

□ Clinical interventions

- Adjunctive pharmacologic therapy (for BMI ≥ 30 with obesity-related comorbidities, or BMI ≥ 27 with concomitant risk factors or diseases)
 - Consider surgery for women who are morbidly obese
-

Smoking Cessation

- For women who are willing to quit
 - Ask (about tobacco use)
 - Advise (to quit)
 - Assess (willingness to quit)
 - Assist (in quitting)
 - Arrange (follow-up visits)

- For women who are unwilling to quit
 - Relevance (explain why quitting is personally relevant)
 - Risks (identify the potential risks of continued smoking)
 - Rewards (identify the potential benefits of smoking cessation)
 - Roadblocks (identify barriers)
 - Repetition (repeated interventions)

- For women who used to smoke but have already quit
 - Congratulate the patient on smoking cessation
 - Encourage active discussions on the benefits of quitting, any success in quitting, problems encountered or threats to maintaining abstinence

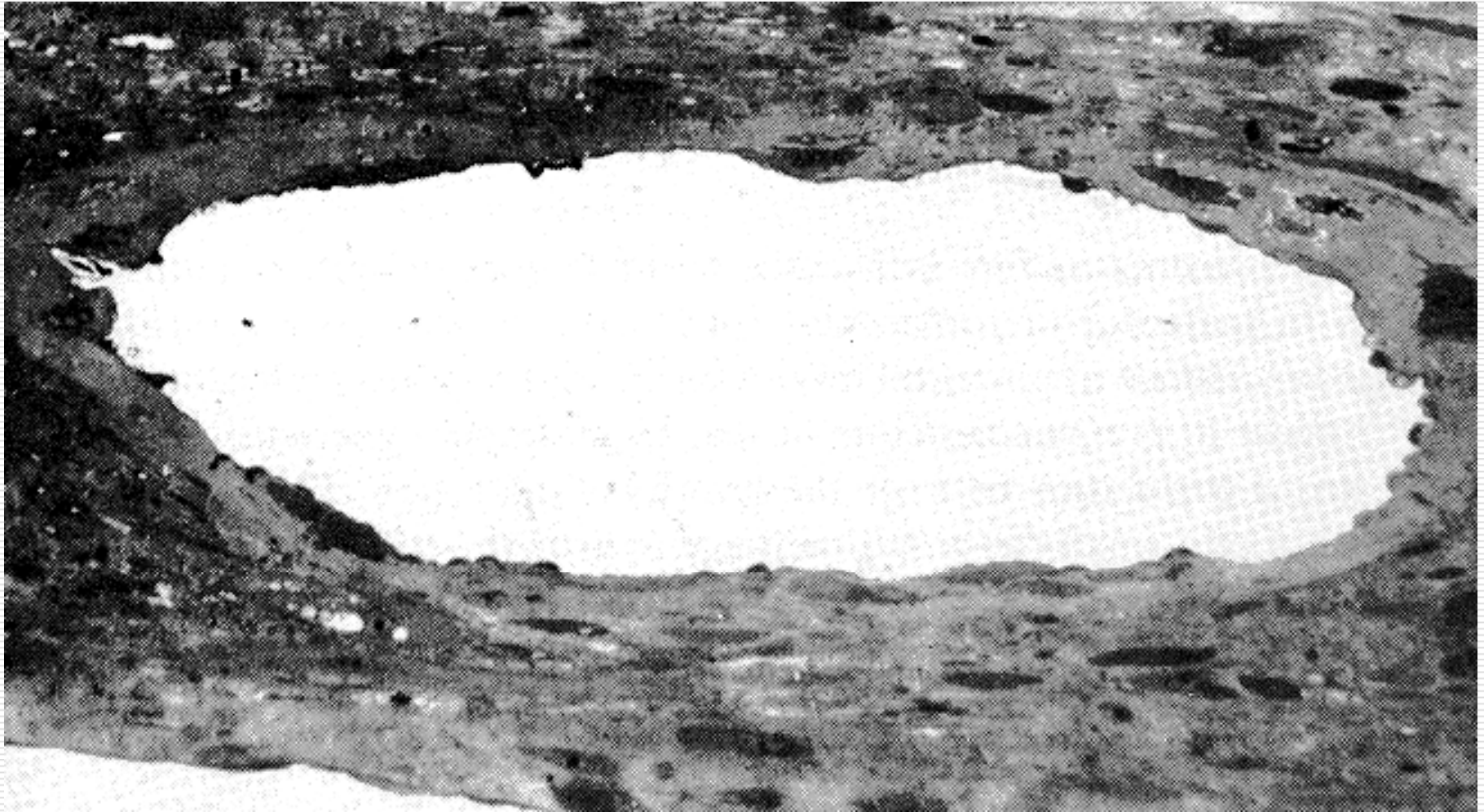
Enhanced Contents

Preterm Birth

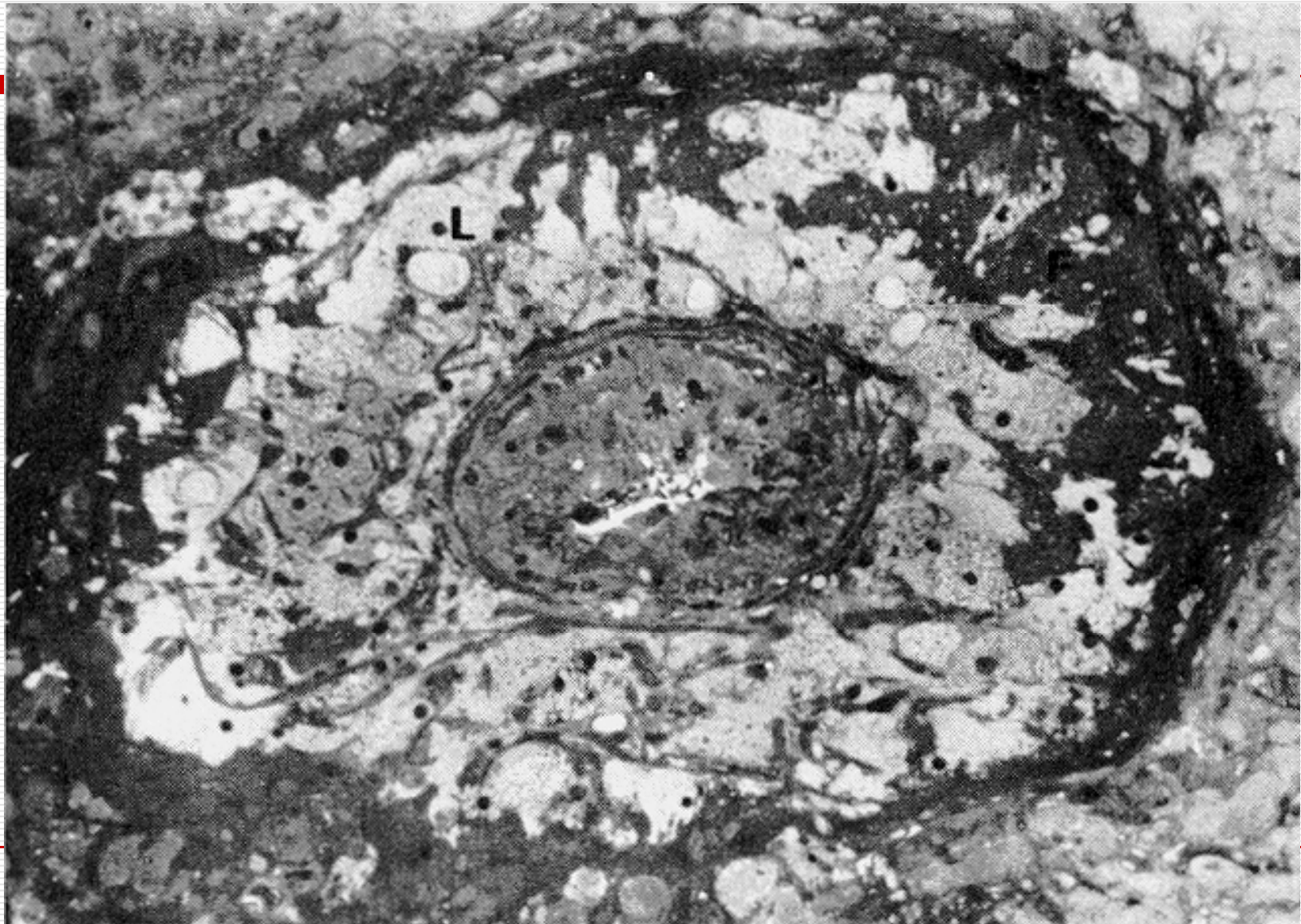
Preterm Birth

- Risk Assessment
 - Review of reproductive history, including the previous pregnancy that resulted in preterm birth
 - Conduct personal interview
 - Review medical records
 - Review placental pathology, if available
-

Spiral Artery (pregnant)



Spiral Artery (Preterm)

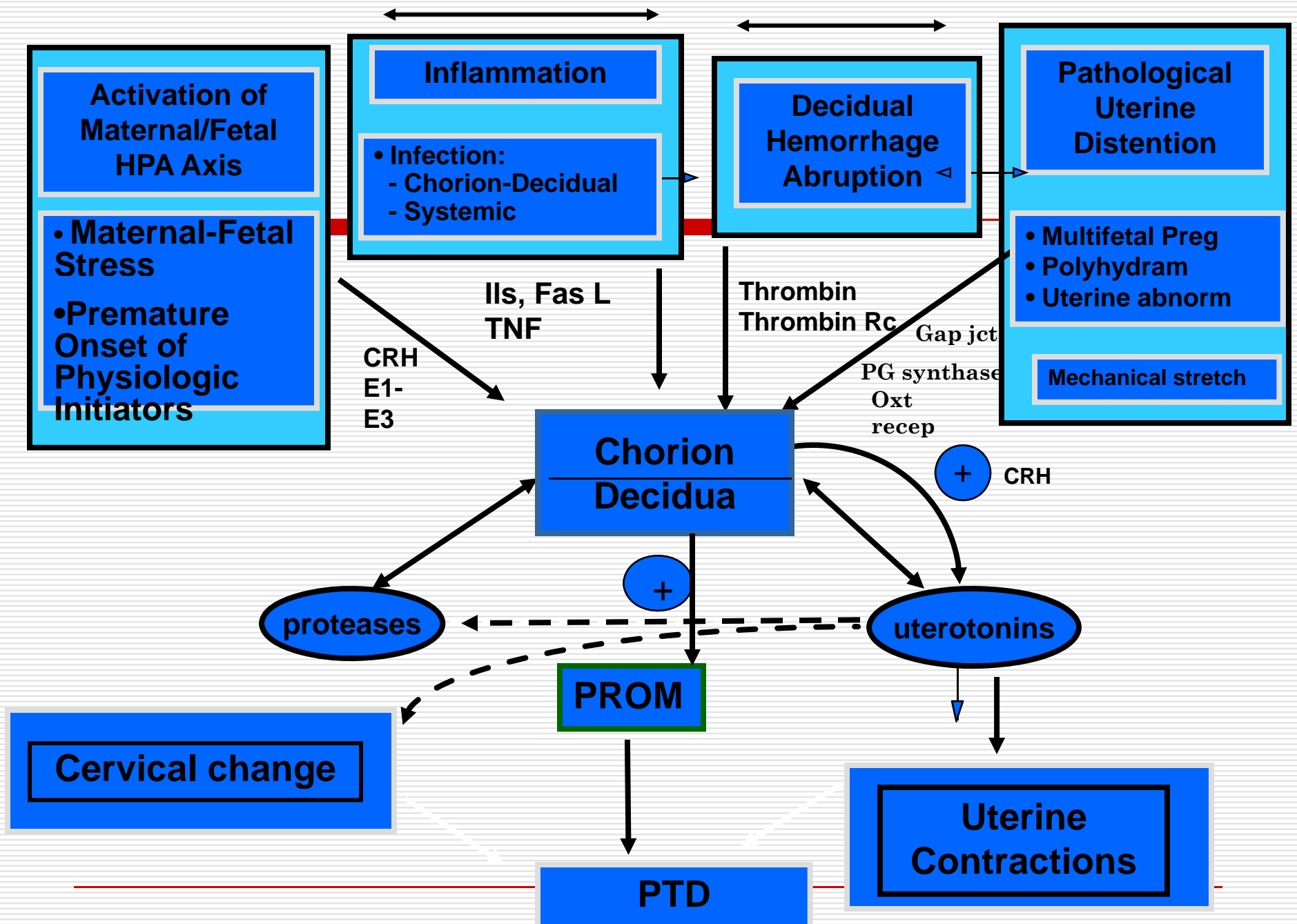


Preterm Birth

- Risk Assessment
 - Distinguish between spontaneous versus induced preterm delivery
-

Preterm Birth

- Risk Assessment
 - Investigate potential causes
-



Lockwood CL. Unpublished data. 2002.

Preterm Birth

□ Investigate potential causes

■ Infectious/inflammatory

- Review medical records for untreated asymptomatic bacteriuria
- Review placental pathology for evidence of infection
- Screen for periodontal infections
- Screen for *Chlamydia* infection
- Screen for sexually-transmitted or urogenital infections in selected populations

■ Neuroendocrine

- Screening for intimate partner violence
- Screening for maternal depression and other affective disorders
- Assess stress and supports at home and work

■ Vascular

- Review placental pathology for evidence of thromboses and abruption
- Screen for genetic thrombophilias (Factor V Leiden, MTHFR, prothrombin gene mutation, antiphospholipid syndrome), as indicated

■ Stretching

Preterm Birth

- Risk Assessment
 - Anthropometric assessment for underweight, overweight or obesity
 - Assessment of behavioral risk factors (smoking, illicit drug use, fasting, douching)
 - Review of past medical history
 - Review of family history for preterm delivery
 - Review of sexual history, past and current contraceptive use, plan for child spacing
-

Preterm Birth

Health Promotion

■ Health Behaviors

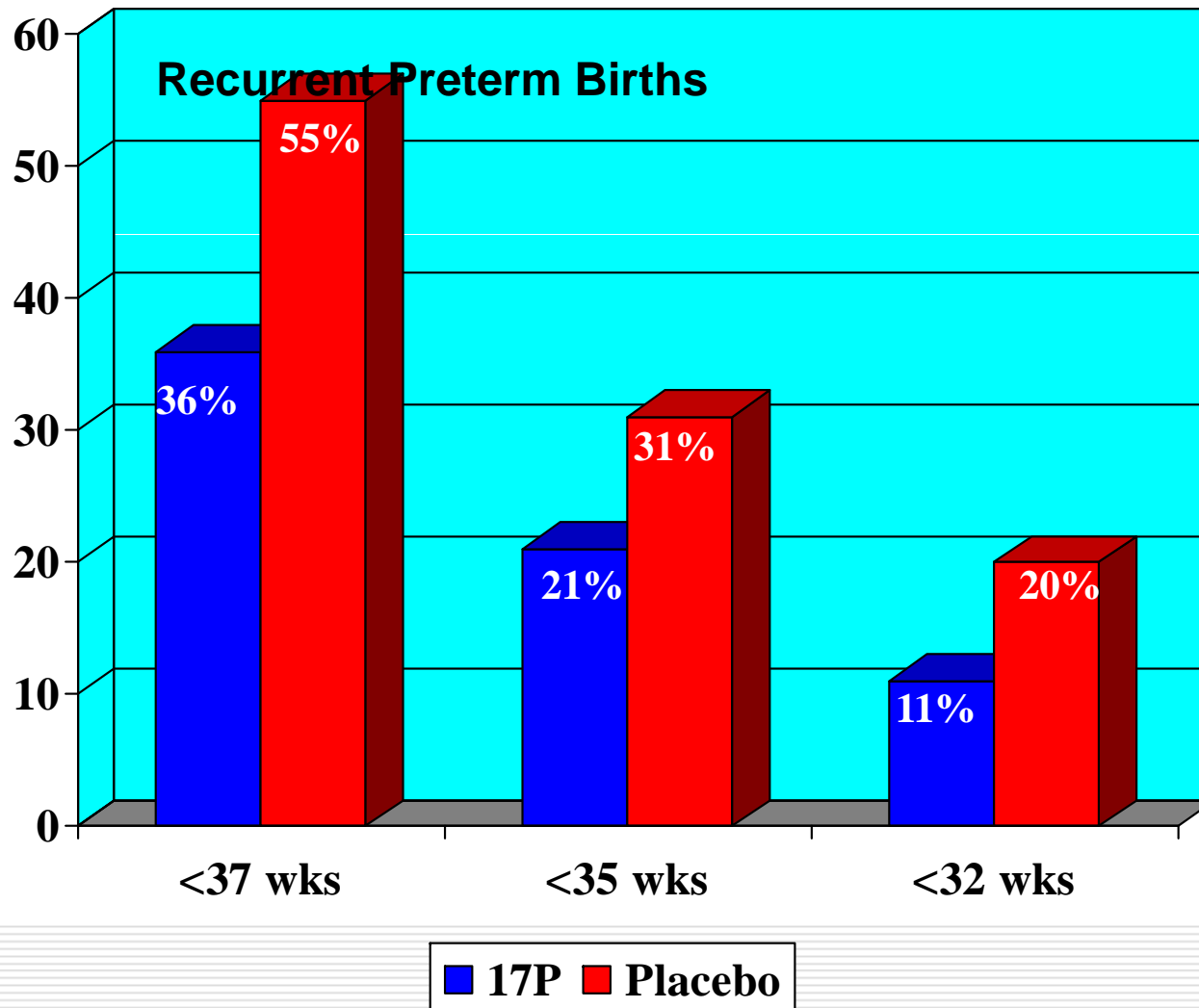
- Smoking cessation (5A's, 5R's, referral)
- Referral for treatment of alcohol abuse and drug addiction
- Promote healthy nutrition (e.g. increase consumption of folic acid, omega 3 fatty acids, fruits and vegetables, decrease omega 6 fatty acids, trans fats, partially hydrogenated oils)

■ Family planning

- Discuss desired birth spacing, avoid short interpregnancy interval
 - Discuss contraceptive options, prevent unintended pregnancy
-

Preventing Recurrent Preterm Births

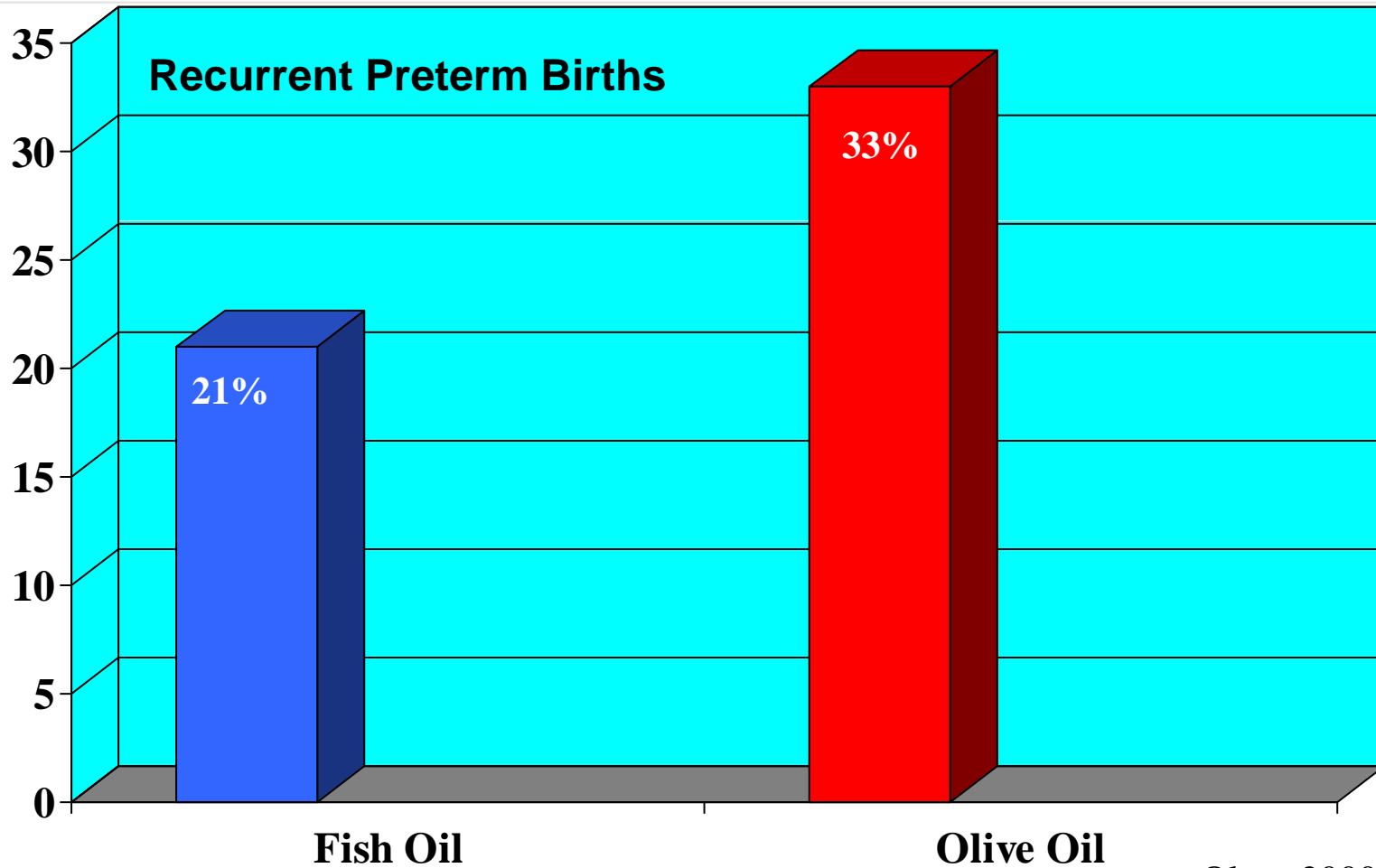
17-alpha hydroxyprogesterone caproate



Meis 2003

Preventing Recurrent Preterm Births

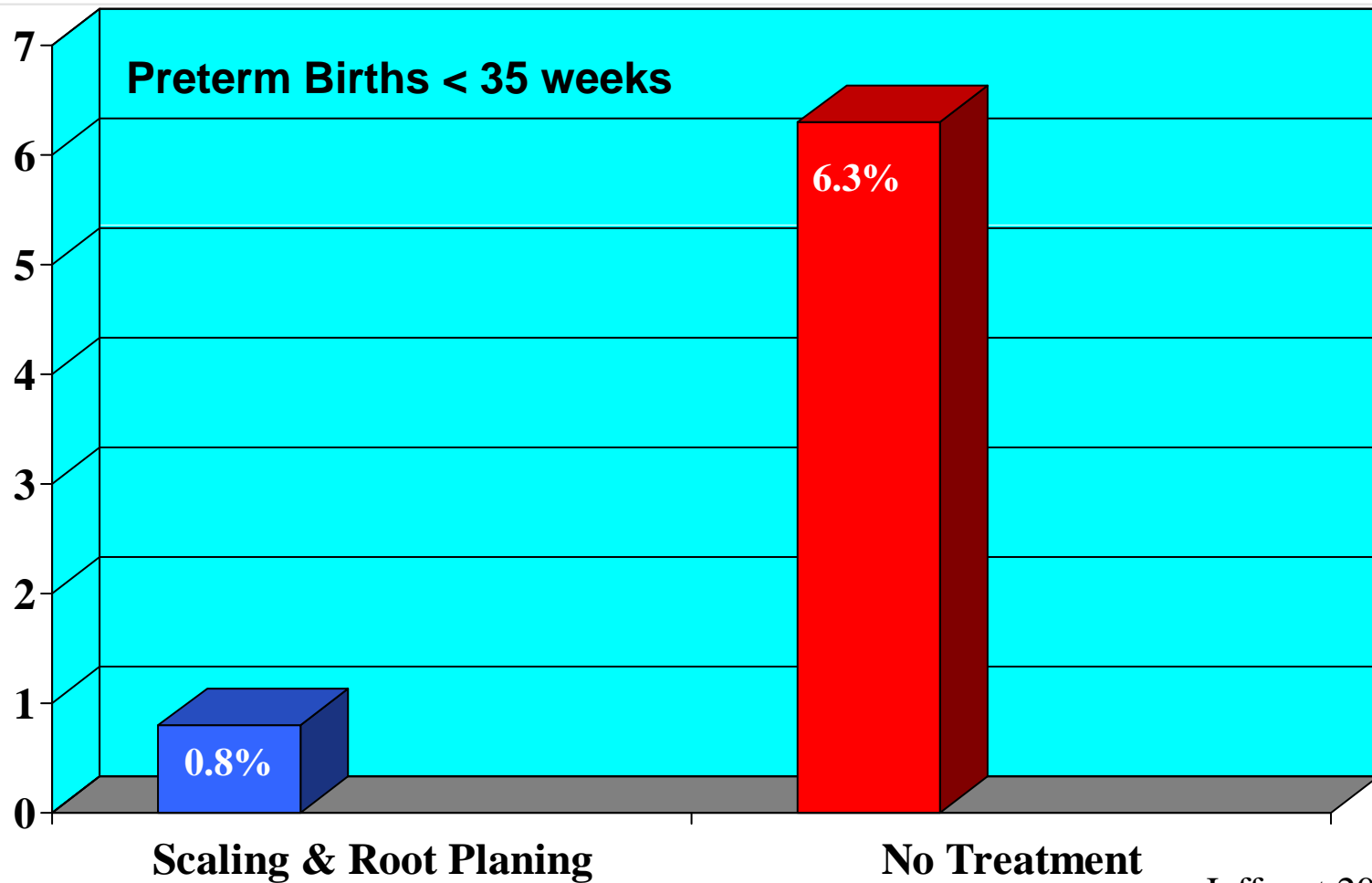
Fish Oil Supplementation



Olsen 2000

Preventing Preterm Births

Periodontal scaling & root planing



Jeffcoat 2003

Preventing Recurrent Preterm Birth

Screening & treatment of asymptomatic BV

□ **Benefit**

- Hauth JC, Goldenberg RL, Andrews WW, DuBard MB, Copper RL. Reduced incidence of preterm delivery with metronidazole and erythromycin in women with bacterial vaginosis. *New England Journal of Medicine* 1995;333:1732-6.
- McDonald HM, O'Loughlin JA, Vigneswaran R, Jolley PT, Harvey JA, Bof A, et al. Impact of metronidazole therapy on preterm birth in women with bacterial vaginosis flora (*Gardnerella vaginalis*): a randomised, placebo controlled trial. *British Journal of Obstetrics and Gynaecology* 1997;104:1391-7.
- Morales WJ, Schorr S, Albritton J. Effect of metronidazole in patients with preterm birth in preceding pregnancy and bacterial vaginosis: a placebo-controlled, double-blind study. *American Journal of Obstetrics and Gynecology* 1994;171:345-9.
- Ugwumadu A, Manyonda I, Reid F, Hay P. Effect of early oral clindamycin on late miscarriage and preterm delivery in asymptomatic women with abnormal vaginal flora and bacterial vaginosis: a randomised controlled trial. *Lancet*. 2003 Mar 22;361(9362):983-8.

□ **No Benefit**

- Carey J, Klebanoff M, Hauth J, Hillier S, Thom E, Ernest J, et al. Metronidazole to prevent preterm delivery in pregnant women with asymptomatic bacterial vaginosis. *New England Journal of Medicine* 2000;342:534-40.
 - Odendaal H, Popov I, Schoeman J, Smith M, Grove D. Preterm labour - is bacterial vaginosis involved?. *South African Medical Journal* 2002;92:231-4.
-

Preventing Recurrent Preterm Birth

Antibiotics & Infections

- In at least four antibiotic trials in pregnancy involving women with prior preterm birth, antibiotic treatment was associated with higher, not lower, incidence of recurrent preterm birth.

 - **Bacterial vaginosis**
 - Andrews WW, Sibai BM, Thom EA, Dudley D, Ernest JM, McNellis D, et al. for the National Institute of Child Health & Human Development Maternal-Fetal Medicine Units Network. Randomized clinical trial of metronidazole plus erythromycin to prevent spontaneous preterm delivery in fetal fibronectin-positive women. *Obstet Gynecol.* 2003;101:847-55.

 - Andrews W, Goldenberg R, Hauth J, Cliver S. Interconceptional antibiotics to prevent spontaneous preterm birth (SPTB): a randomized trial. Abstract presented at the 24th Annual meeting of Society for Maternal-Fetal Medicine (SMFM) held in New Orleans, LA February 2004

 - **Trichomonas vaginalis**
 - Klebanoff MA, Carey JC, Hauth JC, Hillier SL, Nugent RP, Thom EA, et al. for the National Institute of Child Health and Human Development Network of Maternal-Fetal Medicine Units. Failure of metronidazole to prevent preterm delivery among pregnant women with asymptomatic *Trichomonas vaginalis* infection. *N Engl J Med.* 2001;345:487-93.

 - **Periodontal disease**
 - Jeffcoat MK, Hauth JC, Geurs NC, Reddy MS, Cliver SP, Hodgkins PM, Goldenberg RL. Periodontal disease and preterm birth: results of a pilot intervention study. *J Periodontol.* 2003;74:1214-8.
-

Enhanced Contents

Stillbirth

Stillbirth

Risk Assessment

- Review of reproductive history, including prenatal events leading up to the fetal death
 - Conduct personal interview
 - Review medical records
 - Review placental pathology
 - Review of autopsy report
 - Review of cytogenetic analysis
 - Investigation of potential causes
 - Maternal
 - Fetal
 - Placental
 - Labor and delivery
 - Unexplained
 - Anthropometric assessment for overweight or obesity
 - Assessment of behavioral risk factors (drug addiction, smoking, trauma)
 - Review of past medical history
 - Review of sexual history, past and current contraceptive use, plan for child spacing
-

Stillbirth

□ Investigation of potential causes

□ Maternal

- Hypertension
- Diabetes mellitus
- Others (antiphospholipid syndrome (APS), thrombophilias, renal disease)
- Behavioral

□ Fetal

- Congenital malformation
- Review autopsy
- Fetal infections
- Review placental pathology, autopsy
- Severe fetal growth restriction
- Consider cytogenetic analysis if the stillborn has
- Dysmorphic features or anomalies
- Hydrops fetalis
- Severe growth restriction

□ Placental

- Abruptio, thromboses, infarcts
- Consider work-up for APS, genetic thrombophilias
- Infections (deciduitis, chorioamnionitis, funisitis)

□ Labor and delivery

- Review labor and delivery record, including EFM

□ Unexplained

Stillbirth

Health Promotion

- Health behaviors
 - Referral to substance abuse treatment programs, as needed
 - Smoking cessation
 - Seatbelt use, injury prevention
 - Promote optimal control of hypertension, diabetes, or other maternal medical conditions
 - Daily supplementation with 4000 micrograms of folic acid in women who had a fetal death from a neural tube defect
 - Promote weight loss in women who are obese
 - Promote family planning
-

Stillbirth

□ Clinical Interventions

- Address maternal causes during the internatal period
 - **Optimal glycemc control in women with pregestational diabetes**
 - **Optimal control of other chronic conditions (e.g. hypertension, hypothyroidism)**

 - Offer chorionic villus sampling or amniocentesis in women who had a fetal death from chromosomal or known genetic abnormalities

 - Antepartum fetal surveillanc (e.g. Doppler velocimetry in women with fetal growth restriction)
-

Stillbirth

- **Psychosocial Interventions**
 - Offer psychosocial support and referral for counseling and therapy
 - Pay attention to possible maternal depression
-

Preconception Care

Summary

- **Risk Assessment**
 - Reproductive life plan
 - Past pregnancy history
 - Past medical & surgical history
 - Medications & allergies
 - Family & genetic history
 - Social history
 - Behavioral & nutritional assessment
 - Mental health
 - Laboratory testing

 - **Health Promotion**
 - Family planning
 - Stress resilience
 - Nutritional preparedness
 - Immune allostasis
 - Healthy environment
 - Fatherhood readiness

 - **Medical & Psychosocial Interventions**
 - Individualized for identified risks
 - Preventive services and primary care
-

Interconception Care

Summary

□ Risk Assessment

- Family violence
- Infections/Immunizations
- Nutrition
- Depression
- Stress

□ Health Promotion

- Breastfeeding
- Back-to-sleep
- Exercise
- Exposures
- Folate
- Family planning

□ Medical & Psychosocial Interventions

- Individualized for identified risks
 - Preventive services and primary care
 - Enhanced contents
-

Saginaw County Interconceptional Care Program (ICC)

Dawn Shanafelt, RN, BSN, BA

Community Health Section Supervisor



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Program based on the Denver, Colorado Trust Project

- Project period initially from 1995-2001
- Location: Denver Health (public hospital and 13 affiliated Community Health Centers) which provide prenatal care to the majority of the low income pregnant women in Denver
- The object of the initiative was to develop a home-based case management program for women who had delivered a low birth weight baby, had a fetal demise or a baby with congenital anomalies, and who planned on having more children, with the goal of improving outcomes of future pregnancies.



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Denver Project Outcomes

- The program evaluation suggested that women who participate in a comprehensive home visitation and case management program after a poor outcome birth have higher rates of compliance with post-partum care and family planning.
- The women in the program had longer interconception intervals and better outcomes as measured by NICU admission and cumulative low birth weight rates.



Saginaw County ICC Domains

- **Medical Obstetrical:** includes all issues which would come to medical attention or need evaluation by any health professional including nutrition, physical therapy, psychiatry, etc.
- **Family Planning:** All issues related to reproduction
- **Lifestyle Behaviors:** This domain includes smoking, drug use, other risky behaviors such as unsafe sex, and/or any habit that undermines health.



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Saginaw County ICC Domains

- **Relationship Issues:** Includes all partners, family, friends, ex-partners and others who are sources of emotional support and/or stress.
- **Life Necessities:** Includes immediate life survival, income or lack of income, adequacy of food and shelter, transportation, etc...



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Saginaw County ICC Domains

- **Maternal role:** All issues regarding children, parent/child relationship, developmental concerns, etc...
- **Life Course Issues:** Includes education, training, employment and future goals such as leaving a parent's home.



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Saginaw County ICC Clients

- As of today, eleven client cases are open.
- All clients meet the criteria of having experienced a poor pregnancy outcome (i.e. lbw, loss of 20 weeks or greater, preterm) and plan on having a future pregnancy
- All clients have multiple issues that effect each of the aforementioned domains
- A Senior Public Health Nurse is assigned to the program and provides home visiting services to each of the enrolled clients



Saginaw County ICC Clients

- Program is free
- Enrollment is voluntary
- Incentives are given for goals that are achieved
 - **Examples:** Enrollment in Substance Abuse Treatment Program, Securing Employment, Advancing Education, Attending Parenting Classes, Creating and Implementing a Reproductive Health Plan



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Challenges and Barriers

- ❖ Building a Rapport/Trust
- ❖ Very High Risk Clients
- ❖ Transient Population
- ❖ Difficult to Communicate with via Telephone
- ❖ Multiple Agency Involvement
- ❖ Transportation Difficulties



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Successes

- ✓ Bond created with clients who have difficulty trusting others especially from an agency setting
- ✓ The majority of the clients are meeting the goals that they and their home visitor have created
- ✓ Clients often recruited through bereavement referrals, hospital referrals, Healthy Start Program
- ✓ Relationship created through the Fetal Infant Morality Review Home Interview and subsequent bereavement Visits
- ✓ Incentives are tailored to the individual client
- ✓ Community Collaboration



Conclusion

ICC Project shows tremendous positive outcome potential by reaching the highest risk clients and providing the health education and support system needed to increase interconceptional spacing and improve future pregnancy outcomes.

Saginaw County



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Saginaw County



Healthy Start

Preparing For a Good Pregnancy

Kent County

Interconception Care Program

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Overview of the Interconception Care Program

Goal: Decrease African American infant mortality, low birth-weight and prematurity.

Objectives address the following topics:

- Preventing subsequent pregnancies for at least 18 months after delivery
- Family planning
- Dental care
- Healthy weight before becoming pregnant again
- Folic acid before becoming pregnant
- Drug use

What is the IC Program?

- Delivery of comprehensive IC health care services through enhanced case management to ensure that high-risk women are in optimal health before becoming pregnant again.
- Identify key risk factors with a PC/IC Risk Screening Tool and provision of education, interventions, and counseling related to risk.
- Implementation of a 18 month client service and data tracking form that's utilized by nurse case managers during home-visits.

Who is the Program for?

A woman is eligible if they:

- Live in Kent County
- Aren't currently pregnant
- Have had a *poor pregnancy outcome* in the past 12 months

Poor pregnancy outcomes are defined as:

- Premature delivery
- Low birth-weight baby
- Infant death
- Stillbirth or miscarriage after the fourth month of pregnancy (after 20 weeks gestation)

GOAL: Enroll 100 women in the IC program through contracts with providers of home visiting support programs, and agreements for data reports from NICU.

Services for Women in the IC Program

- Risk screening at enrollment and every three months
- Case management
- Education on topics that impact interconception health
- Referrals to needed services
- Blood pressure/cholesterol screening & Risk Factor Analysis for Chronic Disease
- Assistance obtaining family planning services (FP incentive program and Refer-A-Friend Program for 12 months supply of birth control for non-Medicaid women and/or women not eligible/enrolled in Plan First!
- Dental care (cleaning, extractions, restorations, dental kits, education)
- Incentives: Pre/Interconception Kits (water bottle, toothbrush, floss, folic acid (multivitamin), coupon for fresh fruits/vegetables at local farmer's market, Healthy Women's Resource Guide, condoms, etc.
- Transportation to support services

Role of the Nurse Case Manager

- Providing in-home visits every 3 months (at a minimum)
- Complete enrollment forms
- Conduct Pre/Interconception assessment
- Completing the data tracking forms and develop plan of care
- Providing IC education
- Connecting client with needed services (i.e. dental program, BP/cholesterol testing, etc.)

Making referrals & documentation of

Barriers to Implementing CDC Recommendations

1. Individual responsibility across the life span
2. Consumer awareness
3. Preventive visits
4. Interventions for identified risks
5. Interconception care
6. Pre-pregnancy check ups
7. Health coverage for low-income women
8. Public health programs and strategies
9. Research
10. Monitoring improvements

Role of the Organization/Provider

- Identify eligible women
- Submit:
 - Copies of enrollment forms
 - Tracking forms
 - Risk assessments
 - Discharge/outcome forms
 - Invoices for payment/reimbursement
- Contacting KCHD to request:
 - FP incentives
 - Pack-n-plays
 - Educational packets

Getting Started in Kent County

- Developed protocols for IC Care
- Developed a corresponding PC/IC risk assessment
- Developed goals/objectives for the IC Program
- Provided an IC Care Training for Nurse Case Managers, Staff, CHW and other support programs
- Contracts/Agreements with providers – to deliver IC care and case

management reimbursement @

Referrals & Marketing

- Report from NICU – eligible clients
- Request providers to conduct chart reviews over the past 12 months for current clients in MIHP
- IC Program Brochure
- FIMR – KCHD Community Nurses (home interviews for infant deaths and grief support/counseling)
- Healthy Kent 2010 – Infant Health Implementation Team, MIHP Provider Network

IC Program Direction from the State:

Evidence-based intervention that:

- Improves birth outcomes
- Sustainable
- Broadly transferable with other ongoing resources
- Integration of lessons learned from IC programs into MIHP
- Cost of implementing evidence-based strategies among women at risk for poor birth outcomes.

Involvement of Local Systems of Care

- Healthy Kent 2010 – Infant Health Implementation Team
- Kent County FIMR
- MIHP Provider Network
- KCHD – MIHP Program
- KCHD – Child Loss Team
- KCHD – Health Education & Promotion Section (Health Improvement Team)
- Spectrum Health MOMS
- Strong Beginnings (Federal Healthy Start Program)
- Spectrum Health Family Birthplace
- Saint Mary's Health Care
- Planned Parenthood Centers of Northern and West Michigan
- Baxter Wholistic Health Center – Dental Clinic

Outcomes – Short Term

- Project Deliverables
- Recruit at least 25 eligible women into the IC Program.
- Complete needs assessments of the enrolled clients.
- Complete a Plan of Care for each enrolled client, including but not limited to, the types of services and referrals needed.
- Complete and ensure accurate data collection for each client.

Outcomes – Intermediate

- 43 women enrolled
- 89.5% Retention
- 36 AA Women enrolled
- 7 Non-AA women enrolled:
2 American Indian, 3 White,
1 Hispanic, 1 Pacific Islander
- 134 Home visits
- 3 providers: KCHD/MIHP,
Spectrum Health MOMS, St. Mary's
Health Care
- 47% IC enrollees utilizing method
of birth control
- 19 women receiving dental
services to date – 15 completed
dental care in FY 2006-2007
- 3/43 women report no source of
primary care
- Educational Attainment at
enrollment: (58%) have H.S.
diploma or higher education
- Average age of women enrolled:
25 yrs.

Next Steps

- Expand Referral Network for identification of eligible women
- Support Groups/Expand team of support professionals
- Make program improvements for participant retention (i.e. life skill enhancement/job training, provision of primary health care services via community clinics)
- Expand partnerships for delivery of comprehensive services to assist women with: Chronic Disease Management, Family Planning/Birth Spacing, Healthy Weight, Reproductive Tract Infections, Periodontal Disease, Appropriate Nutrition & Supplementation, Substance Abuse, and Social Stressors

Support and Thanks

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Kent County Health Department



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Strong Beginnings

