

PRE-CONCEPTION / INTER -CONCEPTION CARE TRAINING CURRICULUM

Introduction

A comprehensive peri-natal program involves a coordinated approach to medical and psycho-social support that optimally begins before conception. Preconception care therefore should be an integral part of Well Women health care because it permits identification of those conditions or risk factors that could affect a future pregnancy or fetus, and promotes early intervention.

Preconception care therefore, permits targeted prenatal care to optimize outcomes and potentially renders mother and fetus amenable to intervention. Preconception healthcare improves pregnancy outcomes for example, one of the causes of infant mortality in the United States is birth defects. Most birth defects occur between 17 and 56 days after conception, often before pregnancy is confirmed and advent of the the first prenatal visit

Additionally, when started at least one month before conception, folic acid supplements reduce the incidence of neural tube defects including Spina Bifida and Anencephaly. Many women have their first prenatal visit at eight weeks of pregnancy or later, the period of time before the first prenatal visit, however, carries the greatest risk to fetal development. (American Family Physician; June15, 2002)

Purpose

The purpose of this curriculum, is to provide a manual of instruction for Nurses and other practitioners serving women of childbearing age. It is designed to assist local health departments improve the knowledge base of reproductive health care providers, and to assure the delivery of preconception health care that will significantly impact infant mortality in populations at risk. Recommendations for maternal and child care are based on current practice standards from the American College of Obstetrics and Gynecology (ACOG), and the American Academy of Pediatrics (AAP), as well as State guidelines and other materials listed in the reference section. These materials reflect a consensus that women of child bearing age need pre-conceptional/ inter-conceptional care that is consistent, comprehensive, and risk-appropriate.

Preconception Care Defined

Preconception care is the provision of services directed towards the identification of medical and social problems prior to conception. It can be defined as care which adds a different dimension to the usual primary care, as it focuses on the provision of prevention and intervention strategies designed to promote healthy pregnancy outcomes. (American Academy of Pediatrics Fifth Edition)

Goal of Preconception Care

- To enhance knowledge, and improve attitudes and value for health care prior to conception
- To assure that women of childbearing age in the State of Illinois receive evidenced-based risk screening, health promotion, and intervention that will enable them to enter a pregnancy in good health.
- To identify reversible health risks to pregnancy outcome, emphasizing factors that must be acted on before conception or to achieve optimal pregnancy outcomes.

- To educate women on risk prevention before pregnancy. Education regarding exercise, obesity, nutrition, occupational hazards, family support, and financial issues related to pregnancy contribute to a better-prepared patient, whose prospects are good for a healthy outcome.

CDC recommendations to improve reproductive health include the following :

- Individual responsibility across the life span
- Consumer Awareness
- Preventive visits
- Interventions for identified risks
- Inter-conception Care
- Pre-pregnancy Checkup
- Health Insurance Coverage for women with low incomes
- Public health programs and strategies
- Research
- Evaluation

These recommendations require changes in consumer knowledge, clinical practice and public health programming, which will necessitate in-service education and training.

Learning Objectives

At the completion of a period of training, providers of preconception care will be able to:

- Assist client to develop a reproductive life plan.
- Increase public awareness of the importance of preconception health.
- Provide risk assessment, and health promotion counseling to women of child bearing age.
- Provide interventions for identified risks.
- Provide interventions to women who have had a previous pregnancy that ended in an adverse outcome.
- Provide pre-pregnancy check-up to couples planning a pregnancy.
- Increase awareness regarding the necessity of Health Insurance Coverage for women with low income
- Integrate components of preconception health into existing local public health programs
- Increase evidence based practice, and use of the evidence to improve preconception health.
- Develop measurable outcomes, and evaluate them to determine program effectiveness.

1 Reproductive Life Plan

Objective Women of childbearing age, men, and couples should be encouraged to have a reproductive life plan.

Action Steps

- Develop, evaluate, and disseminate reproductive life planning tools for women and men in their childbearing years, respecting variations in age; literacy, including health literacy, within a cultural context.
- Develop, evaluate and disseminate individual health education materials for women and men regarding preconception risk factors, including materials related to biomedical, behavioral, and social risks known to affect pregnancy outcomes.

2 Consumer awareness

Objective

Increase public awareness of the importance of preconception health behaviors and preconception care services by using printed and electronic media this is sensitive to literacy, including health literacy, and cultural values.

Action Steps

- Develop and age-appropriate educational curricula and modules for use in schools' health education programs.
- Integrate reproductive health messages into existing health promotion campaigns (e.g. campaign to reduce obesity and smoking)
- Conduct consumer-focused research necessary to identify terms the public understands and develop messages for promoting preconception health and reproductive awareness.
- Develop messages for promoting preconception health knowledge and attitudes and behaviors among men and women of childbearing age.
- Engage media partners to assist in depicting positive role models for lifestyles that promote reproductive health (e.g. Delaying initiation of sexual activity, abstaining from unprotected sex, and avoiding alcohol and drug use).

3 Preventive Visits

Objective

Provide risk assessment and educational health promotion counseling to all women of childbearing age as a component of primary care visits, to reduce reproductive risks and improve pregnancy outcomes.

Action Steps

- Increase health care provider awareness regarding the importance of addressing preconception health among all women of childbearing age.
- Develop and implement curricula on pre-conception care for clinical instruction, and for continuing education of health care professionals.
- Develop a recommended screening and health promotion package.
- Develop a practical screening tool for primary care settings, which emphasizes preconception risk assessment (e. g. reproductive history, genetic, and environmental risk factors)
- Develop evidence-based models for integrating components of preconception care to facilitate delivery of and demand for prevention and intervention services.
- Establish benchmarks, provider training, and self audits to improve provider knowledge attitudes, and practices to reduce missed opportunities for screening and health promotion.

- Use federally funded collaboratives for community health centers and other Federally Qualified health Centers to improve the quality of preconception risk assessment, health promotion, and intervention provided through primary care.
- Develop fiscal incentives for screening the health promotion.

4 **Interventions for Identified Risks**

Objective

Increase the proportion of women who receive interventions as follow-up to preconception risk screening, focusing on those interventions with evidence of effectiveness and greatness potential impact.

Action Steps

- Increase provider awareness concerning importance of ongoing interventions for chronic conditions and identified risk factors.
- Implement modules on preconception care for specific clinical conditions for use in clinical practice, and for continuing education credits.
- Disseminate existing guidelines related to evidenced-based intervention for clinical conditions and risk factors.
- Disseminate evidenced based interventions that address risk factors that can be used in a primary care setting (i.e alcohol misuse; antiepileptic drugs, diabetes, folic acid deficiency Hapatitis B, HIV/AIDS, hyperthyroidism, PKU, rubella seronegativity, obesity, oral anticoagulant, STD and smoking.
- Apply quality improvement techniques and tools, establish benchmaks, self audits, and participate in quality improvement collaborative groups.

5 **Inter-conception Care Defined**

Inter-conceptional care, is provided to women of reproductive age between pregnancies. Essentially, it may be describes as pre-conception care delivered after pregnancy. This care addresses specific risk factors that may have contributed to previous poor pregnancy outcome. Additionally, it ensures that conditions and behaviors which may pose maternal and infant risks are identified and managed.

Goal of Inter-conception Care

The goal of Inter-conception care is the same as Pre-conception care

Objective # 1

To provide additional intensive interventions to women who have had a previous pregnancy that ended in an adverse outcome (i.e. infant death, fetal loss, birth defects, low birth-weight, or pre-term births).

Action Steps

- Monitor the percentage of women who complete postpartum visits.
- Develop, evaluate and replicate intensive evidenced-based inter-conception care and coordinate models for women at high social and medical risk.
- Enhance the content of postpartum visits to promote inter-conception health.

- Use existing public health programs serving women in the postpartum period, to link them to other sources of interventions (e.g. Family Planning, home visiting, WIC).

Objective # 2

Increase awareness of the importance of pregnancy spacing

Action Steps

- Provide health and education instructions that advise a waiting period of at least one year after the last pregnancy, or three months following a miscarriage.

6 Pre-pregnancy Checkup

Objective

Offer one pre-pregnancy visit for individuals planning pregnancy, as a component of obstetric care.

Action Steps

- Review and revise existing professional guidelines to develop the recommended content and approach for such a visit.
- Recommend modification in payment regulations to permit payment for a pre-pregnancy visit.
- Educate women and couples regarding the value and availability of pre-pregnancy planning visits.

7 Health Insurance Coverage for Low Income Women

Objective

Recommend and advocate of increase public and private health insurance coverage for women with low incomes to improve access to preventive women's health and preconception and inter-conception care.

Action Steps

- Improve the design of family planning waivers by permitting options to offer inter-conception risk assessment, counseling and intervention along with family planning services.
- Increase health coverage among low income women of child bearing age by using federal options and waivers under public and private health insurance systems and the State Children's Health Insurance Program.
- Increase access to healthcare services through policies and reimbursement levels for private and public health Insurance systems to include a full range of clinicians who care for women.

8 Public Health Programs and Strategies

Objective

Integrate components of preconception health care into existing local public health "well women's health care" and related programs, including emphasis on interconception interventions for women with previous adverse outcomes.

Action Steps

- Use Federal and local community support to encourage more integrated preconception health practices in clinics and programs.
- Provide support for CDC programs to develop, evaluate, and disseminate integrated approaches to promote preconception health.
- Evaluate the preconception care activities used by other programs, and support replication projects.
- Use local task forces, coalitions or communities to discuss opportunities for promotion and prevention in preconception health at the community level.
- support public health practice collaborative groups to promote shared learning and dissemination of approaches for increasing preconception health
- Include content related to preconception care in educational curricula of schools of public health and other training facilities for public health professionals.

9 Research

Objective

Increase the evidence base and promote the use of the evidence to improve preconception health.

Action Steps

- Prepare evidenced-based systematic review of all published reports on programs, and policy through the Agency of Healthcare Research and Quality.
- Support evaluation of model programs and projects, including integrated service delivery and community health promotion projects.
- conduct studies to advance knowledge of preconception risks, clinical and public health intervention, including knowledge of more integrated practice strategies and inter-conception approaches.
- Design and conduct analysis of cost benefit and cost effectiveness as part of the study of preconception interventions.
- Examine factors that results in variation in individual use of preconception care (i.e., barriers and motivators that affect healthcare).

10 Recommendation

Monitoring Improvements

Objective

Monitor selected preconception health indicators (i.e., folic acid supplementation, smoking cessation, alcohol misuse, diabetes, and obesity).

Action Steps

- Use pregnancy Risk Assessment and Monitoring System to monitor individual experiences related to preconception care.
- Target pre-conception health programs and interventions to areas where high rates of poor health outcomes exists for women of reproductive age and their infants.
- Use perinatal records of risk to measure and monitor the proportion of risk attributable to the health of women before pregnancy,

- Include preconception, inter-conception, and health status measures in population-based performance monitoring systems (e.g. Title V programs).
- Include a measure of preconception care services delivery in the Healthy People 2010 Objectives.
- Develop and implement indicator quality improvement measures for all aspects of preconception care, example, use the Health Employer Data and Information Set Measures to monitor the percentages of women who complete preconception care and postpartum visits or pay for performance measures.

Preconception Care when Pregnancy is planned

The elements which must be accomplished prior to conception are:

- Risk assessment
- Health promotion
- Medical and psycho-social interventions

1 Risk Assessment

The primary objective of risk assessment is to identify problems that need to be addressed.. The average women of child bearing age is healthy and should have no major problems during pregnancy or during postpartum. However some medical, behavioral or psychosocial problems may be overlooked, and others may develop during the prenatal period. It is therefore important the providers of well-women's care should pay particular attention to six problems that are commonly missed during prenatal or postpartum care. They are:

- Family violence - is common among pregnant and postpartum women in the US. Pregnancy is the leading cause of homicide among women of child bearing age in the US
- Infectious diseases
- Immunization
- Nutrition assessment
- Psycho-social assessment -depression and stress
- Medical history - preexisting disease states, Heart, Diabetes
- Physical exam
- Laboratory tests
- Family history - genetic issues
- Teratogens and environmental toxicans
- Substance abuse, alcohol and tobacco use
- Financial assessment
- Obesity - underweight

2 Health Promotion

Factors that could change timing of or choice to conceive include:

- Domestic violence
- Birth spacing
- Genetic disease
- Disease with poor prognosis (e.g) AIDS)
- Diseases dangerous to pregnancy (e.g. CHF)
- Conflict between needed maternal care and fetal well-being

Barriers to Preconception Care Include the Following:

Unintended pregnancy - Incidence if unplanned pregnancy is 49%
Usual entry into prenatal care in the 3rd month after LMP
Planned pregnancies are seldom planned with a health care provider
Unpreparedness of health care providers
Ignorance about the importance of good health habits prior to conception
Limited access to health services

Role of Providers in Preconception Health Care

Every provider of health care services, should provide preconception information and counseling to women of child-bearing age, and should take advantage of opportunities to recruit women into preconception care. These include advising:

- Patients with a negative pregnancy test about preconception care
- Patients having evaluation of irregular menses about preconception
- All sexually active women of child-bearing age to be available for preconception care.
- Creating public awareness by stimulating consumer demand for preconception and inter-conception care. (Recommendations from Perinatal Guidelines, Georgia 1999)

When should Pre-conception care be offered

Since so few pregnancies are planned, preconception care issues must be addressed at all encounters with reproductive aged individuals, and should be offered :

- As part of a routine health maintenance care
- At a defined preconception visit
- To women with chronic illness

Preconception Issues for Well Women

Family Planning

A short pregnancy interval may be associated with birth of an SGA infant in a subsequent pregnancy, (Lieberman 1989, Zhu 1999; and preterm birth in a subsequent pregnancy (Basso 1998, Zhu 1999)

Family Planning and pregnancy spacing assessment should include the following:

- Family history
- History of depression and the potential for PP depression
- Maternal health risk
- Genetic History (both maternal and paternal)
- Medical, surgical, pulmonary and neurologic history
- Current medication (prescriptions and nonprescription);
- Social history, including alcohol, tobacco, and illicit drug use
- Domestic abuse and violence
- Physical and emotional stress
- Nutritional status
- Environmental and occupational exposures
- Immunity and immunization status
- Risk factors for sexually transmitted diseases
- Obstetric history
- Potential fetal health risks
- Gynecologic history
- General physical examination

Common Conditions Amenable to Preconception Care include, but not limited to:

Diabetes
Hypertension
Seizure disorder
Sickle Cell Trait /Disease
Thyroid disorder
Thrombo-embolic disease
Hemoglobin disorders
STDs
Repetitive pregnancy losses
Eating disorders
Alcohol, tobacco and other drug use and abuse
Domestic violence
Poor nutrition

Common Illnesses Amenable to Preconception Care Include:

Hypertension
Diabetes
Renal conditions
Rheumatic heart disease
Substance abuse
Thyroid abnormalities
Chronic hepatitis
HIV infection
Depression

Preconception Care When Pregnancy is Contemplated Considers the Following:

Future pregnancy when choosing medications for patients
Immunizing teenage girls against rubella
Teaching males and females about safe sex practices and HIV prevention

Routine Pre-conceptual Laboratory tests include:

Vaccinations for Rubella, varicella, and hepatitis

- Hemoglobin and Hematocrit
- Urine screen for protein and glucose
- Papanicolaou cervical cytology (Pap Smear)
- Screening for Gonorrhea, Syphilis, Chlamydia
- Screening for human immunodeficiency virus (HIV) infection is **recommended**.

If positive, counseling and partner testing should be offered along with treatment. If negative, HIV prevention strategies should be reviewed.

Tests recommended for specific indications are as follows:

To assess proven etiologies of recurrent pregnancy loss

For maternal diseases based on medical or reproductive history

Mantoux skin test with purified protein derivative for TB

Recommended Testing for Families at Risk for Specific Genetic Based Diseases or Racial/Familial risk factors:

Sickle cell Hemoglobinopathies (People of African Descent)
Thalassemia (Mediterraneans, Southeast Asians, and People of African descent)
Thalassemia (People of African descent, and Thailanders
Tay-Sachs disease (Ashkenazi Jews, French Canadians, and Cajuns)
Gucher's Canavan, and Niemann-Pick disease (Ashkenazi
CF, fragile X syndrome for family history of nonspecific, predominantly male-affected, mental retardation, Duchenne muscular dystrophy.

Preconception Genetic Counseling and Screening Include

Family history of genetic diseases
Discussion of age-related risks
Discussion of disease-related risks
Carrier Screening
Potential options of donor egg or sperm or early genetic testing

General Preconception Counseling Include:

Family planning, pregnancy spacing
Exercise
Obesity - weight reduction before pregnancy
Increasing weight before pregnancy if underweight
Nutrition - Healthy eating
Abstinence from tobacco, alcohol, and illicit drugs
Advise administration of daily vitamin supplement containing 400mcg Folic Acid, and 30mg of elemental iron beginning at least one month before conception. Women who have had a pregnancy with neural tube defect, should be advised to take 4.0mg of Folic Acid daily American Family Physician, June 15, 02)
Maintaining good control of any preexisting medical conditions (eg, diabetes, hypertension, systemic lupus erythematosus, asthma, seizures, thyroid disorders, and inflammatory bowel. disease) Determining the time of conception by obtaining an accurate menstrual history, and providing instruction by using a menstrual calendar.

Substance Use and Preconception care

Patient education must be directed to the:
The effects of substance on the fetus
Screening for substance use and abuse
Referrals to a treatment program
Pregnancy may be a strong motivator for change

Preconception Care as it Relates to Alcohol Intake in Pregnancy

Patient must be counseled that:

- Fetal Alcohol Syndrome is the leading cause of preventable mental retardation
- No level of alcohol consumption is considered safe

- To abstain when attempting to conceive and during pregnancy
- Assessment for problem drinking will be conducted with a standardized screening tool.

Preconception care as it Relates to Tobacco Use

Patient must be counseled that:

- Smoking is the leading preventable cause of low birth-weight- for every 10 cigarettes smoked daily, the risk of delivering an SGA infant increases by a factor of 1.5.
- Smoking is associated with placental abruption, pre-term delivery, placenta previa, and miscarriage.
- Smoking cessation results in increased birth weight
- Exposure to environmental smoke in the household is associated with SIDS, childhood respiratory illness, asthma and otitis media

Preconception Care for Men must include counseling regarding the following:

- Alcohol - may be associated with physical and emotional abuse, and may decrease fertility
- Genetic counseling - Sickle Cell trait/disease
- Sexually transmitted diseases - syphilis, herpes, HIV, gonorrhea
- Preparedness for parenthood - psychological, financial, life plans for education, career.

Inter-conceptual Care -Prenatal care

Definition of Prenatal Care

Regularly scheduled obstetric care beginning in early pregnancy and continuing through post-partum. Prenatal care involves the management of medical, nutritional, Psycho-social, and educational needs of the patient and her family. This is reevaluated at regular intervals, and revised in accordance with the progress of the pregnancy.

Rationale for Prenatal Care: Access to prenatal care has long been associated with reduction in infant and maternal mortality and morbidity. Encounters between pregnant women and health care providers, afford opportunities for teaching when a foundation can be laid for learning good health habits which will benefit both mother and infant Women who receive prenatal care during the first trimester have better pregnancy outcomes than women who have little or no prenatal care.

Goals of Prenatal Care:

To maintain and improve maternal/ infant health and well-being through education including nutrition, Periodic surveillance, laboratory testing, and risk assessment including risks of genetic disease and birth defects.

Objectives of Prenatal Care

- To reduce maternal mortality, morbidity, fetal

- To reduce pre-term births, intrauterine growth retardation, congenital anomalies, and failure to thrive
- To promote health supervision, and healthy fetal growth and Development

Major Recommendations for quality Prenatal Care- All pregnant women:

- Should be assessed for peri-partum depression.
- Should be given folic acid supplementation prior to conception.
- The first prenatal visit should occur during the first trimester.
- Gestational age must be accurately established by 20 weeks, either by the last menstrual period correlating with exam the first trimester, or an ultrasound preferably at 18-20 weeks gestation, to allow for fetal survey.
- Should be screened for HbsAg before delivery.

Components of Prenatal Care.

Prenatal care involves the management of medical, nutritional. Psycho-social, and educational needs of the patient and her family. This is reevaluated at regularly scheduled intervals, and revised in accordance with the progress of the pregnancy. In 1989 the US Public Health Service identified three basic components of prenatal care, they are:

- Early and continuing risk assessment, including laboratory testing
- Health promotion, including patient education
- Medical and psycho-social assessment, intervention and follow-up care.

Early and Continuing Risk Assessment

Prenatal care is more effective when the first visit takes place at 6-8 weeks gestation, and not delayed until the second or third trimester. The prenatal visit is a comprehensive process of assessing historical data, laboratory findings, medical, social and obstetrical risk indicators. One important goal of the prenatal visit is to prevent pre-term births which is the chief cause of infant mortality. Prenatal visits are designed:

- To provide primary health care
- Identify risks to fetal health and safety
- To prevent and or control disease
- To assure delivery of a healthy baby of appropriate weight.

Risk Assessment includes obtaining the following data:

- Demographic information
- Gynecologic history, including the date of the last menstrual period (LMP)
- History of contraceptive use
- Obstetric history
- Estimated day of delivery (EDD) determined by the last menstrual period if known. If the date is unknown or a size-date discrepancy exists, an ultrasound examination should be performed before 20 weeks.
- History of current pregnancy
- Accurately dating pregnancy
- Medical/surgical history
- Genetic history
- History of dental care

- Social history/Lifestyle behaviors
- Environmental exposures
- Pharmacologic history
- Nutritional assessment including pregnancy weight and body mass index (BMI)
- Psycho-social assessment
- Physical examination
- Employment history
- Financial planning

Assessment

The assessment process begins with the initial Prenatal visit, and will be more effective if a pre conception visit occurred. It is on-going and ideally starts with the initial visit which should occur between 6-8weeks of gestation. At the initial prenatal visit the patient's database is established, if not prior to conception, and involves assessment or collecting physical, historical and laboratory data from which a plan of care is developed and followed throughout the course of the pregnancy. Historical data include the following:

Demographics

The age of the mother is an example of a characteristic that is associated with both medical risk(because pregnancy at the extremes of the reproductive age span can have specific physiological consequences) and psycho-social risk. Marital status of the mother may provide a possible indicator of support if she is single, separated, divorced, or has no significant other to assist throughout herpregnancy and postpartum. It will indicate whether there is a need to plan for child care for the baby and some occasional respite care for the mother.

Assessment of income and financial resources for pregnancy will allow the provider to assess the need for financial assistance through Medicaid, or other funding. All clients should be assessed for Medicaid eligibility via the Medicaid Presumptive Eligibility process. Education assessment is useful for at least two reasons. The client may need assistance to either continue schooling if an adolescent, or in pursuit of a G.E.D. if she dropped out of school. Education assessment can also offer insight into possible ability to comprehend information supplied by the provider. It is important to ascertain from the patient what her housing situation is: homeless, evicted, living in a shelter, etc.

Gynecological History

Menstrual history includes premenstrual syndrome, dysmenorrhea, fibroid tumors, irregular bleeding, abnormal Pap smears, pelvic surgeries or interventions; last normal menstrual period (LNMP), and Diethylstilbestrol (DES) exposure. The number of weeks that have elapsed between the first day of the LNMP (not the presumed time of conception) and the date of delivery is the means to calculate gestational age, regardless of whether the gestation results in a live birth or a fetal death.

Contraceptive History

Information should include whether this pregnancy was planned and is wanted, what contraception method was used, the current sexual relationship, is it monogamous, and if not the number of partners involved.

Past Obstetric History

This topic covers prior pregnancies, previous intrauterine growth retardation (IUGR), infant/pre-term birth, high parity, birth interval of less than two years, previous hemorrhage, stillborn or neonate death, sudden infant death syndrome (SIDS). Any of these would indicate greater risk factors for the client.

Medical/Surgical History

Ascertain whether the client has experienced any chronic diseases such as diabetes, hypertension, anemia, and what prescription or over the counter medications were or are being used. Gather information on infections such as hepatitis, toxoplasmosis, group B streptococcus infections, allergies. Trauma, surgical procedures, blood transfusions. Learn whether satisfactory resolution was achieved on any of these topics.

Genetics History

Is there a record of repeated spontaneous abortions, chromosomal and other congenital abnormalities, hemoglobinopathies such as sickle cell anemia. Has the client, spouse or family been exposed to radiation or other toxic substance exposure? Have there been multiple births? Is there a family history of chronic diseases (diabetes, hypertension, anemia, etc.)?

Life Style Behaviors

This section should assess the client's use of tobacco products, alcohol, illicit drugs, over the counter medications, prescription drugs, rest and sleep patterns, extremes of exercise or physical exertion, and dental care.

Environmental Exposures

The period of greatest sensitivity to the environment for the developing fetus is between 17 and 56 days after conception. Many structural anomalies have already occurred by the end of the eighth week and certainly by the end of the first trimester. In 1990, in Illinois, 20.7 percent of women received care only after the first trimester and 2.1 percent got no prenatal care at all, according to the Department's Illinois Center for Health Statistics. Preconception counseling may affect some patients who otherwise would not seek care until after this critical period.

A chemical exposure history should be obtained, ideally prior to conception. Women should avoid significant exposure to chemical solvents and metal fumes and should carefully follow current guidelines for handling antineoplastic agents, including the use of vertical laminar flow hoods in their preparation.

A number of chemicals are of potential concern to human pregnancy. The effects of most of these substances on human pregnancy are unknown, but several, such as heavy metals and organic solvents, have been implicated in a variety of reproductive disorders. It would seem prudent to educate women for whom pregnancy is a possibility regarding such hazards; help them identify their own exposure risks;

and provide them with the facts available regarding the teratogenic potential of any drug, chemical, or environmental agent to which they are exposed.

It is important to ask the client about their environment contacts outside their daily work involvement.

This history should include inquiry about activities and products used by the client, as well as by other household members. This will include such environmental things as: Interview the client to assess the type of and place of employment. If the work environment would place the pregnancies in jeopardy. It is important to ask the client about their environment contacts outside their daily work involvement. This history should include inquiry about activities and products used by the client, as well as by other household members. This will include such environmental things as:

- Lead based paint
- Ceramic ware
- Soil/dust near lead industries
- Leaded gasoline
- Plumbing leachate

Inquiries regarding hobbies and related activities should include the following:

- Glazed pottery making
- Preparing lead shots
- Target shooting at firing ranges
- Fishing sinkers
- Stained glass making
- Lead solder (e.g electronics)
- Painting
- Furniture refinishing
- Car and boat repair home remodeling

Questions should also be raised regarding a spouse taking home residue on clothing, e.g. in farm communities there may be exposure to pesticides and herbicides. Investigation regarding a safe water supply needs to be addressed. Learn whether the source of the client's water supply is a public water supply (municipal) or private. If it is private, it is advised that the private well be sampled once during the past year for coliform and nitrate. The well should be free of coliform bacteria and contain no more than 10 mg./L. Of nitrates. Testing can be done through an approved private laboratory.

Psycho-social Assessment

It is important to do a review of the client and her environment to evaluate social and behavioral factors that affect the client's ability to function. This assessment includes a psycho-social history/determination of current functioning, counseling relative to need, and community referrals for services.

Components of the assessment derived from the interview and updated medical record should include family composition and functioning (strengths and needs), adjustment to pregnancy and parenting attitudes, perceptions of need for care, support systems of client and family (use of formal and informal resources), cultural issues regarding health care, pregnancy, family relationships, educational level, mental health status and history (family violence, depression, suicidal tendencies, key stressors and life events, maternal stress/anxiety extremes), pertinent medical history (e.g., substance abuse), and environmental needs and resources such as housing, financial resources, employment, clothing, transportation, child care and community violence.

Ascertain whether the client is experiencing any emotional highs or lows about becoming a parent, or whether she is experiencing increased fatigue or stress, particularly if there are other youngsters at home or if she is employed outside her home. The client may have headaches due to stress or the headaches may be indicative of serious medical problems such as hypertension, proteinuria, or edema of the extremities. In such cases prompt contact with the medical provider is indicated.

Physical Examination

The physical examination is performed for all women during the pre-conceptual visit or the first pregnancy visit. The elements of the physical examination include: general appearance and nutrition; blood pressure, pulse, height to weight profile, present weight; head and neck, heart and lungs, breasts, abdomen, pelvic area tenderness, extremities and back, neuromuscular; and pelvic evaluation - speculum and bimanual examination, clinic pelvimetry.

At each follow-up visit, the patient should be given an opportunity to ask questions about her pregnancy or comment on changes that she has noted. The physical exam should include general appearance, nutrition, blood pressure, weight (including pattern of weight gain), uterine size, heart rate of mother and

fetus, and cervical check after 40 weeks. The cervical check should include dilatation effacement, fetal presentation, and station. The findings of this exam should be carefully documented and should be assessed during each visit. The patient should be asked about fetal movement at each visit. Urine should be checked to detect protein and glucose. Any change in the pregnancy risk assessment should be recorded after each evaluation and an appropriate management plan outlined. Continual risk assessment should be a standard part of the ante-partum care.

At 24 to 28 weeks gestation an interval history since the last visit should be obtained and should include questions on the general state of health, nutrition, fetal movement and unusual symptoms such as frequent contractions or vaginal bleeding. Continuing assessment is indicated of psycho-social risks, maternal stress or anxiety, and habits to determine significant changes and the need for support or other interventions. The physical examination should include weight as a measure of health for the woman and fetus; blood pressure as a continuing screen for hypertension; and auscultation of fetal heart rate, assessment of fetal activity, and fundal height for growth pattern.

A repeat hematocrit or hemoglobin is indicated during the second and third trimester to help monitor nutritional status and identify anemia. Since the one-hour glucose screen for diabetes is recommended for all women near 26 weeks, both laboratory tests can be done at this time. For Rh-negative women, a repeat Rh titer should be done at this visit and, if unsensitized, RhoGAM should be given. This is the beginning of the third trimester and is 10 weeks after the previous risk assessment. At this time, diagnoses of problems such as toxemia, growth retardation, or abnormal fetal presentation may first be made. The timing also reflects the optimal screening time for pregnancy-induced diabetes and anemia.

Nutritional Assessment

Nutritional assessment during the initial prenatal visit should include the following subjective data:

- Pre-pregnancy weight (height to weight profile)
- Diet history with evaluation of barriers to adequate nutrition intake, (e.g., financial, cultural, food fads, pica, and special dietary patterns (e.g., vegetarian, lactose intolerance, caffeine, Aspartame

Objective data should include:

- Height, weight, normal weight, percentile for height, weight, weight/height, desirable body weight.; desirable body weight, body frame,

- Fluctuations in weight gain vs weight loss.
- Age, race
- Significant laboratory data pertinent to nutritional status.
- Medications which may influence nutritional status.
- Dietary supplements, e.g. vitamins, calcium
- 24-Hour Diet Recall Results: Calculate the nutrient intake utilizing USDA Handbook 456, Food Values of Portions Commonly Used and/or other appropriate methods. Determine the appropriateness of the diet using the Recommended Dietary Allowances as a standard. Record the amounts of each nutrient, vitamin or mineral as appropriate for the specific diet requirements and/or nutritional status.
- Fluid Intake: the amount in cubic centimeters (cc.) and types of fluids.
- Drug/Nutrient Interactions: interactions that may increase/decrease absorption of the nutrient/drug, and increase/decrease toxicity of medication, and decrease effect of drugs.
- Environmental assessment related to nutrition include factors that affect nutritional status, e.g., no working refrigerator, no indoor plumbing, etc.
- Level of Understanding of Diet: Understanding of dietary needs of patient/significant other.

Patient Education

Patient education in pregnancy is very important in helping women, particularly women at risk to learn appropriate compliance behaviors aimed at appropriate outcomes. Patient education provides the following:

- Anticipatory guidance for expectations of pregnancy
- Clear directions for compliance with regimens aimed at delivering quality care, with assurance of positive outcomes
- Assessment of patient's knowledge base before discussing the following issues:

Nutrition Education

Over the past quarter century, there has been an increased awareness of the positive relationship between maternal weight gain during pregnancy and birth weight of the newborn. This awareness is compounded by the recognition of socioeconomic differences in dietary quality and the pregnancy performance which has heightened concern about the nutritional status of the pregnant woman. The woman's body mass index should be determined at the initial prenatal visit to allow for preconceptional intervention recommendations if her status is under- or overweight. An individualized goal for weight gain during pregnancy should be set, and any major or potential nutritional risk factors should be identified. The woman should be asked about her food intake, and, if necessary, she may be referred to a registered dietitian or nutritionist for dietary counseling. A woman's nutrition before pregnancy may have profound effects on reproductive outcome. Underweight women who gain little weight during pregnancy are at particularly high risk. Educational materials on nutrition that are available from the American College of obstetricians and Gynecologists, the U.S. Public Health Service, and the March of Dimes may be given to the patient. All patients should be referred or to the Women, Infants, and Children (WIC) program for assistance.