

Family-Centred Maternity and Newborn Care:
National Guidelines

— CHAPTER 3 —

Preconception Care

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Introduction

The health of the parents, prior to the woman's pregnancy, is vital to the ultimate health of the baby. Promoting the health of women, men, and families before pregnancy thus merits attention as an important aspect of family-centred maternity and newborn care.

The preconception period is not a neatly defined period of time. Throughout their reproductive lives, most women never really “know” when, or if, they will become pregnant. Women have choices, however, about becoming pregnant. Effective contraception has provided options (Raphael-Lerr, 1991). In addition, early pregnancy, or the first eight weeks, is critical as the time of greatest developmental risk to the fetus. In effect, many women may be unaware at this point that they are pregnant. Clearly, preconception care should be considered throughout one's life.

Preparing for a healthy pregnancy is not the sole responsibility of either the mother or the family. Individual life patterns, social support networks, and social living conditions are all important factors in conceiving, giving birth to, and raising healthy children. Poverty, for example, has a strong influence on pregnancy and children. Thus, it is critical that children and families are supported in safe and caring communities and in society in general.

Preconception care includes many components that are based on the principles of family-centred maternity and newborn care.

- It begins with attitudes and practices that value pregnant women, children, and families.
- It encourages women and men to prepare actively for pregnancy.
- It focuses on the many environments influencing the family, including social, psychological, spiritual, and physical.
- It respects the diversity of people's lives and experiences.
- It incorporates informed choice, thereby helping a woman and her partner to understand health issues that may affect conception and pregnancy.
- It enables women and men to be as healthy as possible, helping them recognize actual and potential problems (Moos, 1989).
- It attempts to identify parents with increased genetic risks and to provide them with sufficient knowledge to make informed decisions about their reproductive options (Levitt, 1993).

Health care providers have a responsibility to involve themselves in providing preconception care to individual women and families. As well, they should work as advocates to create healthy, supportive communities for women and men in the childbearing phase of their lives.

Health care providers involved in preconception care enter into a collaborative partnership with a woman and her partner, enabling them to examine their own health and its influence on the health of their baby. The health care provider's role is to provide accurate information; translate and communicate this information in a clear and precise way; support the woman and/or couple's decision-making process; and offer and refer them to relevant services when appropriate. The information provided and techniques used to encourage effective discussion and communication will allow the woman and her partner to make an informed decision about having a baby. The decision, however, ultimately rests with the parents.

Diversity

Since diversity is the norm in our society, health care providers must be aware of, and sensitive to, diversity and must plan preconception programs accordingly. For example:

- “Typical” family structures may include two-parent heterosexual couples; two-parent lesbian and/or gay couples; single-parent families of either gender; blended families; extended families including grandparents, aunts, uncles; or community families made up of close friends.
- Canadians come from a variety of ethnic and cultural backgrounds with differing beliefs and norms concerning pregnancy, parenting, and the roles of women, men, and children.
- The geography of our communities is vastly different, ranging from large urban centres to small, rural, isolated communities.
- The age at which women become pregnant has changed considerably over the past 20 years. The average age of first birth has increased. At the same time, the rate and number of teenage pregnancies has increased (Canadian Council on Social Development, 1997).

It is recommended that women and men from diverse backgrounds be involved in all aspects of preconception care, including determining priorities, developing and delivering programs, and participating on institutional/agency committees. Such participation will ensure that the care provided responds to community needs.

Preconception Care Needs

Preconception care focuses not only on the physical preparation for pregnancy and parenting, but also on the social, psychological, and spiritual elements. Positive and realistic attitudes about pregnancy and parenting, which are formed at an early age, are fine-tuned throughout life. Although society at large must have a general awareness of preconception health, interest in this information will be influenced by such factors as people's age and life stage, their childbearing history, and their life priorities.

Health care providers also need accurate and up-to-date information on preconception health issues. They require ongoing education through conferences, journals, and courses. They need to be informed about the most recent research evidence and its application. They should be familiar with "best practice" models for providing preconception care.

The Place of Preconception Care

When deciding the site of preconception programs, it is important to know:

- where people work and go to school;
- where they go for health information and care;
- what media they interact with; and
- how they interpret messages in the media.

Preconception care and programs should be offered through a number of venues, in various community locales, and through a variety of creative approaches. It is recommended that preconception care and education be incorporated into school curricula and the workplace, delivered through the media, and offered through community-based agencies. A variety of mechanisms can be used to share information. These include the Internet, audiovisual resources, print resources, as well as group and individual sessions.

The School

It is recommended that sexual health education be included in the curricula of all Canadian schools. Broadly based, comprehensive sexual health education programs can help young people to respect and protect their sexual health. Because the determinants for becoming sexually active and

pregnant are complex, all programs need to be wide-ranging and involve several community sectors. Teachers, parents, and health care providers are all partners when planning effective programs for children and adolescents. However, innovative ideas such as peer support programs, school sexuality clinics, and student-led initiatives need to be supported (Baskerville, 1993; McKay, 1993; Health Canada, 1994).

Attention needs to be focused on younger children as well. Programs and activities that encourage realistic and age-appropriate attitudes toward healthy lifestyles, healthy relationships, preparations for parenting, and sexuality — and that also stress mutual respect — should be encouraged from kindergarten through elementary and intermediate school. It is important that the decision to have a baby be viewed, and prepared for, as part of the continuing process of “raising a family.”

The Workplace

Sixty percent of Canadian women are employed in some way outside the home (Women’s Bureau, Labour Canada, 1992). It is therefore recommended that the workplace be used as a location for preconception care and education. Many workplaces already involve their employees in some form of wellness program, for example, back care, fitness, heart health, nutrition, stress management, or smoking cessation. These programs are ideal opportunities to educate potential parents about issues of healthy pregnancy and parenting (National Commission to Prevent Infant Mortality, 1988).

The Media

When planning preconception programs, health care providers need to take into account the media’s popular health messages. This information needs to be incorporated into program-planning discussions. Clearly, the popular media, through programming and advertising, greatly influence the decisions people make about their lives.

Television, films, and magazines can depict sexuality, pregnancy, and parenting in unrealistic and potentially dangerous ways. At times, they promote the attainment of unrealistic body shapes and sizes. As well, they advocate the use of alcohol, drugs, and tobacco as ways of gaining social acceptance and reducing stress; they downplay the risks of unprotected sex with multiple partners; they trivialize relationships; and they provide poor role models for adults, young people, and children.

Health care providers need to use the media to get *appropriate* messages out to the general public. In recent years, various organizations have sponsored media and advertising campaigns that promote healthier lifestyles and address prevention issues; for example, the dangers of drinking and driving as well as the effects of smoking and drinking on the unborn child. These efforts should be continued and expanded (Frede, 1993).

Primary Care

Throughout their lifetimes, women and men see primary care practitioners for a variety of reasons. The majority of women, however, do not specifically access a practitioner for preconception information. It is therefore recommended that preconception health counselling be provided as part of general preventive care, or during primary care visits for other health problems. Ideal opportunities for discussion with women of childbearing age would be at the time of her annual PAP test, during review of birth control or during her premarital examination (Public Health Service Expert Panel, 1989; Frede, 1993). Preconception counselling offered at such opportune moments can influence women, or women and their partners, who might otherwise not seek care until after confirmation of pregnancy (Swan and Apgar, 1995).

Community Settings

Community health workers, such as public health nurses or health care providers in community health and/or resource centres, should include preconception content in many of their community programs and group activities. Community health workers often work closely with other community leaders, including teachers and religious leaders, and are well placed to promote the inclusion of preconception information in community programs.

Preconception programs can occur anywhere that women and men gather. Because many women do not routinely access health care or information, alternative ways of providing such information and services must be found. Trained peers and professionals involved in outreach programs, one-to-one visiting programs, programs through community centres, churches, day care centres, drug stores, and grocery stores — all are potential means of reaching isolated women.

Preconception Assessment, Counselling, and Support: Specific Issues

Social Support

Social support can provide a balanced, secure environment. Such support is often lacking when people are economically disadvantaged, are newcomers to Canada, or have few friends or family within their own community. Unfortunately, pregnancy in itself may lead to social isolation.

Preconception care needs to include discussions that focus on the sources and types of social support women and men have. It should assist potential new parents to determine the support needed to raise a child and to explore possible sources of this support. Ultimately, parents will define who provides their support. In effect, the preconception period is a time to identify women and families with inadequate support and to try to link them up with appropriate community resources.

Stress

Many factors can contribute to stress in a woman's life. Over 60 percent of women with preschoolers are in the work force (Canadian Council on Social Development, 1997). Often, women still do most of the work around the home as well as the child-related activities, so they are juggling jobs, children, relationships, volunteer work, and housework. Some women are unemployed or working in low-paying jobs, and are living in poverty. Other women may be living in abusive relationships.

Stress can affect a woman in various ways. Preconception counselling can identify stressors and help men and women examine ways of dealing with these stressors before pregnancy occurs. As well, community resources and support systems can be identified and assistance given as to ways of accessing these resources before the woman actually becomes pregnant.

Quality of Relationships

Preconception counselling can focus on the quality of the relationship of the woman and her partner. As well, physical, emotional, and sexual changes that accompany pregnancy and early parenting can be identified. If a woman wants to parent alone, preconception counselling can highlight

the social and community supports already in use and others available elsewhere.

Parenting alone or with a partner requires an openness about basic life values and beliefs. Preconception care and education can facilitate discussions around such issues as discipline, involvement of immediate and extended family, spirituality, child care, hopes for the future, home responsibilities, parental roles, and finances (Aikey-Keller, 1992).

Abuse and Violence

Violence in intimate relationships is commonly encountered by women of childbearing age. Research indicates that 29 percent of all women experience violence from a current or previous partner (Statistics Canada, 1993). Often, both the woman and the health care provider are equally reticent about broaching the issue of violence. Health care providers should be alert, however, to the consequences of abuse that could affect the health of the woman and her potential family. The preconception period is a critical time to identify women who are at risk for abuse and family violence. Through counselling, it may be possible to influence these factors prior to pregnancy.

Care providers need to:

- be aware of the problem of abuse;
- be able to assess and identify abuse;
- provide a safe, private, and therapeutic environment to facilitate disclosure; and
- provide support and care for the women.

Assessing and identifying abuse involves:

- identifying the risk factors and clinical clues that indicate abuse; and
- asking direct, sensitive questions. (A woman-abuse screening tool has been incorporated into the Antenatal Psychosocial Health Assessment [ALPHA] Form. This is described in more detail in Chapter 4, page 12.)

Educational material on abuse should be clearly displayed in waiting areas, examination rooms, and washrooms (perhaps the only place where a woman goes without her partner). Telephone numbers of local shelters and help lines should be clearly displayed in all areas, including washrooms.

Some health care providers, themselves, may be victims of violence. This makes it very difficult for them to broach the issue with women in

their care. It is clearly important for health care providers involved in abusive relationships to seek help and support.

Female Genital Mutilation

Female genital mutilation or FGM (including female circumcision, incision, and infibulation) is a cultural practice going back 4000 years. Between 85 and 115 million women and girls have been subjected to this procedure worldwide, and each year two million or more are forced to undergo the procedure. Today, FGM is practised in 26 African countries and is increasingly being reported in Europe, Canada, Australia, and the United States (WHO 1994; Daya 1995).

Given the multicultural diversity of Canada, health care providers here may encounter women who have undergone FGM. It is crucial that these women be treated with compassion and respect. Female genital mutilation has implications for preconception counselling. It may contribute to chronic pelvic inflammatory disease. A thorough pelvic examination may be impossible. As well, women who have experienced FGM may fear intimacy, labour, and birth. These concerns need to be addressed prior to pregnancy.

Women who have experienced FGM may want to deal only with female health care providers. Whenever possible, female physicians, midwives, or nurses should be made available (Daya, 1995).

Significantly, a number of medical associations have banned the practice of female genital mutilation in Canada, including the Society of Obstetricians and Gynaecologists of Canada and the Canadian Medical Association (SOGC, 1992; Lebourdais, 1995).

Healthy Lifestyle

Preconception counselling provides the opportunity to discuss a number of issues related to a woman's lifestyle. It is the responsibility of the health care provider to:

- in partnership with the woman, assess her lifestyle;
- identify effective strategies to deal with mutually agreed upon issues; and
- provide education, support, counselling, or referral to appropriate resources within the community.

Lifestyle practices are heavily influenced by the context of a woman's life. It is therefore important to consider behaviours against this backdrop. In

addition, lifestyle issues are often not sufficiently explored with women and families who appear to be healthy and apparently not at risk for difficulties.

Preconception counselling frequently focuses on the effects of certain lifestyles on the fetus, if these are continued throughout pregnancy. Equally important should be discussions of the effects of such lifestyles on a woman or man's fertility; and on the woman's ability to maintain the pregnancy, as well as her and her baby's health postpartum.

TOBACCO

In Canada, 28 percent of women over 15 years of age smoke regularly; within the 20- to 24-year age group, the smoking prevalence for women is 34 percent (Health Canada, 1995a). Tobacco smoking has been shown to be associated with infertility, low sperm counts, abnormal sperm, menstrual disorders, spontaneous abortions, ectopic pregnancies, low birth weight, prematurity, placental irregularities, infant mortality, sudden infant death syndrome (SIDS), and infant and childhood morbidity (Baird and Wilcox, 1985; Cefalo and Moos, 1988; Scher and Dix, 1990).

Women smoke for many reasons and are influenced by both external and internal factors. External factors include social and cultural norms, the regulatory framework, and the smoking behaviour of people with whom the woman lives and works. Women smoke because they are addicted, to deal with stress or boredom, to control weight, or to provide a break from a demanding life (Health Canada, 1995b). Some groups of women are more likely than others to smoke. These tend to be women living in very stressful circumstances; smoking becomes an important part of their coping mechanism (Health and Welfare Canada, 1987 and 1990). For example, women who are single, separated, or divorced, and women with less education, lower incomes, and lower-status occupations than the norm have higher rates of smoking (Health and Welfare Canada, 1994).

Women who are contemplating pregnancy and smoke are caught in a very real dilemma. On the one hand, they want to have healthy pregnancies and babies. On the other, they feel controlled by a powerful physical and psychological addiction. Health care providers have a unique opportunity at this teachable moment to guide clients through to positive solutions (Health Canada, 1995c).

In preconception counselling for a woman and her partner, it is important:

- to assess the woman's smoking status, her knowledge about the general health risks of tobacco smoking and the impact of smoking on fertility, and the impact of smoking on the fetus, should she become pregnant;
- to explore the woman's readiness to quit or cut down, and to identify strategies to help her do so; and
- to refer the woman to appropriate services.

The challenges involved in quitting need to be thoroughly considered. Reasons for smoking, the stresses in the woman's life, and her social support network — all need to be thought through. The following are possible options: group stop-smoking programs, relaxation techniques, individual counselling, hypnosis, and partner support counselling. Appendix 1 includes a number of useful resources available to health care providers.

ALCOHOL

The consumption of alcohol in Canada is pervasive and widely accepted. Alcohol use, abuse, and addiction occur in a social context and affect all levels of our society (Loney et al., 1994). Alcohol, a known teratogen, can cause birth defects by affecting the growth and proper formation of the fetus's body and brain. Fetal Alcohol Syndrome (FAS) has been recognized in Canada as one of the leading causes of preventable birth defects and developmental delay in children (Health Canada, 1996). In addition, alcohol use has been associated with an increase in female infertility, due to ovulatory factors or endometriosis (Grodstein et al., 1994).

The Joint Statement: Prevention of Fetal Alcohol Syndrome (FAS) and Fetal Alcohol Effects (FAE) in Canada (Health Canada, 1996) concludes by saying that no definitive information can be conveyed to women regarding safe quantities of alcohol use during pregnancy. *Consequently, the prudent choice for women who are or may become pregnant is to abstain from alcohol.*

In preconception counselling, it is important to identify those women who are likely to drink heavily as well as those likely to continue drinking throughout their pregnancy. Various tools can assist in the identification of women at risk (Bush et al., 1987; Sokol et al., 1989; Bradley et al., 1998); every woman who receives preconception counselling should be asked about alcohol consumption. As well, health care providers have a responsibility to inform women, and to assist them with appropriate referrals and supportive interventions. If the woman has a partner, he or

she should be included in the counselling on alcohol use; the message is to encourage the woman's choice not to drink and to cut down, or stop, the partner's drinking. It is important to develop community- and family-based addiction programs, and to refer women and families to them as appropriate.

DRUGS

Women and men may use drugs for either medical or non-medical purposes. Drugs are widely available in our society, and some — for example, like alcohol, tobacco, and caffeine — are used so commonly that they are not always considered to be drugs. Prescription drugs, such as narcotics, may be obtained from physicians, among other sources. Illicit drugs — whose purity, dose, and sometimes even the substance itself can be unknown — include narcotics, stimulants, cannabinoids, and hallucinogens (Koren, 1994).

Women of childbearing age have increased their non-medical drug use over the last two decades (Koren, 1994). Health care providers (and others) may perceive women who use drugs on a social or “recreational” basis and women who are drug-dependent to be unconcerned about health risks. However, more often than not, these women wish to spare their unborn children the risks associated with drug use.

The situations among women in the drug subculture, and the drug effects on their unborn children, cannot be extrapolated to women who use a substance once, or several times, socially. The effects of drugs on women who are drug-dependent — both on their reproductive health and their unborn children — depend on more than just their drug-taking behaviour. Critically important are the social and economic conditions of their lives and their access to appropriate health care.

Women with a long history of drug-related problems will benefit from preconception care that is integrated with drug treatment. Naturally, individual situations dictate the need for residential treatment, or outpatient individual or group counselling. Obviously, too, the ideal candidate is the woman motivated to change her drug habit. In most situations, however, care is sporadic and crisis intervention may be the only approach accepted. Nevertheless, each contact with the woman should be taken as an opportunity to engage her in ongoing care. She should be provided with information concerning the known effects of drug use on her pregnancy, and encouraged to stop all use so as to ensure the best outcome. This advice should be offered in a respectful and non-judgmental context (Koren, 1994).

Health care providers are referred to three resources in particular for detailed information concerning the effects of drugs on reproductive and preconception health: the Motherisk Program (The Hospital for Sick Children, tel: 1-877-327-4636, fax: (416) 813-7562, Internet address: <http://www.motherisk.org>); *Maternal-Fetal Toxicology, a Clinician's Guide* (edited by Gideon Koren); and the Canadian Centre on Substance Abuse, tel.: (613) 235-4048, fax: (613) 235-8101, Internet address: <http://ccsa.ca/>.

ENVIRONMENTAL CONDITIONS

Whether or not they work outside the home, all people are exposed, on a daily basis, to various chemicals and toxins in the environment. Preconception care should begin with an assessment of the workplace, home, and leisure activity environments for exposure to toxins or hazardous conditions; in addition, previous exposure should be assessed. Some cases in the workplace may require work modification or extra precautions. Protective reassignment of women at risk for poorer pregnancy outcomes due to difficult working conditions may be prudent prior to pregnancy (Levitt, 1993; CICH, 1997a, b).

Environmental hazards are numerous. Here are some of the more common ones:

- *chemicals* such as DDT;
- *metals* such as lead, copper, and zinc;
- *vinyl monomers* such as vinyl chloride;
- *anesthetic gases* found in dental offices and operating rooms; and
- *radiation*, for example, x-rays found in medical and dental offices and the electronics industries (Cefalo and Moos, 1988; Scher and Dix, 1990).

As well, for women, certain types of strenuous work and prolonged standing have been associated with preterm delivery and lower birth weights (Teitleman et al., 1990).

Health care providers are again referred to the three resources noted above for more information about environmental toxins and counselling information.

PHYSICAL ACTIVITY

Women planning to become pregnant should look carefully at their fitness levels and exercise schedules. Preconception counselling needs to focus on the woman's present level of exercise and determine what changes are

needed for a successful pregnancy. Regular exercise before and during pregnancy appears to improve (or maintain) physical fitness. As yet, however, the available data are insufficient to identify important risks or benefits for either mother or baby (Kramer, 1997).

Strenuous, frequent exercise can sometimes cause problems before conception. Menstrual function can be affected and fertility problems may result (Cefalo and Moos, 1988). However, with the possible exception of oligomenorrhea and anovulation, no evidence currently exists to indicate that exercise is a cause of infertility (ACOG, 1992a). Nevertheless, women engaged in vigorous exercise programs should be made aware that hyperthermia may have teratogenic effects and that this potential risk is greatest in the early weeks of pregnancy (ACOG, 1994). As well, a woman who is actively trying to conceive should avoid hot tubs and saunas, given that pregnancy is not always obvious until fetal growth development is well under way.

Nutrition

The *Nutrition for a Healthy Pregnancy: National Guidelines for the Childbearing Years* (Health Canada, 1999) state that “maintaining or adopting healthy eating patterns before becoming pregnant can help ensure that adequate nutrients are available to support a healthy pregnancy.” The preconception period is therefore an ideal opportunity for the would-be mother to improve her diet and nutrition and establish healthy eating patterns.

Before conception, however, health care providers and women should assess the following:

- the development of healthy eating practices;
- consumption of calcium, vitamin D, iron, and folic acid;
- avoidance of excessive vitamin A intakes; and
- body weight and physical activity levels, including overweight and eating disorders.

Health care providers and educators have a major role to play in educating and supporting woman in their childbearing years. Health care providers are referred to *Nutrition for a Healthy Pregnancy: National Guidelines for the Childbearing Years* (Health Canada, 1999) for more detailed information. Much of the following nutrition information is based on this document.

DEVELOPING HEALTHY EATING PRACTICES

Three important guides from Health Canada¹ — *Nutrition Recommendations. The Report of the Scientific Review Committee, 1990; Action Towards Healthy Eating: Canada's Guidelines for Healthy Eating and Recommended Strategies for Implementation, 1990; and Canada's Food Guide to Healthy Eating, 1997* — form the basis of nationally recognized healthy eating messages. (Currently Canada and the United States are reviewing the scientific data on nutrient requirements and new nutrition recommendations will be released periodically until 2002.) Canada's Guidelines for Healthy Eating are found in Figure 3.1.

Women planning a pregnancy should be encouraged to consume a healthy diet, according to *Canada's Food Guide to Healthy Eating*, that includes foods rich in folate, calcium, iron and enhancers of non-heme iron absorption (e.g. vitamin C).

Figure 3.1 Action Towards Healthy Eating: Canada's Guidelines for Healthy Eating and Recommended Strategies for Implementation

- Enjoy a variety of foods.
 - Emphasize cereals, breads, other grain products, vegetables, and fruits.
 - Choose lower-fat dairy products, leaner meats, and foods prepared with little or no fat.
 - Achieve and maintain a healthy body weight by enjoying regular physical activity and healthy eating.
 - Limit salt, alcohol and caffeine.
-

Health care providers need to be aware that developing healthy eating practices is influenced by several factors: socio-economic status (especially if women have insufficient money to purchase food for themselves and their families), cultural diversity, and age.

CALCIUM AND VITAMIN D

The importance of calcium and vitamin D in the development and maintenance of bone mass points to the need to promote adequate intakes of calcium and vitamin D prior to conception. It is recommended that non-pregnant women consume 700 mg of calcium daily and 100 IU of vitamin D (assuming that a large proportion of the vitamin D requirement,

1. Prior to 1994, Health Canada was called Health and Welfare Canada.

estimated to be 500 IU, is being met by the vitamin D production resulting from sun exposure) (Health and Welfare Canada, 1990). Available data suggest that the average dietary calcium intake of Canadian woman of child-bearing age is lower than recommended intake (Health Canada, 1999).

IRON

Canadian data on the iron intake of women of childbearing years report average dietary intake below recommended nutrient intakes (Health Canada, 1999). It is recommended that women aged 19 to 49 ingest 13 mg of iron daily. Dietary iron has two forms, heme iron and non-heme iron. The percentage of heme iron absorbed is greater than that of non-heme iron. Heme iron is found only in meat, poultry and fish. Non-heme iron is found in vegetables, fruit, grains, nuts, eggs, iron-enriched cereals and pastas. Vitamin C and meat, poultry and fish enhance non-heme iron absorption.

FOLIC ACID

Studies have shown that for women who take vitamin supplements with folic acid around the time of conception, the risk of a neural tube defect (NTD) is significantly reduced. (NTDs include spina bifida, anencephaly, and encephalocele.) NTDs affect about one in 1000 babies born in Canada (live births and stillbirths). Although 90 to 95 percent of NTDs occur in families with no such history, a family or obstetric history of an NTD places a pregnant woman at a much higher risk of having a baby with an NTD (Canadian Task Force on the Periodic Health Examination, 1994).

A randomized controlled multicentre trial has shown that preconception folic acid supplementation can decrease the risk of *recurrent* NTDs by 72 percent (Canadian Medical Association and Health Canada, 1998). Another trial demonstrated a significant reduction in *first occurrences* of NTDs when women took a multivitamin supplement including 0.8 mg of folic acid (Chitayat, 1994).

Women planning a pregnancy should consume 0.6 mg of folate daily. According to *Canada's Food Guide to Healthy Eating* (Health Canada, 1997), the careful selection of folate-rich foods will provide approximately 0.2 mg of folate; the remaining requirement for folate, 0.4 mg, must be obtained from a supplement (Canadian Task Force on the Periodic Health Examination, 1994). Women planning a pregnancy who have not previously had a pregnancy affected by an NTD should be advised to take 0.4 mg of folic

acid supplementation, starting at least one month prior to becoming pregnant and continuing through the early weeks of pregnancy, and to eat a healthy diet, according to *Canada's Food Guide to Healthy Eating*, taking care to include folate-rich foods.

Women who have had a previous pregnancy affected by an NTD are at an increased risk of having another affected pregnancy. Those with a family history of NTDs, those with diabetes, or women who are taking anti-convulsant drugs may also be at increased risk. These women may require a dosage that is higher than 0.4 mg. (The reader is referred to *Nutrition for a Healthy Pregnancy: National Guidelines for the Childbearing Years*, Health Canada, 1999.)

The process of making folic acid fortification mandatory for enriched cereal grain is under way in Canada. This is a passive intervention that can increase women's intake of folic acid during the critical period of the baby's development. As yet, however, no sure link has been established between increasing the intake of folic acid via fortification of foods and a protective effect. Oral supplementation may still be necessary for women to achieve the protective effects of folic acid (Canadian Medical Association and Health Canada, 1998).

EXCESSIVE INTAKES OF VITAMIN A

Vitamin A, in excess, is teratogenic in the early weeks of pregnancy. But no one knows what constitutes the minimum teratogenic dose, although the literature reports increased risk of birth defects at intakes of 10 000 IU daily. (It is important for women to know that they may inadvertently consume excess vitamin A in a multivitamin, or in a prescription medication for acne.) The recommended intake for vitamin A, 4355 IU, is easily met through dietary means; supplementation is therefore not recommended (SOGC, 1998). If women are taking supplements in multivitamin/multimineral form, they should take only one tablet per day.

BODY WEIGHT AND PHYSICAL ACTIVITY LEVELS

A healthy body weight promotes general health, reduces the incidence of disease and is a major positive influence on pregnancy. A healthy body weight falls within a range of weights for any given height that is compatible with good health. Weight-related problems can negatively influence the mother's and unborn baby's health, and, if possible, should be addressed before pregnancy occurs. The challenge for health care

providers is to help all women establish healthy attitudes and beliefs about weight and body image and adopt healthy eating and activity patterns that will help them achieve and maintain a healthy weight throughout life. Body weight is assessed using the Body Mass Index (BMI) which measures weight relative to height. See *Nutrition for a Healthy Pregnancy: National Guidelines for the Childbearing Years* (Health Canada, 1999) for details regarding the determination of BMIs. Health care providers should encourage women to follow *Canada's Physical Activity Guide to Healthy Active Living* (Health Canada and Canadian Society for Exercise Physiology, 1998).

Preconception Assessment and Counselling

A history with which to assess preconception health is an important part of a woman's (and her partner's) health care. The goal of such counselling is to provide the woman and her partner with accurate information about their health with regard to reproduction, pregnancy, and any potential risks. It is then up to them to make an informed choice. The following table may be useful for health care providers conducting health assessments of women prior to conception.

Table 3.2 Taking a Preconception History for Assessment and Counselling**GENETIC HISTORY**

A thorough preconception history identifies couples who are genetically at risk.

When women and their partners are informed of the risks of having a baby with birth defects or a genetic disorder prior to the pregnancy, they are then able to determine their options regarding a pregnancy (including contraception, artificial insemination, adoption, prenatal invasive testing, or chance).

Family History

- Examine the health of close family members.
- Establish, if possible, the exact disease or cause of death where appropriate (particularly in parents and siblings).
- Include assessment of *genetic diseases*, including muscular dystrophy, hemophilia, cystic fibrosis, fragile X syndrome, congenital heart disease, phenylketonuria, dwarfism, sickle cell anemia, and Tay-Sachs disease.
- Include assessment of *multifactorial congenital malformations*, such as spina bifida, anencephaly, cleft palate and cleft lip, hypospadias, and congenital heart disease.
- Include assessment of *familial diseases with a major genetic component*, such as developmental disability, premature atherosclerosis, diabetes mellitus, psychosis, epileptic disorders, hypertension, rheumatoid arthritis, deafness, and severe refractive disorders of the eye.

Ethnic History

- Establish risk for specific conditions related to ethnic origin, such as sickle cell anemia, Tay-Sachs disease, neural tube defects, beta-thalassemia, and alpha-thalassemia.

Age

- Establish risks associated with age (e.g. women under age 15 or over age 35 may carry increased biological risks). Some genetic risks are associated with age.

HEALTH HISTORY**Nutrition**

- Assess the present nutritional patterns and status of the woman, her partner, and her family. Assess, for example, the practice of vegetarianism; history of eating disorders; use of supplements; use of medications; lactose intolerance; and cultural and religious practices.

Chronic Conditions

- Assess the presence of chronic conditions that can affect a woman's ability to conceive, as well as the use of medications in treatment of chronic disease and their potential effect on pregnancy.
- The following specific conditions should be considered: diabetes mellitus, anemias, thyroid disorders, gynecological disorders, hyperphenylalaninemia, asthma, sexually transmitted diseases, heart disease, hypertension, deep venous thrombosis, kidney disease, systemic lupus erythematosus, epilepsy, hemoglobinopathies, cancer, seizure disorders, tuberculosis, rheumatoid arthritis, and mental health/psychiatric disorders.

Infectious Conditions

- Identify women who are *rubella*-susceptible. If they are not actively attempting pregnancy, offer a vaccination.

- Identify and counsel women at risk for *hepatitis B (HBV)*. Routine preconception testing of all women for hepatitis B (HBV) is not currently recommended.
- Counsel women to avoid exposure to cat feces and raw and undercooked meats. Routine serologic testing for *toxoplasmosis* in the preconception period is not recommended.
- Offer women without a definite history of *chickenpox* testing of varicella titres. Vaccination of susceptible women is encouraged, if they are not actively attempting pregnancy.
- Evaluate the woman and her partner's exposure to *sexually transmitted disease*. Identifying and treating STDs before pregnancy offers the potential advantages of promoting fertility and preventing preterm labour.
Counselling strategies include those aimed at reducing or eliminating the risk of further infection.
 - Consider doing a preconception screening for infection with *chlamydia* for all women with a history of pelvic inflammatory disease, multiple sex partners, or STD. Chlamydial infections increase the risk of pelvic inflammatory disease, fertility problems, intrauterine fetal death, low birth weight, and postpartum endometriosis. Active maternal chlamydial infection has a transmission rate of 60 percent.
 - Evaluate the woman and her partner for ongoing risk of *HIV infection*. Fetal transmission of the HIV virus occurs in approximately 30 percent of cases and prenatal treatment is effective in reducing the risk. All women should be offered HIV testing in the preconception period.
 - Examine all women with a history of pelvic inflammatory disease, multiple sex partners, or STD for *gonorrhoea*. Ophthalmia neonatorum is a major consequence of maternal gonorrhoea. If gonorrhoea is suspected, a culture should be done before a pregnancy is considered and the appropriate treatment given.
 - Evaluate women for signs of *maternal and neonatal syphilis*. Although disease rates are rising, prompt and adequate treatment can prevent congenital syphilis.

Reproductive History

- Collect information about menstrual, contraceptive, and sexual histories; infertility; abnormal Pap smears; or in utero exposure to diethylstilbestrol.
- Discuss *past obstetric history*, including early miscarriages; number of pregnancies; type of birth; length of labour; and specific complications, such as premature labour or delivery, gestational diabetes, pregnancy-induced hypertension, and postpartum depression.
- Discuss *menstrual difficulties*, specifically excessive cyclic bleeding, amenorrhoea, and oligomenorrhoea.
- Discuss gynecological disease, such as endometriosis or pelvic inflammatory disease.

Psychosocial History

- Assess *interpersonal relationships and social support systems*, including such factors as support of family and friends, employment, socio-economic issues, and violence and abuse.

Lifestyle Assessment

- Assess *lifestyle issues*, including such factors as nutrition; physical activity; prescription and over-the-counter drug use; other substance use; and environmental exposures, current and past.

PRESENT HEALTH STATUS**Physical Examination**

- Conduct an initial prenatal examination. Include vital signs (blood pressure, pulse, height, and weight); general physical examination; breast examination; pelvic examination; and clinical pelvimetry.

Laboratory Evaluation

- Have an evaluation done of the woman's hemoglobin or hematocrit, Rh factor, urine dipstick for protein and glucose, blood type, Pap smear, and gonococcal and chlamydia culture (as recommended in clinical practice guidelines). Syphilis, hepatitis B, HIV (if testing is offered). Assess rubella and varicella titres (if necessary).

Sources: Levitt, 1993; Cefalo and Moos, 1995; Swan and Apgar, 1995; Society of Obstetricians and Gynaecologists of Canada, 1998.

Genetic Counselling

Genetic counselling services should be made available to women and their partners who suspect that their future children may be at risk for inheriting a disorder, or to couples following the birth of a baby with a birth defect. Throughout Canada, there are counselling centres where people can gather the information necessary to determine a probability estimate for genetic problems. These centres also provide extensive counselling. Health care providers should contact their regional centres for detailed information.

Bibliography

- Aikey-Keller B. *Preconception: A Woman's Guide to Preparing for Pregnancy and Parenthood*. Santa Fe, N.M.: John Muir, 1992, p. 89.
- American College of Obstetricians and Gynecologists (ACOG). Women and exercise. *ACOG Technical Bulletin no. 173*. Washington: Author, 1992a.
- . Committee Opinion. *Cocaine in Pregnancy*. Washington: Author, 1992b.
- . Smoking and reproductive health. *Technical Bulletin no. 180*. Washington: Author, 1993.
- . Exercise during pregnancy and the postpartum period. *ACOG Technical Bulletin no. 189*. Washington: Author, 1994.
- Baird DD, Wilcox AJ. Cigarette smoking associated with delayed conception. *JAMA* 1985; 253(20): 2979-83.
- Baskerville NB. The impact of school-based sexuality health centres. *J Human Sexuality* 1993; 2(2): 1-15.
- Bradley KA, Boyd-Wickizer J, Powell SH, Burman ML. Alcohol screening questionnaires in women: a critical review. *JAMA* 1998; 280(2): 166-71.
- Bush B, Shaw S, Cleary P, Delbanco TL, Aronson MD. Screening for alcohol abuse using the CAGE questionnaire. *Am J Med* 1987; 82(2): 231-5.
- Canadian Council on Social Development. *The Progress of Canada's Children: 1997*. Ottawa: Author, 1997.
- Canadian Institute of Child Health (CIH). *Environmental Hazards: Protecting Children*. Ottawa: Author, 1997a.
- . *A National Symposium on Environmental Contaminants and the Implications for Child Health*. Ottawa: Author, 1997b.
- Canadian Medical Association, Health Canada. Folic acid fortification: what does it mean for patients and physicians? *Can Med Assoc J* 1998; 158: 773-4.
- Canadian Paediatric Society (CPS). *Periconceptual Use of Folic Acid for Reduction of the Risk of Neural Tube Defects*. Ottawa: Author, 1995.
- Canadian Task Force on the Periodic Health Examination. Periodic health examination, 1994 update: 3. Primary and secondary prevention of neural tube defects. *Can Med Assoc J* 1994; 151(2): 159-66.
- Cefalo RK, Moos MK. *Preconceptional Health Promotion: A Practical Guide*. Rockville, Md.: Aspen, 1988.
- . *Preconceptional Health Care: A Practical Guide*. St. Louis, Mo.: Mosby, 1995, pp. 3-18.
- Chitayat D. Recommendations for folic acid to prevent neural tube defects. *The Motherisk Newsletter* 1994; 3: 1-2.
- College of Physicians and Surgeons of Ontario. Female circumcision, excision and infibulation. *College Notice no. 25*. Toronto: Author, March 1992.

Daya MB. Female genital mutilation — a call to abandon this traditional custom. *J Soc Obstet Gynaecol Canada* 1995; 17(4): 315-8.

Denton AB, Skott KE. Unintended and unwanted pregnancy in Halifax: the rate and associated factors. *Can J Public Health* 1994; 85: 234-8.

Ernest AA, Hannigan J. Maternal risk factors in fetal alcohol syndrome: provocative and permissive influences. *Neurotoxicol Teratol* 1995; 17(4): 445.

Forman R, Singal N, Perelman V, Chou S, Hoffman L, Parkin P et al. Folic acid and prevention of neural tube defects: a study of Canadian mothers of infants with spina bifida. *Clin Invest Med* 1996; 19(3): 195-201.

Frede D. Preconceptional education. *AWHONN's Clin Issues Perinat Women's Health Nurs* 1993; 4(1): 61.

Grodstein F, Goldman MB, Cramer D. Infertility in women and moderate alcohol use. *Am J Public Health* 1994; 84(9): 1429.

Health and Welfare Canada. (Greaves I). *Background Paper on Women and Tobacco and Update*. Ottawa: Author, 1987 and 1990.

———. *Action Towards Healthy Eating: Canada's Guidelines for Healthy Eating and Recommended Strategies for Implementation*. Ottawa: Author, 1990

———. *Nutrition Recommendations: The Report of the Scientific Review Committee*. Ottawa: Minister of Supply and Services Canada, 1990.

———. (Edwards N, Sims-Jones N, Hotz S). *The Effects of Tobacco Smoke and Second-hand Smoke in the Prenatal and Postpartum Periods: A Review of the Literature*. Ottawa: Author, 1994.

Health Canada. *Canadian Guidelines for Sexual Health Education*. Ottawa: Division of STD Control, Bureau of Communicable Disease Epidemiology, Laboratory Centre for Disease Control, Health Protection Branch and Health Service Systems Division, Health Services Directorate, Health Programs and Services Branch, 1994.

———. *Survey on Smoking in Canada — Smoking Behaviour of Women, Nov 1994*. Ottawa: Health Policy and Consultation Branch, 1995a.

———. *Smoking and Pregnancy: A Woman's Dilemma*. Ottawa: Women and Tobacco Reduction Programs, 1995b.

———. *Smoking Interventions in the Prenatal and Postpartum Periods*. Ottawa: Women and Tobacco Reduction Program, 1995c.

———. *Joint Statement: Prevention of Fetal Alcohol Syndrome (FAS) and Fetal Alcohol Effects (FAE) in Canada*. Ottawa: Author, 1996.

———. *Canada's Food Guide to Healthy Eating*. Ottawa: Minister of Public Works and Government Services Canada, 1997.

———. *Nutrition for a Healthy Pregnancy: National Guidelines for the Childbearing Years*. Ottawa: Public Works and Government Services Canada, 1999.

Health Canada, Canadian Society for Exercise Physiology. *Canada's Physical Activity Guide to Healthy Active Living*. Ottawa: Health Canada, 1998.

Koren G (ed.). *Maternal-Fetal Toxicology, a Clinician's Guide*. 2nd ed. New York: Marcel Dekker, 1994.

Kramer MS. Regular aerobic exercise during pregnancy. In: Neilson JP, Crowther CA, Hodnett ED, Hofmeyr GJ, Keirse MJNC (eds.). *Pregnancy and Childbirth Module of the Cochrane Database of Systematic Reviews* [updated 05 December 1996]. Available in the Cochrane Library [database on disk and CD-ROM]. The Cochrane Collaboration; Issue 1. Oxford: Update Software, 1997. Updated quarterly.

Labour Canada. *Adapting to a Changing Workforce*. Ottawa: Author, Women's Bureau, 1992.

Lebourdais E. Circumcision no longer a "routine" surgical procedure. *Can Med Assoc J* 1995; 152(11): 1873-6.

Levitt C. Preconception health promotion. Primary care. *Clinics in Office Practice* 1993; 20(3): 537-49.

Levitt C, Hammond M, Hanvey L, Continelli A. *Approaching Smoking in Pregnancy — A Guide for Health Professionals*. Toronto: College of Family Physicians of Canada, 1997.

Lightfoot-Klein H, Shaw E. Special needs of ritually circumcised women patients. *J Obstet Gynecol Neonatal Nurs* 1991; 20(2): 102.

Loney E, Green K, Nanson J. A health promotion perspective on the House of Commons report "Foetal alcohol syndrome: a preventable tragedy." *Can J Public Health* 1994; 85(4): 248-50.

Luerson NH, Boucher C. *Getting Pregnant: What Every Couple Needs to Know Right Now*. Fawcett Columbine, 1991.

Lumley J. Periconceptional folic acid (0.36 mg) vs placebo. [revised 26 April 1993] In: Keirse MJNC, Renfrew MJ, Neilson JP, Crowther C (eds.). *Pregnancy and Childbirth Module of the Cochrane Pregnancy and Childbirth Database* [database on disk and CD-ROM]. The Cochrane Collaboration; Issue 2. Oxford: Update Software, 1995.

MacLeod T. Female genital mutilation. *J Soc Obstet Gynaecol Canada* 1995; 17: 335.

McKay A. Research supports broadly-based sex education. *Can J Human Sexuality* 1993; 2(2): 95.

Midmer D, Biringer A, Carroll J, Reid A, Wilson L, Stewart D et al. *A Reference Guide for Providers: The ALPHA Form — Antenatal Psychosocial Health Assessment Form*. 2nd ed. Toronto: University of Toronto, Department of Family and Community Medicine, 1996.

Moos, MK. Preconceptional health promotion: a health education opportunity for all women. *Women Health* 1989; 15(3): 55-7.

Moos RC, Moos Merry-K. *Preconception Health Promotion*. Rockville, Md.: Aspen, 1995, p. 25.

National Commission to Prevent Infant Mortality. The private sector's role in reducing infant mortality. In: MacLachlan D, Merkel S. Prenatal education and family centered health promotion at the worksite. *AAOHN J* 1988; 38(3): 114.

Ohlsson A. The ramifications of substance abuse in pregnancy. *Treating the Female Patient* 1992; 6(1): 6.

Ontario Women's Directorate, Government of Ontario. *Work and Family: The Cultural Balance*. Toronto: Author, 1991.

Public Health Service Expert Panel on the Content of Prenatal Care. *Caring for Our Future: The Content of Prenatal Care*. Washington: Public Health Service, 1989.

Raphael-Lerr J. *Psychological processes of childbearing*. London: Chapman and Hall, 1991, p. 3.

Repchinsky C. Nicotine replacement therapy. *CPNRPC* 1993 (Mar); 87-8.

Reycroft Hollingsworth D, Resnik R. *Drugs and Reproduction. Maternal and Fetal Risks. Medical Counselling Before Pregnancy*. New York: Churchill Livingstone, 1988.

Rosenblatt DS, Fraser FC, Roy DJ. Folic acid to prevent neural tube defects: time for food fortification. *Clin Invest Med* 1996; 19(3): 202-3.

Scher J, Dix C. *Preventing Miscarriage: The Good News*. New York: Harper and Row, 1990, p. 184.

Society of Obstetricians and Gynaecologists of Canada (SOGC). *Female Genital Mutilation Policy Statement no. 12*. Ottawa: Author, 1992.

———. *The Use of Folic Acid for the Prevention of Neural Tube Defects*. Ottawa: Author, 1993.

———. *Healthy Beginnings: Guidelines for Care During Pregnancy and Childbirth*. Ottawa: Author, 1998.

Sokol RJ, Martier SS, Ager JW. The T-ACE questions: practical prenatal detection of risk-drinking. *Am J Obstet Gynecol* 1989; 169(4): 863-8.

Statistics Canada. The violence against women survey. *The Daily* [Ottawa] 18 Nov 1993.

Stewart PJ, Potter J, Dulberg C, Niday P, Nimrod C, Tawagi G. Change in smoking prevalence among pregnant women, 1982-1993. *Can J Public Health* 1995; 86(1): 37-41.

Swan L, Apgar B. Preconceptual obstetric risk assessment and health promotion. *Am Fam Physician* 1995; 51(8): 1875-85.

Teitelman AM, Welch LS, Hellenbrand KG, Bracken MB. Effect of maternal work activity on preterm birth and low birth weight. *Am J Epidemiol* 1990; 131(1): 104-13.

Van Allen MI, Fraser C, Allanson J, McLeod DR, Andermann E, Friedman JM. Recommendations on the use of folic acid supplementation to prevent the recurrence of neural tube defects. *Can Med Assoc J* 1993; 149: 1239-43.

World Health Organization. *Female genital mutilation*. [document #WHO/FHE/94 31 July 1994] In: Daya MB. Female genital mutilation — a call to abandon this traditional custom. *J Soc Obstet Gynaecol Canada* 1995; 17(4): 333-42.

APPENDIX 1

Tobacco Reduction Resources**Guide Your Patients to a Smoke-Free Future**

A program of the Canadian Council for Tobacco Control, endorsed by the College of Family Physicians of Canada and the Canadian Medical Association
170 Laurier Avenue West
Suite 1000
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www.cctc.ca

Catching Our Breath

Women's Health Clinic
3rd Floor – 419 Graham Avenue
Winnipeg, Manitoba R3C 0M3
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Tobacco-Free Booklets for Prenatal and Postpartum Providers

Health Canada Publications
Ottawa, Ontario K1A 0K9
Tel.: (613) 954-5995
Fax: (613) 941-5366
www.hc-sc.gc.ca

Approaching Smoking in Pregnancy: A Guide for Health Professionals

The College of Family Physicians of Canada
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170 Laurier Avenue West
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