


## Prevention of unintended pregnancy and use of contraception—important factors for preconception care

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### ABSTRACT

Preservation of fertility and optimizing health before pregnancy is becoming increasingly important in societies where childbirth often is postponed. Research shows that as women postpone childbirth they achieve higher levels of education and higher incomes. This leads to advantages for their children and for society. However, as women postpone childbearing they are at risk for contracting conditions which may affect fertility and/or pregnancies, pregnancy outcome, and the newborn child. Preconception counseling is therefore becoming increasingly important. Women are often unaware of the added health benefits of contraception and have the right to be well informed so they can make decisions to fulfill their reproductive desires. Contraception can reduce the risk of unintended pregnancies, ectopic and molar pregnancies, and sexually transmitted infections. In addition, hormonal contraceptives reduce the risk of some types of cancer, dysmenorrhea, heavy menstrual bleeding, and anemia and are a treatment for endometriosis. Contraception should increasingly be looked upon as a means of preserving fertility and optimizing health status before a planned pregnancy. Thus, effective contraception can provide women with a possibility of achieving their long-term reproductive goals, although childbearing is actually postponed. The most effective contraceptive methods are the long-acting reversible contraceptives, which have been shown to be highly effective especially in young women who have difficulties with adherence to user-dependent methods. Therefore, these methods should increasingly be promoted in all age groups.

### ARTICLE HISTORY

Received 10 March 2016  
Revised 24 June 2016  
Accepted 28 June 2016

### KEYWORDS

Added health benefits; combined hormonal contraception; long-acting reversible contraception; preconception care; unintended pregnancy

### Introduction



Preservation of fertility and optimizing health before pregnancy is becoming increasingly important in societies where childbirth often is postponed. The average age of first childbirth has steadily been rising in the OECD countries, with first-time mothers' mean age being 28.2 years in 2014 (1). In the United States the mean age of first-time mothers is 26.3 years (2). Postponing childbirth has advantages for women and society. Research shows that as women postpone childbirth they achieve higher levels of education and higher incomes (3,4). This leads to advantages for their children and for society (5,6).

As women postpone childbirth and have fewer children, they are in need of contraceptives for longer periods. These contraceptives must also be highly effective as women are postponing childbirth during the period in life with the highest fertility. Risks of unintended pregnancies do not only include risk of abortion and abortion-related complications but also risk of ectopic pregnancy, which may reduce future fertility, and risk of molar pregnancy that may lead to malignancy. Postponing childbirth may also subject women to greater risks of contracting intercurrent conditions such as sexually transmitted infections (STIs) and endometriosis,

which can affect fertility. Other conditions such as heavy menstrual bleeding may lead to anemia and affect women's health before, during, and after pregnancy. Contraception can reduce the risk of unintended pregnancies, ectopic and molar pregnancies, and STIs. In addition, hormonal contraceptives reduce the risk of some types of cancer, dysmenorrhea, and heavy menstrual bleeding and are a treatment for endometriosis. Women are generally unaware of the added health benefits of contraception. In a Swedish study 57% of women could not mention any added health benefits of contraception (7). Information and knowledge about the fertility-preserving capacity of contraceptives and their added health benefits needs to be increased in society.

### Prevention of unintended pregnancy

Worldwide approximately 40% of pregnancies are unintended, although rates vary across countries and regions (8). Unintended pregnancy may result in several outcomes such as birth, miscarriage, induced abortion, ectopic pregnancy, and molar pregnancy. The prevention of unintended pregnancies through the availability of effective contraceptives has changed lives for women, children, and society.

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### Prevention of adolescent pregnancy

Teenage mothers have higher risks of pre-term birth, pre-natal and post-partum depression, substance and alcohol abuse, and harsher parenting style (9). In addition, offspring to teenage mothers had worse results in school, higher levels of psychopathology, higher levels of criminal activity, and greater substance abuse levels (9). Prevention of adolescent pregnancies should therefore be a high priority in society. In the United States 86% of the decline in teenage pregnancy rates over the last 40 years has been attributed to contraception (10). Several studies have examined adherence to different contraceptives among adolescents. Young women have more problems with adherence to methods that require daily, weekly, or monthly administration. Long-acting reversible methods have been shown to prevent adolescent pregnancies to a larger extent than user-dependent methods (11,12). Long-acting methods have also been shown to have lower discontinuation rates (13). In spite of these findings the contraceptive pill is still the most prescribed method among young women in the United States (14) and in Europe (15). Due to their superior effectiveness in preventing unintended pregnancies, long-acting reversible contraceptives should be promoted among adolescents.

### Prevention of ectopic pregnancy and molar pregnancy

Worldwide approximately 1%–2% of all pregnancies are ectopic. Ectopic pregnancy has a negative effect of future fertility according to several studies (16–19) and is costly for society, with hospital visits, admissions, and absence from work, but also personally for women, with reduced fertility rates. Ectopic pregnancy often affects young women who most likely desire preserved fertility (16). Ectopic pregnancy due to a planned pregnancy may be considered as inevitable, but ectopic pregnancies may also be due to an unintended pregnancy. In this group of women it is especially important to prevent repeat ectopic pregnancy through adequate contraceptive counseling. All contraceptives protect against conception and therefore decrease the risk of ectopic pregnancy (20,21). With adequate contraceptive counseling, not only abortions would be avoided but also the suffering and costs from an ectopic pregnancy.

Risk factors for ectopic pregnancy such as pelvic inflammatory disease (PID), usually caused by *Chlamydia trachomatis* or *Gonorrhea*, and endometriosis may also be reduced by contraceptive use. However, the greatest risk factor for ectopic pregnancy is previous ectopic pregnancy, with a recurrent rate of 10%–15% (16,22). Ectopic pregnancies can be life-threatening due to intra-abdominal bleeding caused by tubal rupture, tubal abortion, or operative/postoperative complications. It is the most common reason for maternal mortality during the first trimester and is responsible for 9% of pregnancy-related deaths in the US (23).

The most effective method for prevention of ectopic pregnancy is the contraceptive implant which prevents ovulation and is a long-acting reversible method. It is unknown what proportion of women receive information on the relative

ability of different contraceptives to prevent repeat ectopic pregnancy.

Molar pregnancy or trophoblastic disease is a rare condition present in 0.57–2 per 1,000 pregnancies (24). Molar pregnancy needs to be surgically evacuated and entails a larger risk of hemorrhage compared to surgical evacuation of normal pregnancy. Although the condition has a cure rate of approximately 98% in developed countries, it imposes restrictions on women during the follow-up period and may involve aggressive treatment (25).

### Methods for prevention of unintended pregnancy

In order to prevent unintended pregnancy, the 'typical use' effectiveness rather than the 'perfect use' effectiveness of contraceptive methods should be considered in contraceptive counseling. It has been shown that structured counseling and the cost of contraception can influence the contraceptive method that women decide to use (12,26). Conventional sources of information on contraceptives such as information from pharmaceutical companies do not contain information on typical use effectiveness, and this may therefore not be common knowledge among providers, nor among women. Recently, the importance of long-acting reversible contraceptive methods (LARC; implants and intrauterine contraception) in reducing the rate of unwanted pregnancy, abortion, and repeat abortion has been shown (12,27,28). New methods for increasing the effectiveness of short-acting methods such as the pill, patch, and ring have also been explored. A shorter hormone-free interval has been shown to increase the effectiveness of the typical use of the combined hormonal contraceptive pill. In addition, combined hormonal contraceptive pills containing a progestin with a longer half-life have also been shown to increase effectiveness (29). It has been speculated that continuous use of combined hormonal contraceptives may be the most effective way of using these methods. However, no such prospective studies powered for detection of a difference in rates of unintended pregnancies have been published.

### Added health benefits of hormonal contraception

The first contraceptive pill was not approved on the indication contraception (which was illegal at that time) but for treatment of menstrual symptoms such as dysmenorrhea and heavy menstrual bleeding. In addition, combined hormonal contraceptives have been shown to reduce the risk of several cancers such as ovarian cancer, endometrial cancer, and colon cancer as shown in several large prospective cohort studies (30–32). Use of the intrauterine system containing 52 mg levonorgestrel (release rate 20 µg levonorgestrel per 24 hours), has been shown to reverse precancerous conditions in the endometrium (33). Making women aware of the health benefits of hormonal contraception could increase the use of effective contraceptives among women and optimize preconception health status. As women postpone childbirth and subsequently become older when they have their first child, more women are exposed to the risk of cancer, which increases

with age. The risk of cancer and impairment of fertility may be reduced by contraceptive use.

### **Treatment of dysmenorrhea and endometriosis**

Among women and adolescents with severe dysmenorrhea it is estimated that 25%–75% have endometriosis (34,35). The main treatment of endometriosis is progestins, and the first-line recommended treatment is combined hormonal contraception (36). Endometriosis is present in 25%–40% of infertile women (37). The aim of the medical treatment with progestins is to achieve anovulation and amenorrhea whereby the inflammatory response, endometriomas, and adhesions are prevented (38). These may otherwise cause infertility from the need of ovarian surgery with reduction in the ovarian reserve and lesions causing tubal infertility. Treatment for dysmenorrhea in adolescents should take into account that it may be caused by endometriosis and that endometriosis in adolescents may be aggressive. Treatment with progestins can prevent disease progression and future infertility (39). However, contraceptive pills cannot treat infertility caused by endometriosis (40).

### **Heavy menstrual bleeding**

Heavy menstrual bleeding is present in 4%–22% of women, depending on which method is used for evaluation of menstrual bleeding, and iron deficiency anemia is present in 5%–10% of women of fertile age (41). The main cause of iron deficiency anemia in fertile women is heavy menstrual bleeding (41). Heavy menstrual bleeding increases with age (42). Thus, as women postpone childbirth, they become more exposed to the risk of heavy menstrual bleeding and subsequent anemia. Women with normal hemoglobin levels may still have iron deficiency. Thus, they have depleted the iron depots, most likely due to heavy menstrual bleeding, but are maintaining normal hemoglobin values. Recent research shows that women with iron depletion but normal hemoglobin levels may have less resistance to muscular fatigue. Suggested neuropsychological effects are, among others, depression and impaired learning and memory abilities (43).

The increased need of iron during pregnancy induces iron deficiency anemia in women with reduced iron depots, and iron supplementation is necessary. It has been shown that approximately 10.5% of women in the Helsinki area in Finland have iron deficiency anemia when they present for delivery (44). Iron deficiency anemia puts the mother at higher risk during childbirth, and she also has a higher risk of post-partum infections. Anemia may also impact on the ability to breastfeed (45,46). In the Finnish register study (44) anemia at presentation for delivery was associated with a higher risk for pre-term delivery, cesarean section, and neonatal intensive care admission of the newborn. Post-partum anemia is also linked to post-partum depression, reduced quality of life, and reduced cognitive abilities (46). Thus, it is essential for women to enter pregnancy with an optimal iron status in order to maintain health during and after pregnancy. Prevention of anemia during pregnancy must be taken seriously, and

precautions should be taken early in pregnancy to reduce the risk for adverse pregnancy, delivery, and post-delivery outcomes. When anemia is discovered in early pregnancy a detailed menstrual bleeding history should be taken, and women should be informed about contraceptives which reduce menstrual blood loss in order to optimize future health.


### **Conclusion**

As women postpone childbirth they have an increased need for pre-conception contraceptive counseling. The counseling should focus on the long-term need for effective contraception and avoidance of the consequences of unintended pregnancy such as ectopic pregnancy which reduces future fertility. In addition, pre-conception added health benefits should be stressed. These include prevention of the consequences of heavy menstrual bleeding, anemia, and untreated endometriosis but also of several cancers. During contraceptive counseling the effectiveness of any method in typical use and the superior effectiveness of long-acting methods should be stressed.

### **Declaration of interest**

H.K.K. and K.G.D. have both served on advisory boards for MSD, Bayer, and Gedeon Richter. H.K.K. and K.G.D. have both received honorariums for giving lectures for MSD, Bayer, Gedeon Richter, and Actavis on the topic of contraception and abortion. H.K.K. and K.G.D. have both participated in studies on contraception sponsored by MSD and Gedeon Richter, and, in the case of K.G.D., also Bayer.

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