

Our physicians and staff are devoted to providing the best medical care available. Our physicians are very experienced in caring for High Risk Pregnancy, Infertility and minimally invasive (laparoscopic) surgical techniques. We are looking forward to getting to know and caring for you. If you have any questions or comments about our services, please let us know.

feature of the month

Smoking in Women *Part 2 of 3*

This is part two of a three part series on smoking in women. Part 1 addressed general health care issues related to smoking. In this article, we will consider the impact of smoking during pregnancy and of exposure to environmental smoke in children. The prevalence of smoking during pregnancy is 15%-30% depending on geographic location. Nationwide, that prevalence is inversely related to the level of education. Kentucky ranks second in the nation for prevalence of smoking during pregnancy with one in four pregnant women smoking.

Current tobacco use affects nutritional demands, increasing the requirements of vitamin B12, vitamin C, folate, zinc and some amino acids. Inhaled nicotine enters the blood stream

and is excreted in breast milk and cervical mucus. It also crosses the placenta and is found in the amniotic fluid and umbilical cord blood.

Smoking increases bleeding complications in pregnancy. The risk of spontaneous miscarriage is increased. Of these pregnancy losses, there is an increased incidence of chromosomally normal embryos as compared to spontaneous miscarriages in non-smoking women. The risk of placenta previa is increased. This implanting of the placenta in the lower uterine segment (in part or completely) may result in maternal hemorrhage, premature delivery and the resultant perinatal morbidity and even mortality. Placental abruption is also increased in smoking women. This premature detachment of the placenta results in maternal hemorrhage, premature delivery and perinatal

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morbidity and/or mortality. Smoking increases the risk of stillbirth. Smoking also increases the risk of ectopic pregnancy (tubal pregnancy) which is the leading cause of pregnancy-related death during the first trimester.

The risk of premature labor is increased in smokers. In fact, smoking is responsible for up to 14% of premature deliveries. The risk of preterm premature rupture of membranes (PPROM) is two to three times as great in smokers as compared to non-smokers. This relationship between smoking and PPRM is dose related, i.e., the greater the number of cigarettes smoked per day, the greater the risk. Possible mechanisms for this increased risk of PPRM include altered nutritional status in the mother, impaired maternal immune function and constriction of placental vessels by nicotine resulting in local ischemia (decreased blood supply) with resultant necrosis (death of placental tissue).

Nicotine causes constriction of the blood vessels in the uterus resulting in decreased blood flow of up to 38%. This results in decreased blood flow in the placenta, which in turn decreases the amount of oxygen and nutrients delivered to the fetus causing restricted fetal growth. Carbon monoxide also crosses the placenta. It binds to hemoglobin reducing its oxygen carrying capacity to the fetus. Carbon monoxide also increases the affinity of hemoglobin for oxygen thus interfering with the release of oxygen to the fetus. Both of these effects cause relative fetal hypoxia (lack of oxygen) and decreased fetal growth. Nicotine and carbon monoxide also have direct effects on the fetus causing reduced fetal growth.



Maternal smoking results in an overall decrease in birth weight of about 5 -10 ounces. This decrease is related to the number of cigarette smoked per day and the duration of smoking during pregnancy. Maternal smoking is responsible for 20% -30% of all low birth weight infants (defined as less than 2500 gm or about 5 1/2 lbs). Maternal smoking causes a 3 1/2 fold greater risk of having a small for gestational age (SGA) infant (defined as a

birth weight in the less than 10th percentile for a particular gestational age). This increased incidence of both SGA and preterm delivery results in a 33% increase in the overall perinatal and neonatal mortality in smokers. However, if a woman quits smoking before pregnancy or within the first three to four months of pregnancy (by 16 weeks), she lowers the chance of preterm delivery and health problems in the infant. In fact, the risk of a low birth weight infant is reduced to that of a woman who never smoked.

In utero exposure to maternal smoking affects lung development, increasing the risk for breathing problems in the newborn and for asthma and other respiratory infections in infants and young children. In utero exposure to smoking has been linked to neurodevelopmental abnormalities including attention deficit hyperactivity disorder of school-aged children, increased incidence of behavioral difficulties, and learning problems such as lower scores of expressive language and conceptual understanding.

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Nicotine is excreted in breast milk. The nicotine-intoxicated infant has poorer suckling, ingests less milk and is more prone to spitting up. Smoking decreases milk production. And smoking during lactation increases the incidence of respiratory infections and atopic eczema in infants.



respiratory tract infections (such as pneumonia and bronchitis), of recurrent otitis media (ear infections) and of common respiratory symptoms such as cough, phlegm and wheezing. Exposure to environmental tobacco smoke increases the risk of childhood asthma.

This may be due to

pathophysiologic mechanisms such as inflammation of the respiratory epithelium (lining of the airways) or may be the consequence of the increased occurrence of lower respiratory infections in early childhood or both. The increased severity of asthma attacks associated with environmental tobacco smoke exposure results in an increased number of emergency room visits. In fact, the most common environmental precipitant of an asthma attack is cigarette smoke.

Smoking during pregnancy increases the incidence of hospitalization and fatal illness in infants. Smoking is responsible for 10% of all infant deaths. Sudden infant deaths (SIDS) are more common when the mother smokes. In Kentucky, the incidence of SIDS is 3 to 9 times greater with smokers than non-smokers.

If all pregnant women would stop smoking, the incidence of fetal and infant deaths would decrease by ten percent and the incidence of low birth weight infants would decrease by eleven percent.

During childhood, measures of lung function increase parallel to the increase in height. But children exposed to environmental tobacco smoke (from maternal or paternal smoking) exhibit a decreased rate of lung function growth compared to children of non-smoking parents. Children exposed to second-hand smoke have an increased risk of lower

Finally, environmental tobacco smoke exposure from either maternal or paternal smoking may decrease the physical development of children and may increase the risk of childhood cancers.

Smoking indeed has a significant negative impact on the health of women, the outcome of their pregnancies and the well being of their children. In Part 3 of this series, we will consider cessation of smoking and will include a bibliography for more information.

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