

## KEY MESSAGES

- An international research group concluded that the data on reproductive effects in relation to oral tobacco use during pregnancy are too sparse to allow conclusions, however four additional studies have been conducted since this review was published.
- Five epidemiology studies have been conducted on the association between snus use and pregnancy outcomes. The most recent studies did not find an increased risk of preeclampsia, but did report significantly increased risks of preterm birth and stillbirth. An additional study shows that breastfed infants of women who use snus are exposed to nicotine, but the significance of this exposure is not known.
- The single available study of male reproductive parameters suggests that snus does not affect male reproductive factors.
- Researchers will undoubtedly continue to investigate these issues. The wisest course for women who are pregnant or breastfeeding is to avoid exposure to nicotine through any source.

## QUESTIONS AND ANSWERS

### **Why have researchers studied the relationship between snus use and pregnancy outcomes and reproductive effects?**

Researchers have long been interested in whether particular exposures during pregnancy or breastfeeding can affect a fetus or infant. It is known that smoking during these times can cause abnormalities of the placenta, pre-term delivery fetal growth restriction and low birth weight (US Surgeon General 2004). Smoking is also known to reduce the risk of pre-eclampsia, so it is logical for researchers to investigate the association between any of these health outcomes and other types of tobacco products.

### **Is there evidence that snus use is associated with adverse pregnancy outcomes and reproductive effects?**

Four studies (England et al. 2003; Wikström et al. 2010a,b,c) examined birth outcomes among Swedish women who used snus daily compared to those who used no tobacco products. All studied the same cohort of women, the Swedish Medical Birth Register, but the later study included six more years of follow-up. The earlier study showed that daily use of snus during pregnancy was associated with increased risk of preterm delivery and preeclampsia but not significantly increased risk of small-for-gestational-age. When additional years of birth data were examined from the Swedish Medical Birth Register, Wikström and colleagues (2010a) did not observe a significantly increased risk of preeclampsia or gestational hypertension among snus users. Wikström and colleagues (2010b) confirmed the earlier finding of a significantly increased risk of moderate (32-36 weeks) and very (<32 weeks) preterm birth among mothers who used snus during pregnancy compared with non-tobacco users within this same cohort. Additionally, the authors reported significantly increased risks of both spontaneous and induced

onset preterm births.

Wikström et al. (2010c) investigated the relationship between snus use and risk of stillbirth within the expanded Swedish Medical Birth Register cohort mentioned previously. The authors reported a significantly increased risk of still birth among mothers who used snus during pregnancy.

A fifth epidemiology study (Dahlström et al. 2004) found that exclusively breastfed infants whose mothers used snus are exposed to measurable levels of nicotine. The significance of this finding is unclear.

A single study investigated the effects of snus use, current smoking, and maternal smoking on adult male reproductive function (Richthoff et al. 2008). Use of snus did not affect any of the male reproductive parameters investigated (semen parameters, seminal biochemical biomarkers, hormone levels). The authors concluded that since tobacco smoking was associated with negative impacts on male reproductive parameters, it is unlikely that tobacco itself causes these impacts but rather the compounds that are released by smoking.

### **What conclusions have been reached by public health agencies about the association between snus use and pregnancy outcomes and reproductive effects?**

The European Commission's Scientific Committee on Emerging and Newly Identified Health Risks evaluated the health effects of smokeless tobacco with particular attention to snus and concluded that the data on reproductive effects in relation to oral tobacco use during pregnancy are too sparse to allow conclusions (SCENIHR 2008). This conclusion was reached before publication of the three studies by Wikström and colleagues described previously.

### **What is the safest behavior for pregnant and breastfeeding women?**

Obviously, women who are trying to get pregnant (and may therefore unknowingly expose the fetus before the pregnancy is known), who are knowingly pregnant, or breastfeeding should be very cautious about their behavior and their exposures. The wisest course for these women is to avoid exposure to nicotine and tobacco through any source.

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