**ANC**

Pregnancy is a normal physiological process and most women wish for and have a normal pregnancy, childbirth and postpartum period. However, a pregnancy can be complicated by pre-existing maternal disorders, socioeconomic status, age, complications from the previous delivery and current pregnancy (1). ANC provides an ideal opportunity to introduce interventions to the pregnant woman that can influence the current and future health of both her and her offspring.

ANC includes education, counseling health screening and treatment. ANC also includes evidence-based interventions that are based on effectiveness, local epidemiology or specific diseases (1). ANC is the right of every pregnant woman and today ANC is provided free or at a low cost in Europe. A woman may visit an antenatal clinic for a pregnancy test to confirm an early pregnancy (1). However, not all pregnancies are desired. If a woman wants an abortion in countries where abortions are legal, the woman should be referred for safe abortion and counseling followed by contraceptive advice and prescription (1).

Unwanted pregnancies that end up in unintended births may result in adverse maternal and child health outcomes. These women, who report late for their first ANC visit, may have a higher risk of mental problems leading to premature birth and adverse health consequences for the child (2). A study from Prague found that unwanted children have a higher risk of being abused in childhood, adolescence and up to the age of 35 leading to an increasing risk of psychiatric diseases (3).

In Europe, 1.5 million women have had safe and effective medical abortion with few complications. Unsafe abortions on the other hand, still contributes significantly to women’s morbidity and mortality and is the leading causes of maternal mortality in many countries of central and eastern Europe as well as central Asia (4). The main complications from unsafe abortions are haemorrhage and infections. The long-term consequences include chronic infections and secondary infertility (5). Thus part of effective ANC is also ensuring that women with unwanted pregnancies are referred in a timely and appropriate manner for safe terminations in countries where this is legal.

An important part of ANC health care and health education is evidence-based information. This includes information on normal weight-gain during pregnancy, consequences of overweight/obesity, harms of tobacco/alcohol/drug usage and important information about nutrition and the benefits of breastfeeding (1). All of these areas are recognized to contribute to current and future adverse health consequences for both the mother and infant/child.

Today, tobacco is the leading cause of death globally where as obesity is considered as one of the leading causes of death in the developed world. Smoking and obesity are key risk factors for other chronic and noncommunicable diseases (6). Tobacco also affects all stages of human reproduction. Studies reveal an increased risk of infertility and ectopic pregnancy. Maternal smoking is also a threat to the unborn child and infant. It is associated with a higher risk of miscarriage, a dose-dependent intrauterine foetal growth restriction, an increased risk of premature birth, low birth weight and congenital malformations (7). Maternal smoking also increases the risk of sudden infant death syndrome by 47% (8). Obesity (Body Mass Index ≥ 30) is increasing and in the United Kingdom one out of five women is obese at the time of antenatal booking (9). Maternal obesity affects pregnancy, childbirth and the postpartum period of both the woman and her child. Maternal obesity is also associated with increased risks of miscarriage, preeclampsia and gestational diabetes. The risk of stillbirth is almost doubled and the child may have a higher risk of congenital malformations such as neural tube defects and congenital heart diseases (9). Obesity can lead to preterm birth (10), foetal macrosomia, shoulder dystocia and birth trauma. Obesity may adversely contribute to the initiation, establishment and maintenance of breastfeeding. Long-term effects include increased risk of childhood obesity and childhood type 2 diabetes and metabolic syndrome in offspring (9).

Breastfeeding is widely recognized as the best food for infants and the WHO recommends exclusive breastfeeding for at least six months from the time of birth (11). Exclusive breastfeeding also helps the mother to loose weight gained during pregnancy. Breastfeeding can improve mother-infant bonding and short and long-term health benefits for both the mother and the child. Breastfeeding prevents the incidence and severity of respiratory and gastrointestinal diseases infections and lower the rates of otitis media and allergies in infants (11). For the mother, breastfeeding also protects against breast cancer. For every 12 months of cumulative breastfeeding the woman has an estimated 4.3% risk reduction of breast cancer (12). There is also an association that breastfeeding might reduce the risk endometrial cancer and there is evidence showing that it may protect against ovarian cancer. The European Code Against Cancer has developed the recommendation: “Breastfeeding reduces the mother’s cancer risk. If you can, breastfeed your baby”(12).

Unfortunately, breastfeeding is not appreciated in many European countries and only 13% of infants are fortunate enough to be exclusively breastfeed for six months. The highest rates (>50%) of breastfeeding are found in Kyrgyzstan and Georgia and the lowest rate in the United Kingdom, Finland and Greece (1%) (11). There is a negative correlation between breastfeeding and economic status among European countries and this needs to be changed.

Preterm birth (PTB), the live birth of infants born before 37 completed weeks gestation, is the leading cause of neonatal mortality and morbidity and has long-term adverse consequences for health such as increased risk of cerebral palsy, impaired learning and visual disorders and an increased risk of chronic disease in adulthood. Complications of PTB are responsible for 35% of the world’s 3.1

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millon deaths per year, and the second most common cause of under-5 deaths after pneumonia (13). Babies born with low birth weight (LBW < 2500 g) are the second leading cause of perinatal mortality and morbidity worldwide. Long-term consequences of LBW include higher risk of long-term cardiovascular ill-health and noncommunicable diseases. LBW is also associated with impaired neuronal development during childhood and the risk for this is higher for those born preterm (12). ANC provides an opportunity to address and treat potential contributing factors to increased risk of PTB and LBW such as optimizing weight gain in pregnancy, promoting a healthy diet and nutrition, identifying and managing chronic disease, promoting cessation of unhealthy behaviours such as smoking and drug and alcohol use, screening and treatment of infectious diseases and use of family planning to delay and space pregnancy. Screening and treatment of infectious diseases is especially important as it not only allows for appropriate care and reduction of adverse immediate and long term health consequences for the mother, but also for her unborn child, as is the case with syphilis, hepatitis B and HIV. For example, screening for HIV, coupled with appropriate antiretroviral treatment and caesarean section if required, has successfully decreased rates of vertical transmission of the virus from mother to infant.

**Preconception care**

Today, there is growing evidence on the importance of preconception care, both for the woman and her unborn child. Preconception care allows for the identification and optimization of known pre-existing maternal health conditions and chronic diseases, such as diabetes, hypertension, autoimmune and cardiac diseases. It also provides an opportunity to address lifestyle behaviours such as smoking, use of harmful drugs, alcohol and obesity that could and can be changed before conception. These conditions and behaviours can impact directly on pregnancy outcomes and can have great impact on the intrauterine development of the child, leading to long term health consequences (14). Studies reveal that women who get information from health-care providers before pregnancy are more likely to change their behaviour. Simple examples are eating a healthier diet and taking folic acid supplementation (14). Unfortunately, for many women their first ANC may occur after 12 weeks gestation representing a missed opportunity to effect change, promote health and disease prevention.

**Conclusion**

A life-course perspective to ANC recognizes the importance of preconception care and ANC in ensuring that women and their unborn children have access to quality care, information and education that can influence and impact on current health and future disease prevention from infancy until adulthood. It is thus important that all women are able to access ANC in order to maximize current and future health for all.

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