**CASE STUDY 4**

It is not unusual for pregnant mother to develop complications during their pregnancy period. But for mothers with certain preexisting conditions such as mothers with diabetes or cancer, the chances of developing complications is always high as compared to other normal women. This is why pregnant women are always advice to see a doctor as soon as they conform they are pregnant so as to allow for the doctors to perform certain test such as Maternal screening and ultra sound which will shade more light on the status of their pregnancy. The earlier the chances of the mother developing complication during the pregnancy is detected the better it is as it will give the doctors ample time to figure out the next line of action.

The lack of folic acid means that a mother can easily give birth to a child that has neural tube defect. The lack of folic acid is more than often implicated with neural tube defects such as anencephaly, spinal bifida, and encephalocele. But having said that, the chances of pregnancy being affected by neural tube defect is less common with one out of 100 pregnancies ending up being affected by neural tube defect (Czeizel, 2011). During the first three months of pregnancy, if the mother does not take a diet that has folic acid and especially in the case of Felicity who has diabetes, the chances of her child being affected by neural tube defect could be high. The defect could develop as a result of the failure of the embryonic neural tube failing to close by the fourth week of pregnancy which will, in turn, result in malfunctions of the spine and brain (Czeizel, 2011). Intake of folic acid goes a long way in preventing up to 70% of the development of the neural tube defect and that is why the doctor was very keen to advice felicity to ensure that she takes 600 μg of folic acid daily.

 At the same time, since Felicity took too much time for her pregnancy to be confirmed and the fact that she had not been taking folic acid, she stand the risk of giving birth to a child who will have difficulties in speaking. This is the case as mothers who do not take folic acid supplements are twice as more likely to give birth to children with severe speech delays. At the same time, since Felicity has diabetes, she is at greater risk of having birth defects with chances of a miscarriage also not being eliminated from the equation. Felicity is also at higher-than-normal risk to develop preeclampsia which can a times be life threatening.

Maternal screening is performed early in the pregnancy stage and has a number of benefits associated with it. Its most notable benefit is the fact that it allows for the screening of the blood makers with the purpose of indicating increased fetal risk for certain birth defects as well as genetic diseases. The maternal serum sample is taken and screed for alpha-fetoprotein (AFP) and human chorionic gonadotropin (hCG). Maternal serum marker testing allows for the measurement of AFP in the maternal blood. This is the case as the AFP is always produced freely by the fetus proceeding to circulate freely at the time that fetal membranes and blood vessels are exposed. Measurement of the AFP is very crucial as it is the first protein maker to be associated with fetal abnormalities and can easily be detected early in the mother’s blood. High concentration of AFP in the maternal serum is associated with the chances of neural tube defects occurring. At the same time, decreased level of AFP in the serum is associated with Down syndrome (Hadlow, 2012). As such, maternal serum marker testing allows for the measurement of the level of AFP in the mother’s blood allowing for the testing of probable defects taking place. Doctors, after the testing, will be in a good position to know what line of action will be needed thereafter (Hadlow, 2012). It is very helpful that any chance of a defect occurring be detected as early as possible so as to give the doctors an ample time to correct the abnormality. Ultrasound will be another useful test to be done as it is virtually able to visually detect traces of spinal defects and fetal cranial that can be found in the utero.

A teratogen can be understood as an agent which has the ability of causing a birth defect. It ranges from something in the environment that a mother has taken during her pregnancy to the health of the woman during the pregnancy. The fetus is always vulnerable to teratogens during the first three weeks of the pregnancy as it is that this stage that teratogen work by trying to kill the embryo rather than cause malformations.  Once the egg is fertilized, it always take up to 9 days for implantation to take place. But as soon as the fertilized egg is connected to the uterus, a common blood vessel connects the embryo to the mother. It is at this stage that a foreign object in the mother’s blood can easily cause much damage as it can easily cross over to the developing fetus (Rasmussen, 2012). But once this stage is passed and nothing has happened, the fetus will be most vulnerable to teratogens during the first six to eight weeks of pregnancy. As a matter of fact during days 21 to 60, teratogen agents are more active working with the purpose of causing major congenital malformations to the fetus.

But having said that, teratogens can be fatal to the fetus at any stage of the pregnancy depending with the type of teratogens. Teratogens such as alcohol such as alcohol work by affecting the nervous system and when ingested it has the ability to cause health problems to the baby as well as birth defects at any point during the pregnancy.

As established above, it is very important for pregnant women especially those with preexisting conditions such as in the case of Felicity to consult with their doctors about their pregnancy situation. Tests such as Maternal screening and ultrasound will come in handy it detecting the chances of the mother developing any complications giving the doctors enough time to try and minimize the chances of the complications developing. In the case of Felicity, had she not visited the doctor early enough, she would not had known that she needed to take a diet that is full of folic acid. Intake of folic acid will go a long way in minimizing the chances of her giving birth to a child affected by neural tube defects. Felicity also needed to take good care of herself as intake of teratogen agents during the first three months such as certain medicine or alcohol could end up having catastrophic impact to her unborn child.

**References**

Czeizel, A. (2011). Periconceptional Folic Acid-Containing Multivitamin Supplementation for the Prevention of Neural Tube Defects and Cardiovascular Malformations. *Annals Of Nutrition And Metabolism*, *59*(1), 38-40. http://dx.doi.org/10.1159/000332125

Hadlow, N. (2012). Overview of maternal serum screening for down syndrome. *Pathology*, *44*, S29. http://dx.doi.org/10.1016/s0031-3025(16)32668-x

Rasmussen, S. (2012). Human teratogens update 2011: Can we ensure safety during pregnancy?. *Birth Defects Research Part A: Clinical And Molecular Teratology*, *94*(3), 123-128. http://dx.doi.org/10.1002/bdra.22887