

WHY SHOULD I CARE ABOUT...

GENETICS

Genetics is about studying DNA, which is a set of instructions that tells the cells that make up your body how to grow and function. These DNA instructions are passed down from parents to children (inheritance). It is your genes interacting with stimuli from your environment, that determines what you look like and how your body works.



What are Neural Tube Defects?

Neural Tube Defects (NTDs) are birth defects that affect the brain and the spine (i.e. Spina Bifida) and appear during the early stages of the baby's development. They are the result of failure of the neural tube to close properly in the weeks before the mother knows she is pregnant. If neural tissue is exposed, we call this an 'open' defect, whereas if there is skin covering, we consider this a 'closed' defect.



How common are Neural Tube Defects?

Neural Tube Defects are the second most common type of structural birth defect in humans. The number of babies with NTDs vary depending on the particular geographic areas and other circumstances.



What causes Neural Tube Defects?

NTDs occur due to a combination of different and varying factors. There is not just one cause of NTDs. Scientists have found that NTDs can be influenced by deficiencies in several different genes (can be over 300 genes) that increase the chances of a baby having an NTD. As NTD researchers often say, "NTDs are caused by a little bit of this... and a little bit of that".

Some other factors that may increase the risk of NTDs include:

- Family history of NTDs;
- Mothers not getting enough folate (a type of vitamin B9) through their diet before or during early pregnancy;
- Maternal health concerns such as obesity, diabetes, or the need for certain medications.



Can Neural Tube Defects be passed down?

NTDs can run in families but the risk depends on multiple factors. If you, or someone in your family has had an NTD, the chance of passing it down to a future generation can be between 1% and 10%.



Can you prevent Neural Tube Defects?

The amount of folate (from food) or folic acid (from supplements and fortified foods) has been shown to reduce the prevalence of NTDs. Maintaining a healthy and balanced diet and taking folic acid prior to and throughout pregnancy can lower the risk for an NTD. A folic acid supplement is necessary and highly recommended when a pregnancy is being planned.



Curious about how genetics can affect you ?

You can discuss this with a doctor who can refer you to specialists at your local medical center. For more information, check out these interesting reads of the scientific literature:

Iskandar, B. J., & Finnell, R. H. (2022). Spina bifida. New England Journal of Medicine, 387(5), 444–450

World Health Assembly (2023), WHA76.19 Resolution 'Accelerating efforts for preventing micronutrient deficiencies and their consequences, including spina bifida and other neural tube defects, through safe and effective food fortification'



This brochure of the IF Advisory Group on Genetics is intended to provide information only - not to recommend particular treatment options. Any decision about treatment options should be made in consultation with your own medical team.

