What is Delta Beta Thalassaemia?

Haemoglobin is a protein in red blood cells that carries oxygen around our bodies. Haemoglobin is made up of haem groups containing iron and globin chains. The main globin chains are call alpha (α) and beta (β). Mutations in the globin genes leads to a variant haemoglobin (haemoglobinopathy) being produced. Delta Beta Thalassaemia results from a genetic mutation affecting the delta and beta genes.

Delta Beta Thalassaemia is an inherited condition meaning it is passed from parent to child in genes. Genes carry information about human characteristics such as hair colour. Delta Beta Thalassaemia is NOT contagious and NOT transmitted by germs.

Inheritance

- A person normally inherits two delta and beta genes. (One from each parent) to produce the β & Delta globin proteins in haemoglobin.
- A person may have deletion of delta and beta genes in one of their two Delta β globin genes. This person is referred to as a is Delta Beta Thalassaemia trait and is generally healthy.
    - Carriers may be at risk of having a child with Delta Beta Thalassaemia intermedia if their partner is also a Delta Beta Thalassaemia carrier or other high-risk variants.
- When both delta and beta genes are not present, this person is said to have Delta Beta Thalassaemia intermedia.
    - These patients may have a mild anaemia but are generally healthy.
- Delta Beta Thalassaemia can be inherited with other haemoglobin variants or thalassaemia's resulting in a Thalassaemia intermedia. Examples of other variant haemoglobins/ thalassaemia's to be aware of include:
    - Delta Beta Thalassaemia, Hb Lepore
    - Haemoglobin S, Haemoglobin E & Haemoglobin O ^{Arab}
    - β thalassaemia

Treatment

Treatment is not required for Delta Beta Thalassaemia trait. However, if the Delta Beta Thalassaemia mutation is inherited with any of the other conditions listed above, this can cause more thalassaemic clinical picture, with mild anaemia.

Delta Beta thalassaemia and family planning

The Delta Beta thalassaemia found occasionally among people who originate from Southern Europe, the Mediterranean area, the Middle East, India, Southeast Asia, West Africa, and the Caribbean area. Couples planning a pregnancy should have a blood test to determine whether they are carriers if:

- They or their partner are carriers for **Delta Beta thalassaemia**
- There is a family history of thalassaemia or variant haemoglobin, or
- If their family origin is an area listed above.

Testing can be arranged by your local doctor. By testing we can determine whether there is a risk of having a child with a severe haemoglobinopathy/thalassaemia.

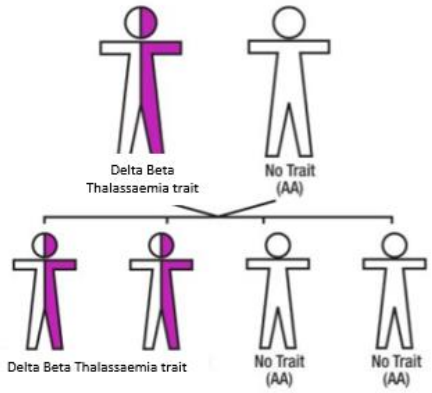
If both parents are found to be carriers of a thalassaemia or significant variant haemoglobin, this should be discussed with a haematologist to assess the risk for their pregnancy/ future pregnancies. These conditions can be diagnosed as early as the 12th week of pregnancy so termination of pregnancy can be considered, if appropriate. Couples can adopt or can consider assisted reproductive techniques (such as pre-implantation genetic diagnosis, the use of donor eggs or donor sperm). Others may choose to take the chance of having an affected child. All these options should be discussed with a Genetic Counsellor.

Important information for your family

If you have Delta Beta Thalassaemia trait, other members of your family should be tested as they may also be carriers and at risk of having children with a *severe disease*. It is recommended that other family members and their partners are screened before having children of their own.

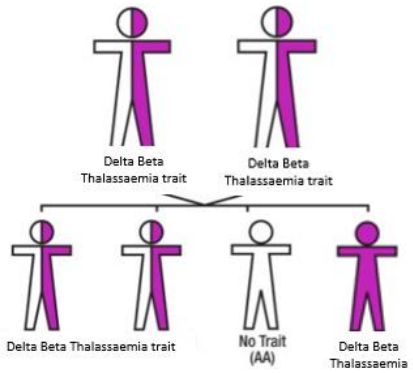
If one parent has Delta Beta Thalassaemia trait and the other parent has normal haemoglobin A, there is a 50 percent (1 in 2) chance **with each pregnancy** of having a child with Delta Beta Thalassaemia trait. These are the possible outcomes with each pregnancy. (Please note 'A' refers to the normal haemoglobin gene)

- 50 percent (1 in 2) chance of having a child with Delta Beta Thalassaemia trait
- 50 percent (1 in 2) chance of having a child without trait



If both parents have Delta Beta Thalassaemia trait there is a 25 percent (1 in 4) chance **with each pregnancy** of having a child with Delta Beta Thalassaemia intermedia. These are the possible outcomes ***with each pregnancy***.

- 25 percent (1 in 4) chance of having a child with Delta Beta Thalassaemia intermedia
- 50 percent (1 in 2) chance of having a child with Delta Beta Thalassaemia
- 25 percent (1 in 4) chance of having a child without trait or disease



This is the same inheritance pattern when one parent is a carrier of Delta Beta Thalassaemia and the other is a carrier of another abnormal haemoglobin. For example Haemoglobin S, Haemoglobin Lepore, E, O ^{Arab} or β thalassaemia

References:

Carrying delta beta thalassaemia – Peterborough & Stamford Hospital, UK

For Medical Professionals seeking further information or advice, please contact Pathlab to discuss with one of our Haematologists: **07 858 0795**