Sickle Cell Trait (SCT)

A trait is something unique about you, like your hair or eye color. Traits are passed down (inherited) from your parents. Genes carry information that makes a trait. People with sickle cell trait (SCT) have 1 sickle cell gene and 1 normal gene.

- Having sickle cell trait is not the same as having sickle cell disease (SCD).
- Sickle cell trait means you could pass sickle cell trait or disease to your children.
- People with sickle cell trait live a normal life. They usually don’t have symptoms of sickle cell disease.
- People of any race or background can have sickle cell trait; however, it occurs in 1 out of every 12 African Americans.

Passing on Sickle Cell Trait or Sickle Cell Disease

- If you inherit 1 sickle cell gene (S) and 1 normal, non-sickle gene (A), then you have sickle cell trait. You are a carrier for sickle cell disease.
- It’s important to know if your partner has sickle cell trait or disease. If they have either one, a child you have together could have sickle cell disease (Picture 1).

Image source: National Institute of Health, National Heart, Lung, and Blood Institute
• If you and your partner both have sickle cell trait, your child could have:

<table>
<thead>
<tr>
<th></th>
<th>Chance Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AA</td>
<td>25% chance of 2 normal genes with normal red blood cells.</td>
</tr>
<tr>
<td>AS</td>
<td>50% chance of 1 normal gene and 1 sickle gene. This is sickle cell trait. They will have a few sickled cells.</td>
</tr>
<tr>
<td>SS</td>
<td>25% chance of 2 sickle genes; this is sickle cell disease.</td>
</tr>
</tbody>
</table>

• If 1 parent with sickle cell trait and 1 parent with abnormal hemoglobin have a child, that child could also have sickle cell disease. This abnormal hemoglobin can include beta thalassemia, hemoglobin C, or hemoglobin E.

• In the US, all newborns are screened for sickle cell trait and disease.

**Problems with Sickle Cell Trait**

• Rarely, people with sickle cell trait can have similar symptoms as someone with sickle cell disease. This typically happens under extreme conditions, such as:
  - Are at a very high height (altitude).
  - Have low oxygen from extreme exercising. This could be something like military boot camp or training for an athletic event.
  - Don’t have enough water in your body (severely dehydrated).
  - Go deep sea or scuba diving.

**Sickle Cell Disease**

• Sickle cell disease is caused by abnormal hemoglobin. Hemoglobin is part of our red blood cells that carry oxygen.

• It is a life-long blood disease.

• Normal red blood cells are smooth and round. Sickled red blood cells are hard, sticky, and shaped like a banana.

• Sickled cells have a hard time moving through small blood vessels because of their shape. They can pile up and clog vessels. When clogging happens, blood can’t carry oxygen to certain body parts.

**More Information**

For more information about sickle cell trait, contact the Sickle Cell Comprehensive Clinic at Nationwide Children’s Hospital at (614) 722-3250.

You can also visit: [https://www.cdc.gov/ncbddd/sicklecell/toolkit.html](https://www.cdc.gov/ncbddd/sicklecell/toolkit.html)