**Nicholas’ Story**

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**Section III: Bridgette’s Wish**

*Box 14: Question*

Towards the end of the video Nicholas’ mom (Bridgette) says “I wish they would come up with an instant cure …” The third question that we will ask in this case is “**What are some current and upcoming approaches for managing and treating SCD?**” In this section we will use our understanding of the structure of sickle cell mutant of hemoglobin and current treatment approaches to understand the molecular basis of upcoming options for managing and treating SCD.

**Part 1: Approaches to manage SCD**

*Box 15: Storyline*

Although sickle cell disease (SCD) was first reported in 1910, more than a 100 years later we still do not have any definitive way to treat this condition. Majority of the current treatment approaches either prevent sickling under low oxygen conditions or are focused on preventing the pain experienced. A cure for SCD (where the E6V mutation is reversed) is currently being attempted using gene therapy approaches. Here we will first focus on the anti-sickling approaches.

*Box 16: Concept*

Individuals with HbS show sickling of red blood cells under the following conditions:

* They have a high concentration of HbS in the cells
* The HbS is in a low oxygenation state
* A hydrophobic patch is exposed on the surface of HbS to bind the mutant Val.

Do you think that removing any of these conditions could lead to an anti-sickling treatment approach? Let us explore.

Q1. Based on what you have learned about SCD how does the hydroxyurea treatment help manage SCD?

Q2. If you could do anything to develop a new treatment for sickle cell disease using the above approaches, what would you do?