

# EDITORIAL

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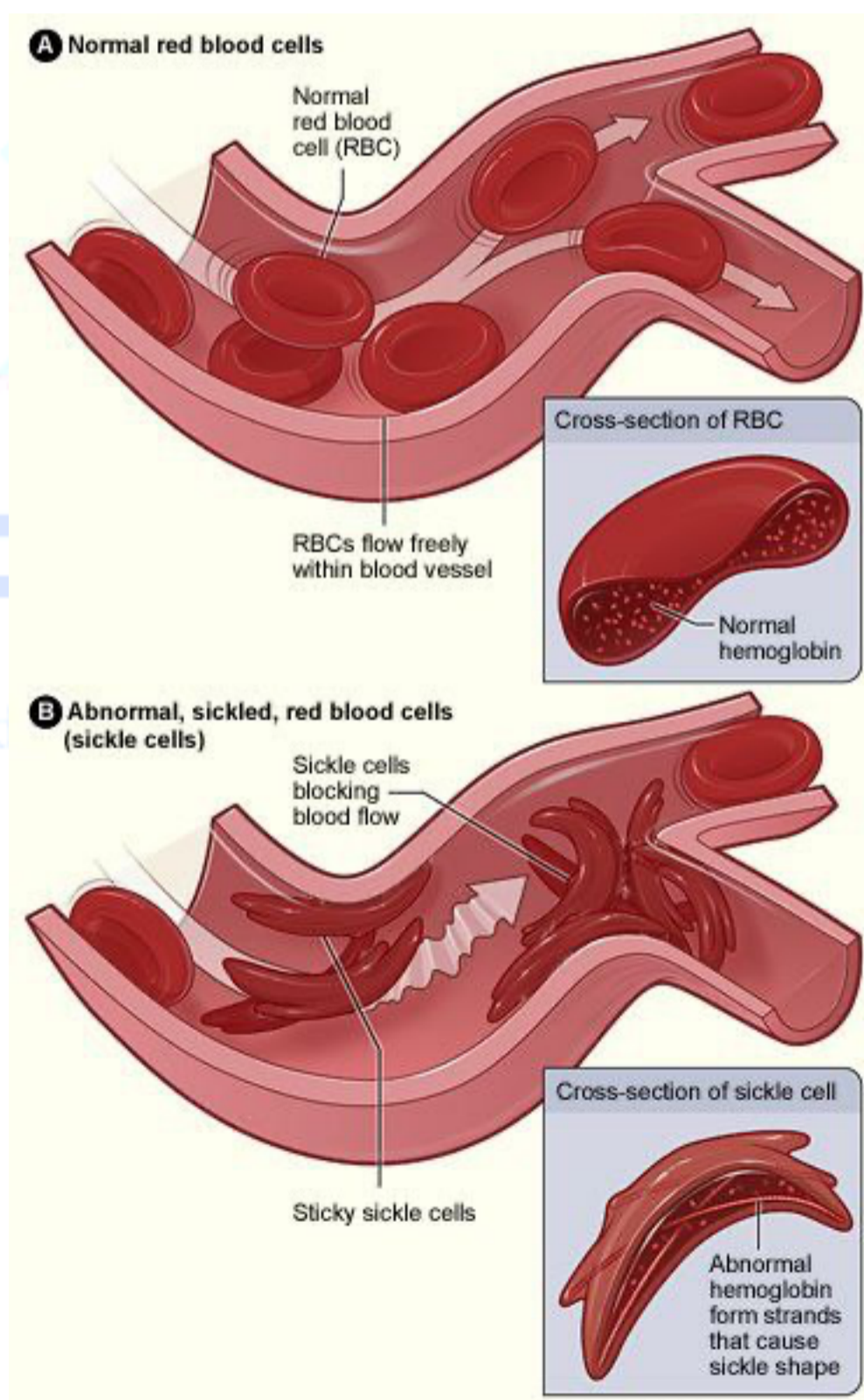
## India's National Sickle Cell Anaemia Elimination Mission

### Introduction

- **Launch of the Mission:** The Prime Minister of India launched the National Sickle Cell Anaemia Elimination Mission from Shahdol, Madhya Pradesh. The goal is to eliminate Sickle Cell Disease (SCD) as a public health threat by 2047.
- **Focus on Vulnerable Communities:** SCD predominantly affects India's tribal and rural communities, where it remains a severe and often underdiagnosed issue.
- **Need for Comprehensive Action:** Despite medical advancements, SCD is still poorly managed in many parts of India, underscoring the necessity for a more holistic approach.

### What is Sickle Cell Disease (SCD)?

- **Definition:** Sickle Cell Disease (SCD) is a genetic disorder where red blood cells (RBCs) take on a sickle or crescent shape, rather than their normal round shape.
- **Impact on Life Expectancy:** People with SCD typically have a reduced lifespan, averaging around 40 years.
- **Health Complications:** SCD causes acute and chronic health problems, including severe pain episodes, organ damage, infections, strokes, and anemia.

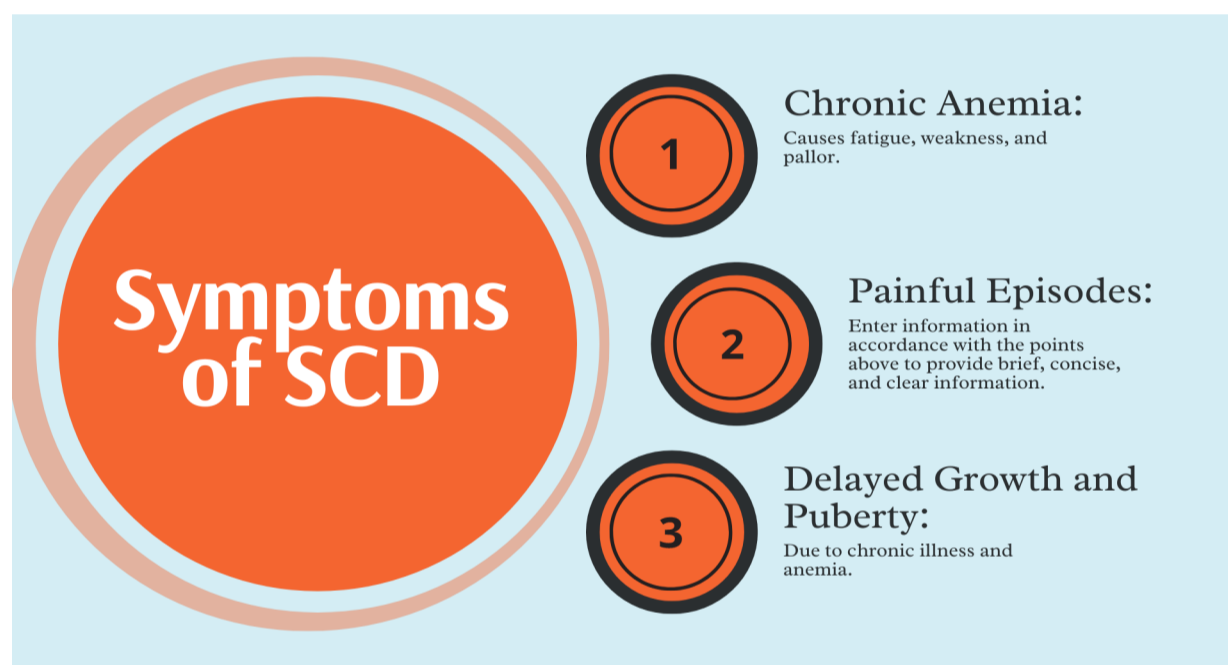


## Causes of SCD

- **Genetic Origin:** SCD is an inherited condition caused by a genetic mutation, where a child receives defective genes from both parents.

## Types of Sickle Cell Disease

1. **HbSS:** Inherited from both parents, with each passing a gene coding for hemoglobin "S".
2. **HbSC:** Inherits one gene for hemoglobin "S" and one for another abnormal type "C".
3. **HbS Beta Thalassemia:** Inherits one hemoglobin "S" gene and one beta thalassemia gene.
4. **HbSD, HbSE, HbSO:** Combination of one hemoglobin "S" gene and another abnormal hemoglobin gene ("D," "E," or "O").



## Treatment Options for SCD

1. **Blood Transfusions:** Help relieve anemia and prevent pain crises.
2. **Hydroxyurea:** Medication to reduce the frequency of painful episodes and long-term complications.
3. **Gene Therapy:** Includes treatments like **CRISPR** and bone marrow transplants.

## Prevalence of Sickle Cell Disease in India

- **Public Health Concern:** SCD is one of the ten major health issues identified by the **Ministry of Health and Family Welfare** as significantly impacting India's **tribal populations**.
- **Global Burden:** India has the second-highest number of SCD cases globally, with over **1 million** affected individuals.
- **SCD Birth Rates:** India ranks third in the world for the number of children born with SCD.
- **Carrier Rate:** Varies widely among different tribal groups, from **1 to 40%**.
- **Geographical Concentration:** Most SCD cases are found in the tribal belts of **Odisha, Jharkhand, Chhattisgarh, Madhya Pradesh, and Maharashtra**.

## Key Challenges in Managing SCD in India



## Government Initiatives on Sickle Cell Disease

### 1. National Sickle Cell Anaemia Elimination Mission:

- **Goal:** To eliminate SCD as a public health concern by **2047** through comprehensive screening and awareness.
- **Research Support:** The **Council of Scientific and Industrial Research (CSIR)** is developing gene-editing therapies.

### 2. National Health Mission (NHM) 2013:

- **Focus:** Includes provisions for disease prevention and management, particularly for hereditary disorders like SCD.
- **Support:** Provides essential medicines like **Hydroxyurea**.

### 3. National Guidelines for Stem Cell Research 2017:

- **Restrictions:** Limits the use of stem cell therapies to clinical trials, except for **Bone Marrow Transplantation (BMT)**.

### 4. National Guidelines for Gene Therapy 2019:

- **Framework:** Outlines guidelines for developing gene therapies and clinical trials for genetic disorders.

### 5. State Haemoglobinopathy Mission of Madhya Pradesh:

- **Objective:** Focuses on improving screening and management of SCD.

### 6. Rights of Persons with Disabilities (RPwDs) Act, 2016:

- **Inclusion:** SCD is among the 21 recognized disabilities, providing benefits like reservations in education and jobs.

## Recent Developments

- **FDA Approvals:** The US FDA has approved gene therapies **Lyfgenia** and **Casgevy** for SCD treatment.
- **First CRISPR-based Therapy:** **Casgevy** is also the first CRISPR-based therapy approved in the U.K.

## Steps to Combat Sickle Cell Disease Effectively



Wisdom leads to success

## Conclusion

Tackling sickle cell disease through improved detection, healthcare infrastructure, and public education aligns with **SDG 3 (Good Health & Well-being)** and **SDG 10 (Reduced Inequality)**. With sustained effort and strategic collaboration, India can significantly improve the management of sickle cell disease, reducing its impact and enhancing the quality of life for affected individuals.

## MAINS QUESTION

Analyze the socio-economic impact of Sickle Cell Disease (SCD) on India's tribal and rural communities. How does the National Sickle Cell Anaemia Elimination Mission aim to address these impacts, and what additional measures could be taken to mitigate them?