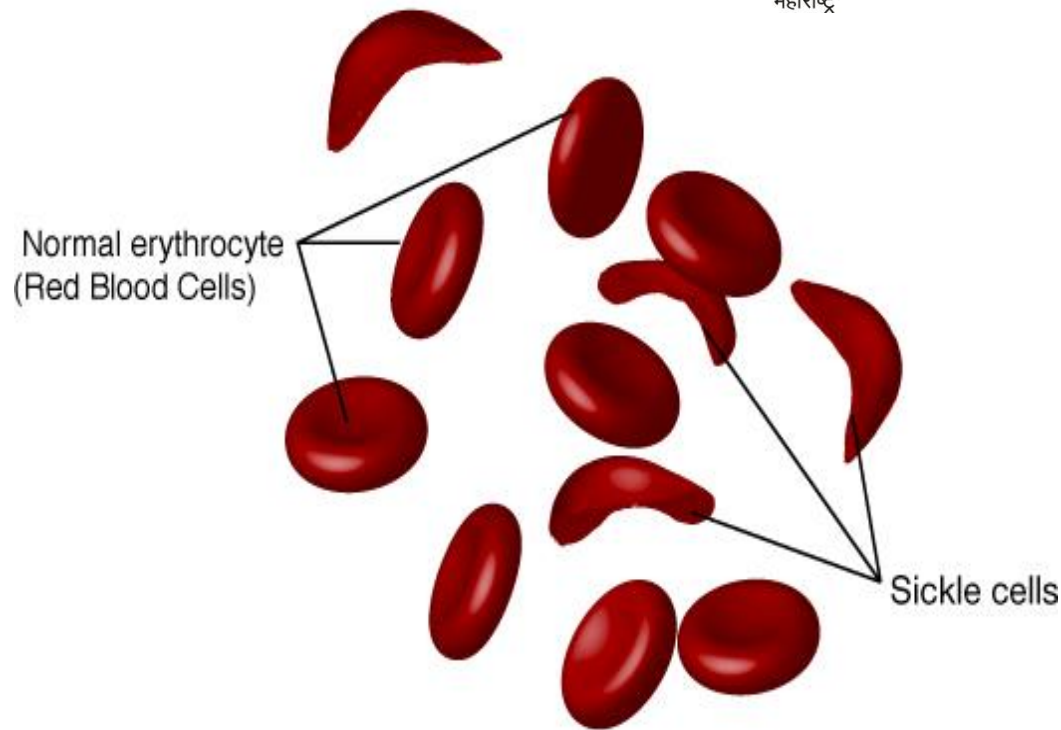


# NATIONAL HEALTH MISSION, MAHARASHTRA. SICKLE CELL DISEASE CONTROL PROGRAM

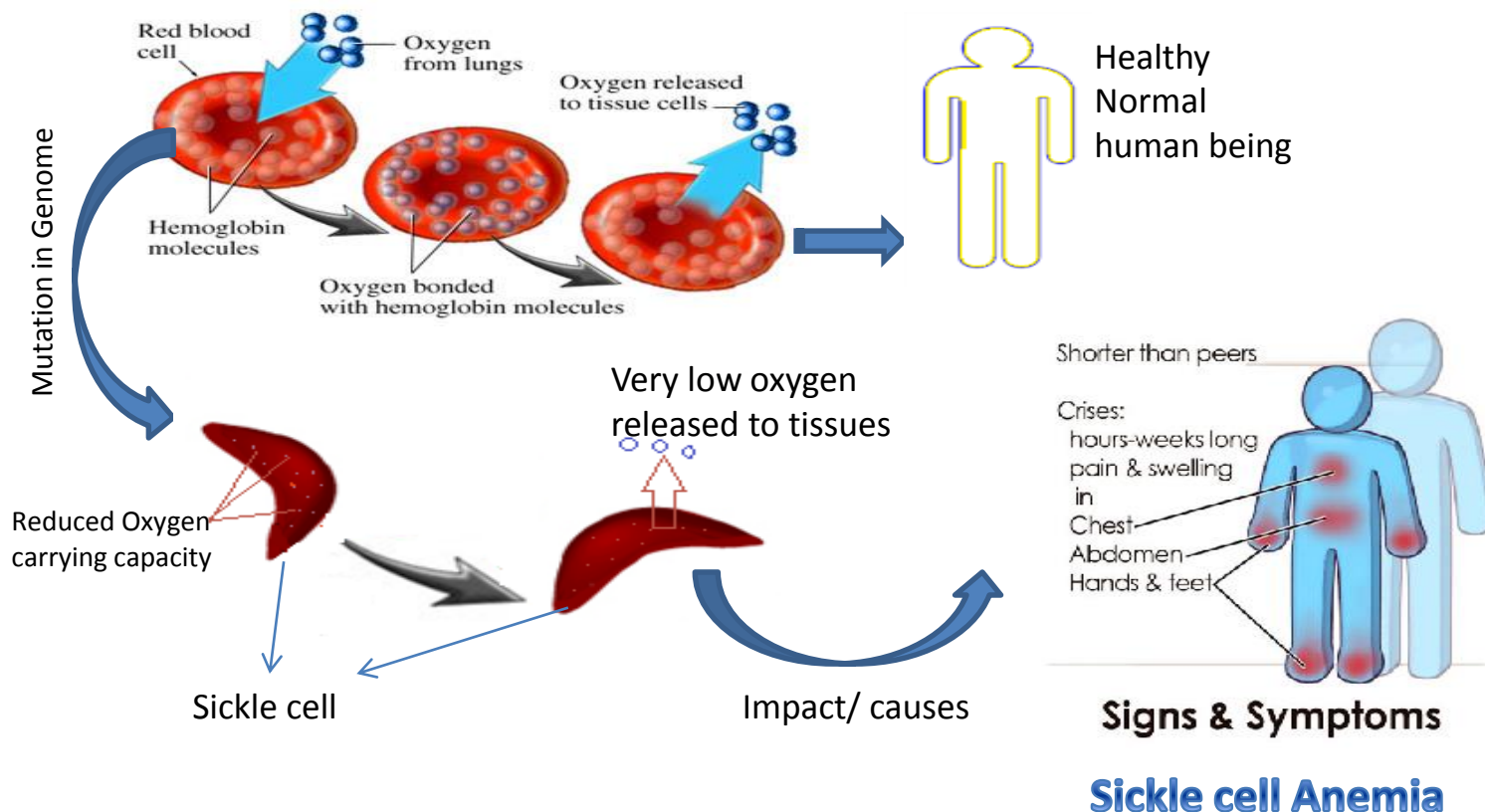


Solubility Test

2 July 2015

# Title of the Intervention - SICKLE CELL DISEASE CONTROL PROGRAM. (FMR B14.2)

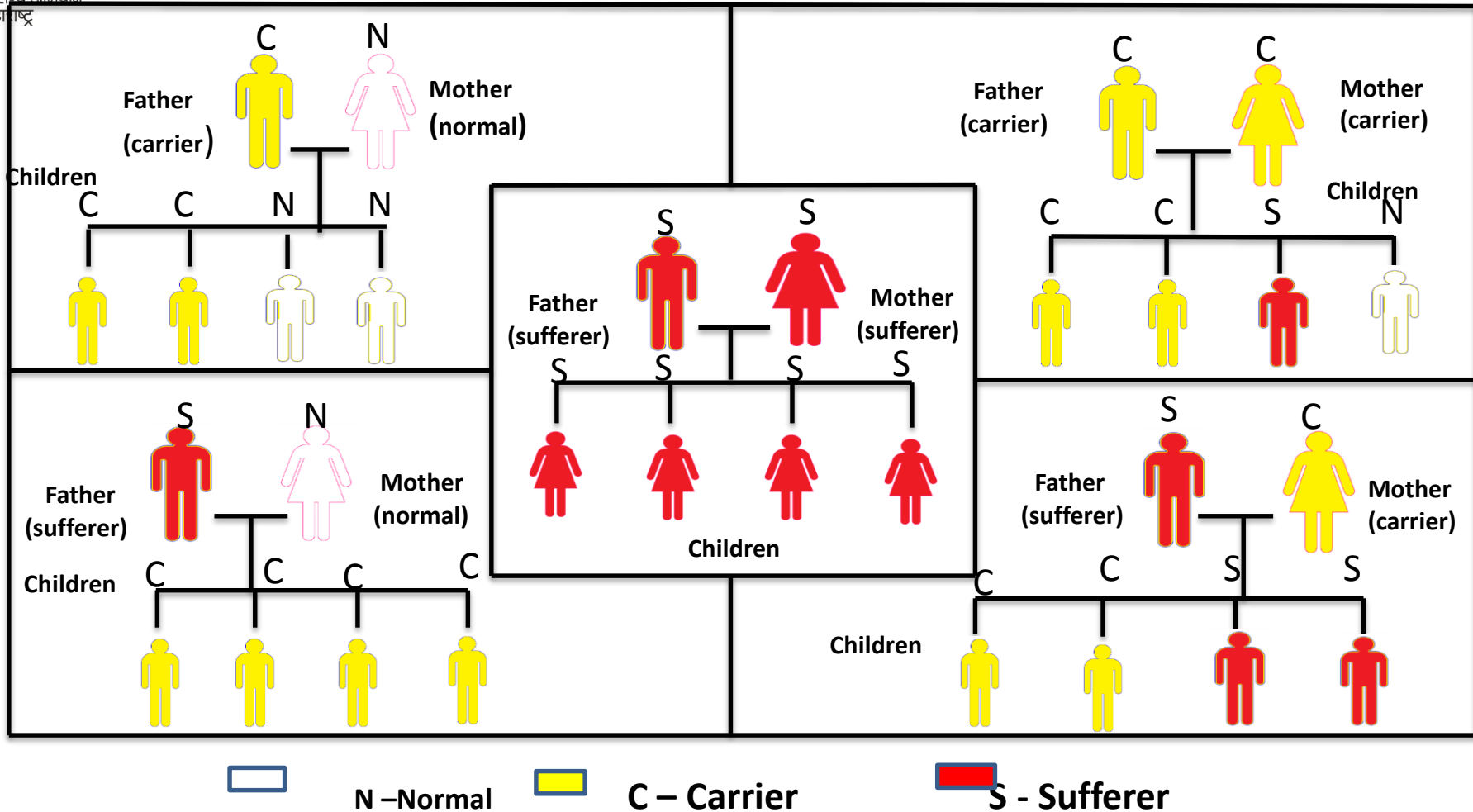
## Problem Statement



The prevalence in Maharashtra is high among the Bhil and Pawara tribal groups from the Nandurbar District and the Madia, Pardhan, Otkar and Gond from the Gadchiroli District .

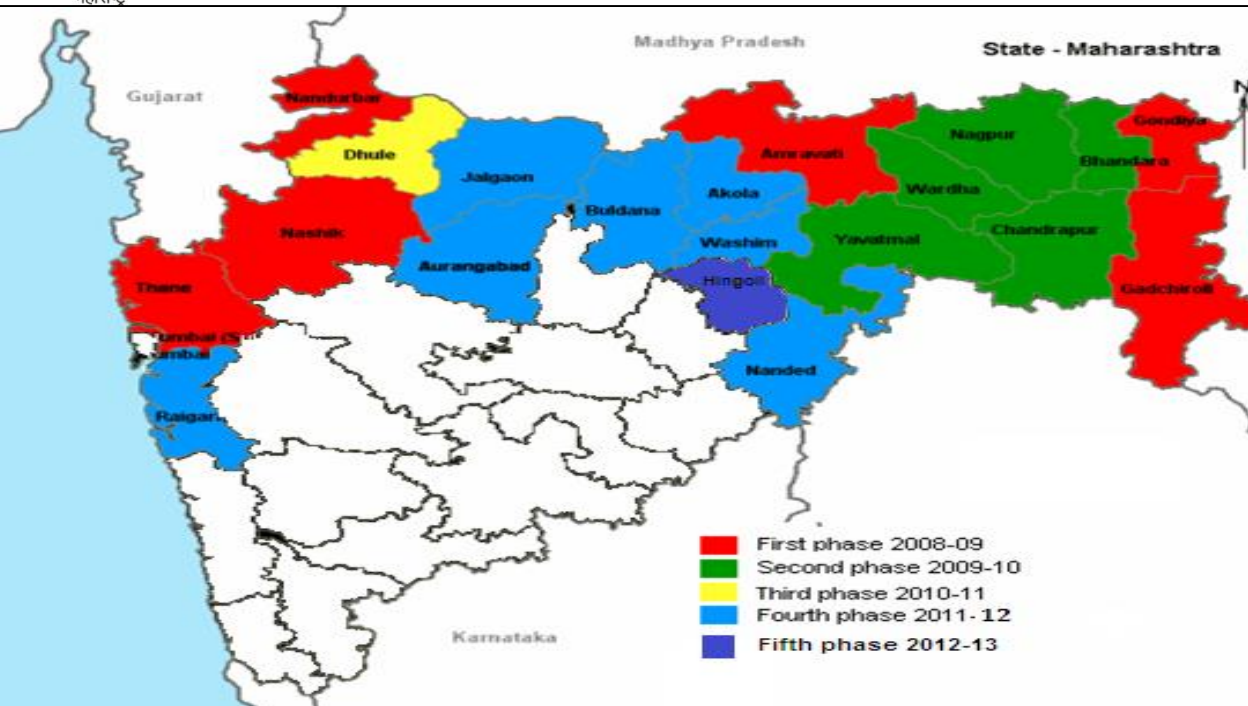
***The possible attribute for this could be inbreeding and therefore need for Racial profiling.***

# GENETIC INHERITANCE OF SCD (AUTOSOMAL RECESSIVE)



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# EVOLUTION OF SICKLE CELL DISEASE CONTROL PROGRAM IN MAHARASHTRA



➤ As per DMER draft proposal June 2008 Sickle Cell Disease is prevalent in 21 districts. The Program is being implemented in these districts in phase wise manner by NRHM since 2008.

District wise Implementation through	
NGOs	ASHA
Thane	Amravati
Palghar	Yavatmal
Nashik	Dhule
Nandurbar	Jalgaon
Gadchiroli	Aurangabad
Gondia	Akola
Nagpur	Buldhana
Chandrapur	Washim
Wardha	Nanded
Bhandara	Raigad
	Hingoli
<b>10</b>	<b>11</b>

➤ **Phase I – (2008-09)** Thane, Nashik, Nandurbar, Amravati, Gondia, Gadchiroli, Palghar (new district established in 2014)

➤ **Phase II – (2009-10)** Nagpur, Wardha, Chandrapur, Bhandara, Yavatmal

➤ **Phase III (2010-11)** Dhule

➤ **Phase IV – (2011-12 )** Jalgaon, Nanded, Buldhana, Washim, Akola, Aurangabad, Raigad

➤ **Phase V – (2012-13)** Hingoli

# ACTIVITIES IN SICKLE CELL DISEASE CONTROL PROJECT

- **Creating Public awareness and screening general population** -Target age group 1 to 30 years & pregnant mothers.
- **Multiphasic screening** - Identifying carrier & sufferer
- **Counselling** - Carrier & sufferers of age group 12-20 years
- **Avoid marriage between coloured card holders** - However, yellow/red card holders can marry with white card holder.
- **Prophylactic & Symptomatic treatment** - at Primary Health Centre, Rural Hospitals & District Hospitals.
- **Training** - Medical officers & other paramedical staff
- **Health institutes involved in SCD Control Program are as follows:-**

Sr. No.	Type of institutions	Total in state	No. institutes implementing SCD program (21 districts)
1	PHC	1811	950
2	RH/SDH	443	238
3	District Hospitals	23	15
4	Woman Hospital/Specialty Hospital	10	4
5	Medical Colleges	16	8
	<b>Total</b>	<b>2303</b>	<b>1215</b>

# SERVICE PROVIDED UNDER SICKLECELL DISEASE CONTROL PROGRAM

I.E.C (Case Mobilization)

Solubility Testing Camp (Health Camps) at PHCs

Positive Sample (suspect)

Negative Sample (Normal)

Electrophoresis testing at RH/SDH/DH

White card distributed

SS Pattern (sufferer)

AS Pattern (carrier) Doubtful sample

HPLC Testing at Medical College/DH

HPLC Testing Medical College/DH

SS Pattern (sufferer)

AS Pattern(carrier)

AS Pattern(carrier)

AA pattern (normal)

Red card

Yellow card

Yellow card

White card

Free Treatment

\* Counselling

Follow up

\*pre marriage/family  
planning counselling

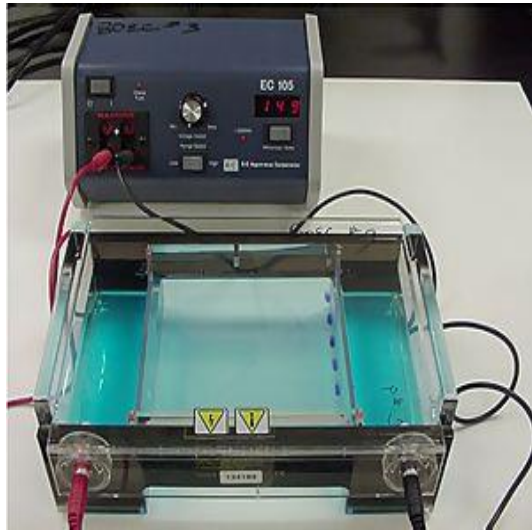
\*Pre marriage/family  
planning counselling

Follow up for regular treatment

(\* Pre-marital Counselling and counselling for Red and yellow card holders)



# Electrophoresis Testing



Electrophoresis machine

Image of Hemoglobin Protein Samples on Coomassie Blue Stained Agarose Gel

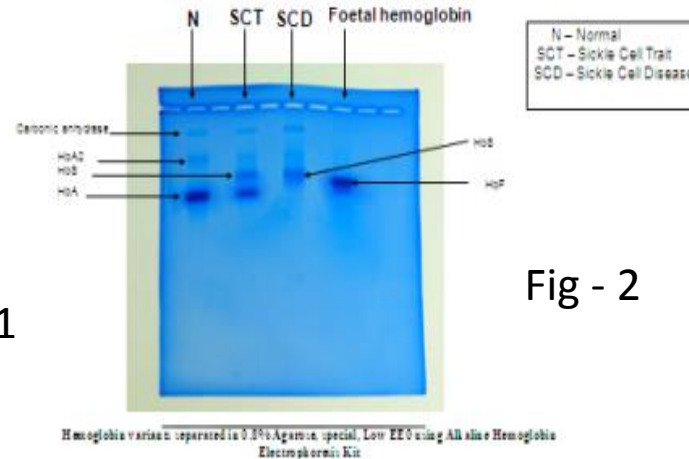


Fig - 1

Fig - 2

Electrophoresis bands

**Procedure :** Blood sample to be loaded at positive pole of the gel. When connected to electricity sample moves from positive pole to negative pole. Which forms band on gel. Which shows bands as seen in fig. 2. Based on band position sickle cell suffer and carrier can be identified.

# PHYSICAL PROGRESS OF SCDCP 2007-2015

Year	No. of Districts	Total solubility tests	Total Positive	Total Sufferer
2007-08	6	15310	557	0
2008-09	6	68590	5505	4
2009-10	11	421246	32462	1056
2010-11	12	1182057	51842	2875
2011-12	19	3121263	80838	3065
2012-13	20	2155666	45760	2040
2013-14	20	3847479	59093	2262
2014-15	21	3063505	47225	2194

Source : Monthly Monitoring reports

- Till date 128,11,316 persons got tested for solubility test; of which 323282 were found positive (1 in 40 -suspect). The confirmatory test of HPLC could detect 13492 sickle cell sufferers (1 in 950 sufferer?). *-Lower than Africa but higher than Latino.*
- State support
  - Free treatment to SCD patients including free blood transfusions
  - 100% Institutional deliveries for SCD mother
  - Sanjay Gandhi Niradhar Yojana aid of Rs 600 per month to SCD patient
  - Free ST transport to SCD patients and their escort



# LEARNING

- **Addition of Caste /tribe in the colour coded SCD Card** so as to help track SCD case and its racial profiling at all service outlets.
- To establish a mechanism of **digital tracking of Sufferers and carriers** to avoid duplication of screening. It will also help the Sufferers and carriers to avail the health services at any Government health institute in the state.
- High prevalence **Caste Population based Screening strategy or linking to anthropological study** for enhancing yield of cases.
- Some non tribal communities also suffer from SCD.
- **Pre natal diagnostic centre** would help screen the foetus in womb.
- Timely **procurement of solubility & electrophoresis kits** for enabling uninterrupted screening of population.
- Implementation through both NGOs and ASHAs works and offers competitive operational options.
- Molecular study at Akola (Seargent -2015) reveals sickle cell carrier with beta thalassemia as well as those with haemoglobin C also suffer from sickle cell disease.

# PROGRESS OF SICKLE CELL PROGRAM



**IEC of Program**



**Testing camps**



**Solubility testing in PHC**



**Telemedicine Facility**