# Living with Pain in Sickle Cell Disease: Barriers to Accessing Care

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# Presenter Disclosure

- Faculty: Isaac Odame.
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  - Grants/Research Support: Novartis, Pfizer
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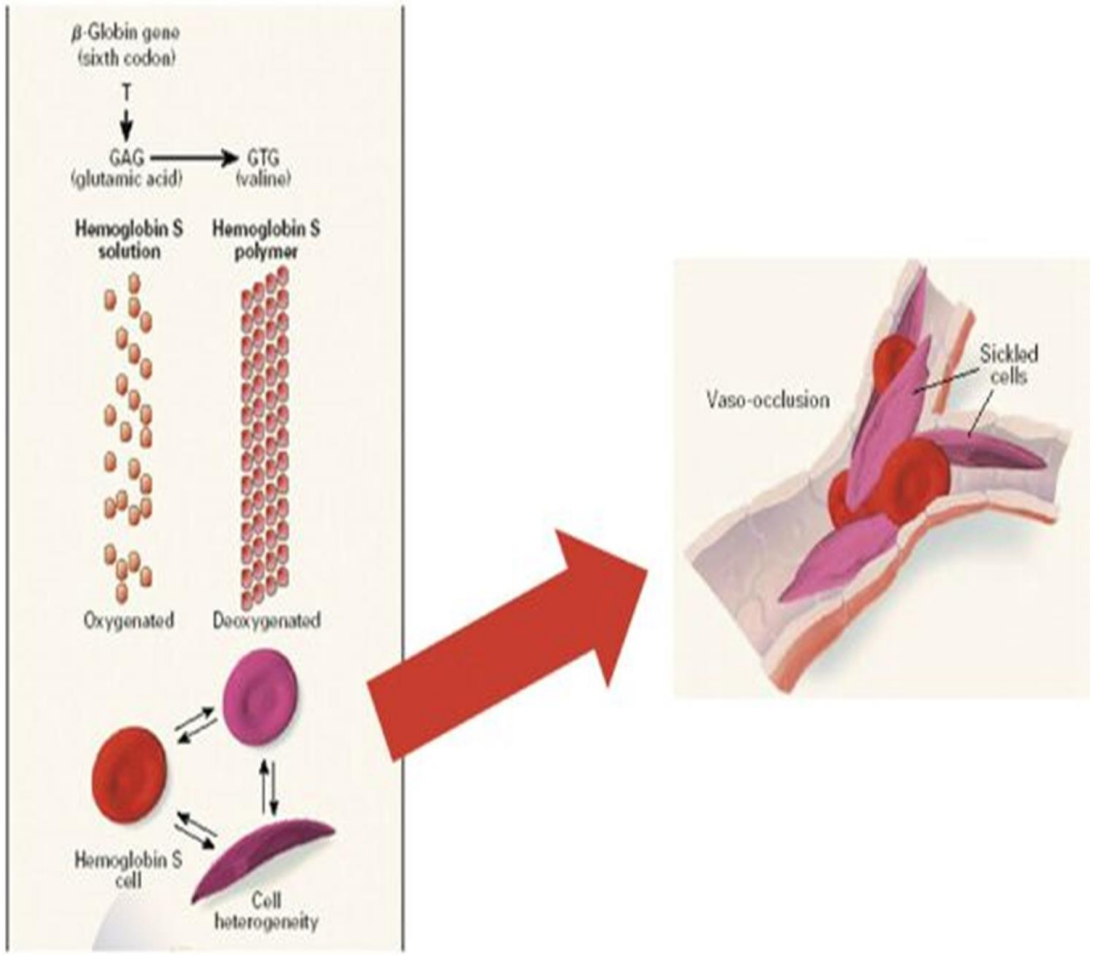
- No proprietary therapeutic agents will be discussed

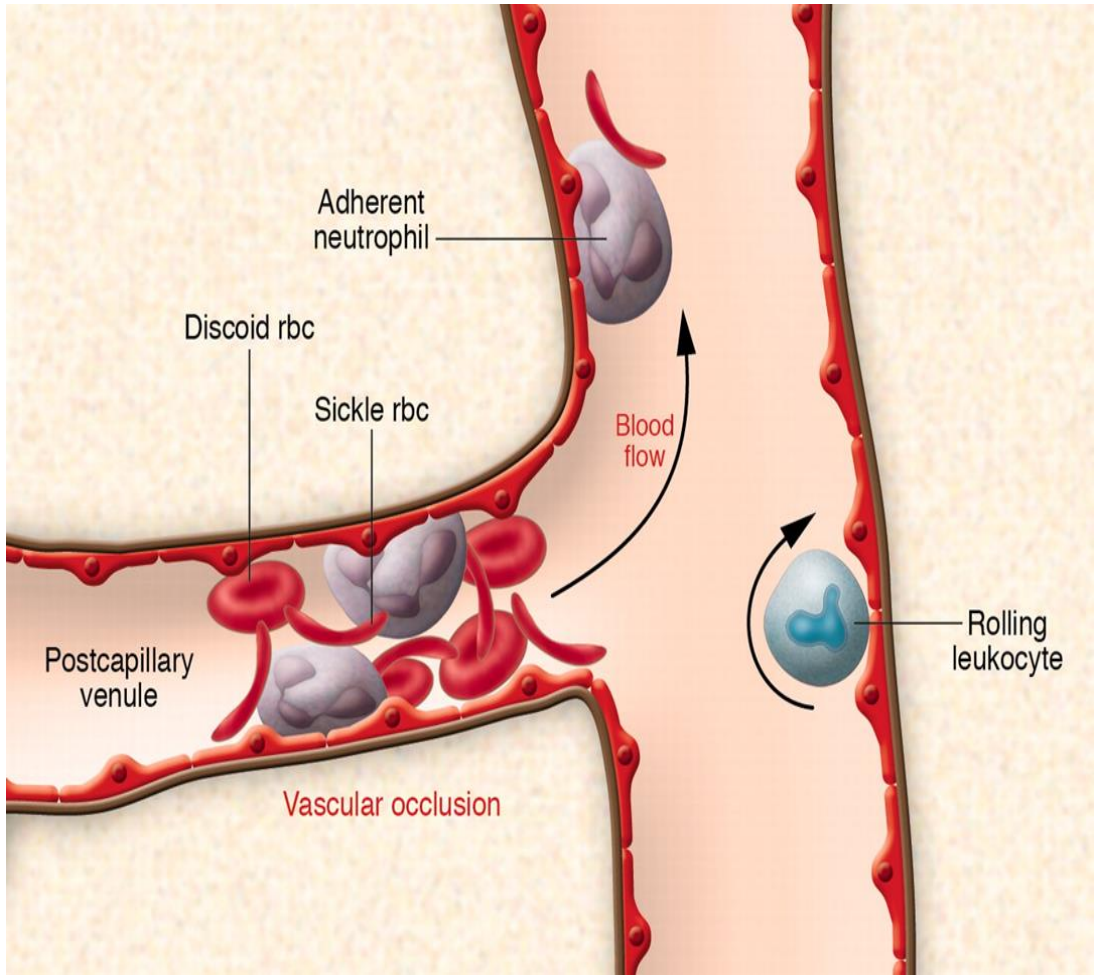
# Objectives

| Describe | Summarize | Examine |
| --- | --- | --- |
| Describe the key features of Sickle Cell Disease (SCD) and the different types of pain patients with SCD experience | Summarize available treatment options for managing pain in SCD | Examine the barriers patients with SCD face when accessing treatment for pain |

# Sickle Cell Disease: Pathophysiology




The Lancet 2004; 364:1343-1360

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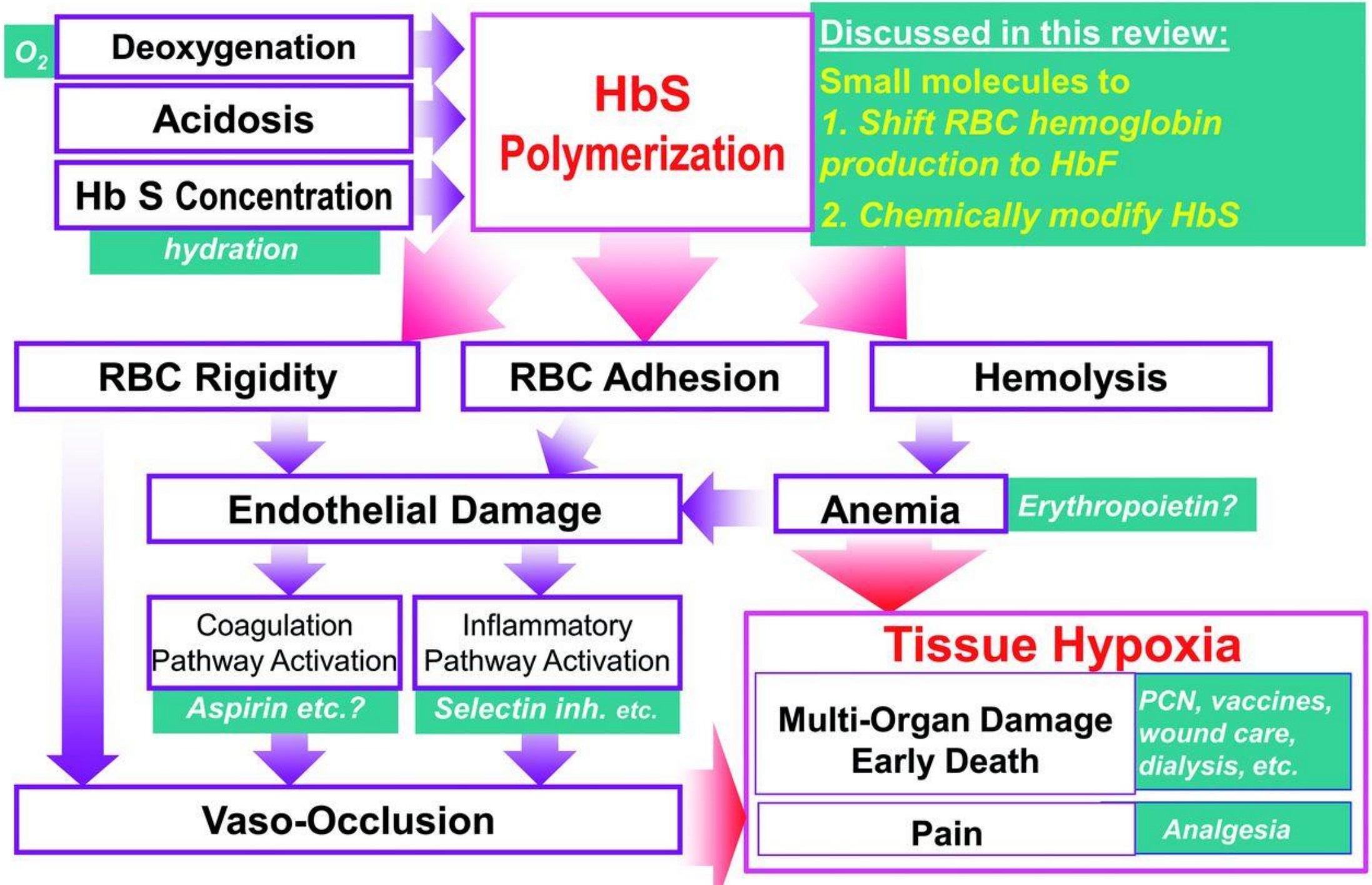
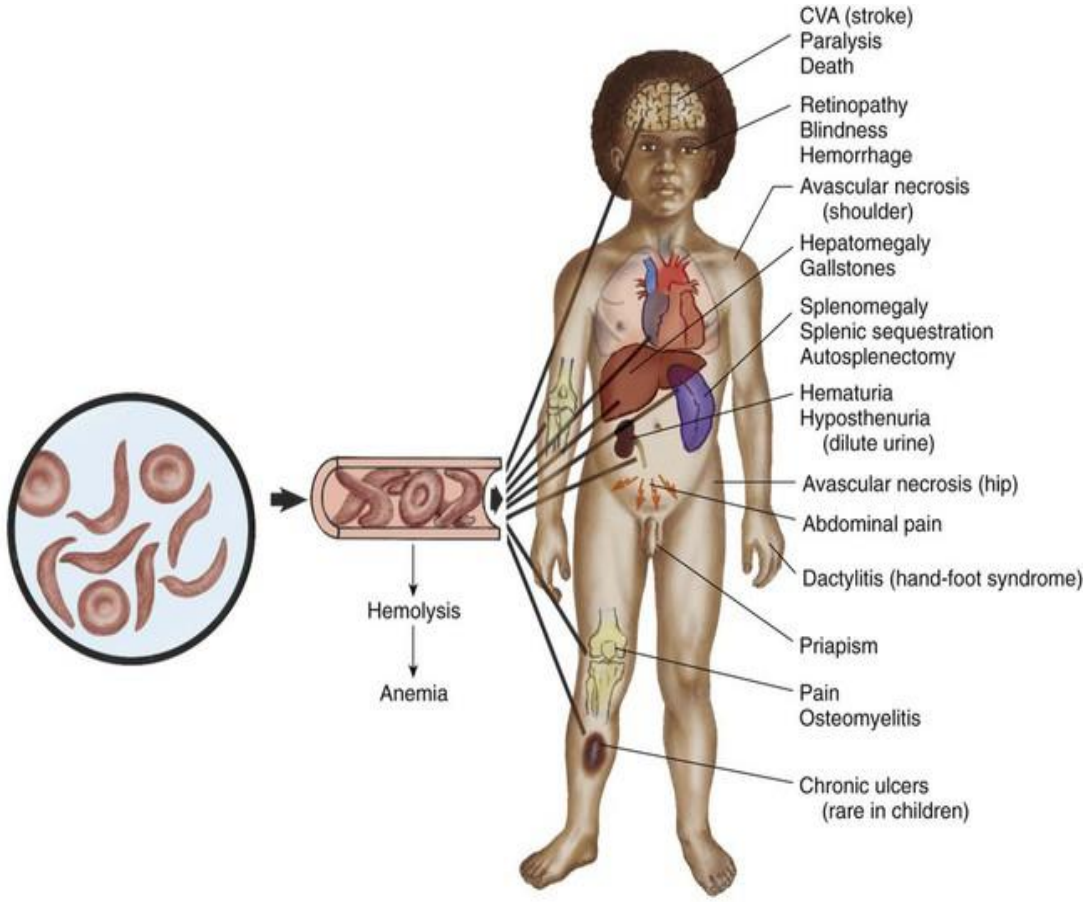
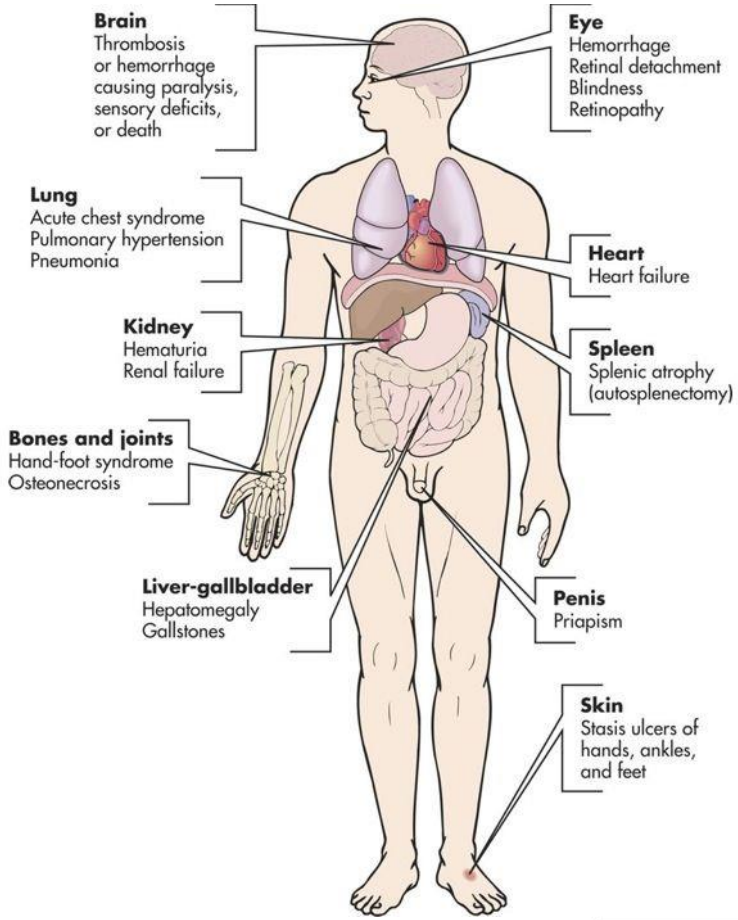

$O_2$
Deoxygenation
Acidosis
Hb S Concentration
hydration
HbS Polymerization
Discussed in this review:
Small molecules to
1. Shift RBC hemoglobin production to HbF
2. Chemically modify HbS
RBC Rigidity
RBC Adhesion
Hemolysis
Endothelial Damage
Anemia
Erythropoietin?
Coagulation Pathway Activation
Aspirin etc.?
Inflammatory Pathway Activation
Selectin inh. etc.
Tissue Hypoxia
Multi-Organ Damage Early Death
PCN, vaccines, wound care, dialysis, etc.
Pain
Analgesia
Vaso-Occlusion

# SCD: End-organ damage

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# The face of SCD pain

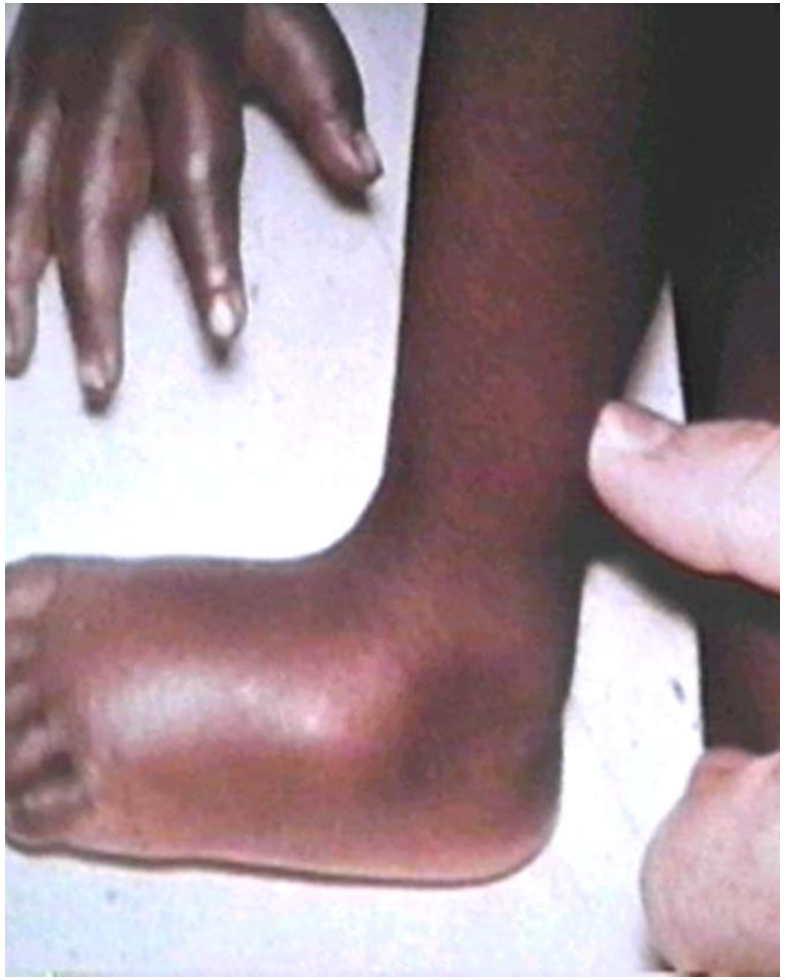
**Hertz Nazaire (1973-2021)**

# Classification of SCD pain syndromes

- Acute painful vaso-occlusive episodes
  - Other acute pain syndromes in SCD
- Chronic painful complications of SCD
  - Leg ulcers
  - Avascular necrosis
  - Chronic osteomyelitis
  - Osteoporosis/osteopenia
- Neuropathic pain
- Pain due to comorbidities

# Acute painful vaso-occlusive episodes

- Most common clinical complication of SCD
  - Acute pain without chronic pain
  - Acute pain in the presence of chronic pain
- Age of onset
  - Can present as early as 6 months age:
  - Older patients: increase rates of pain → VOC most common symptom
- Most common reason for hospitalization
- Location:
  - Long bones of extremities
  - Flat bones –chest, back (vertebrae) and pelvis
- Cooperative Study on SCD
    - 39% of patients have no admissions for pain
    - 5-10% had 3-10 admissions per year



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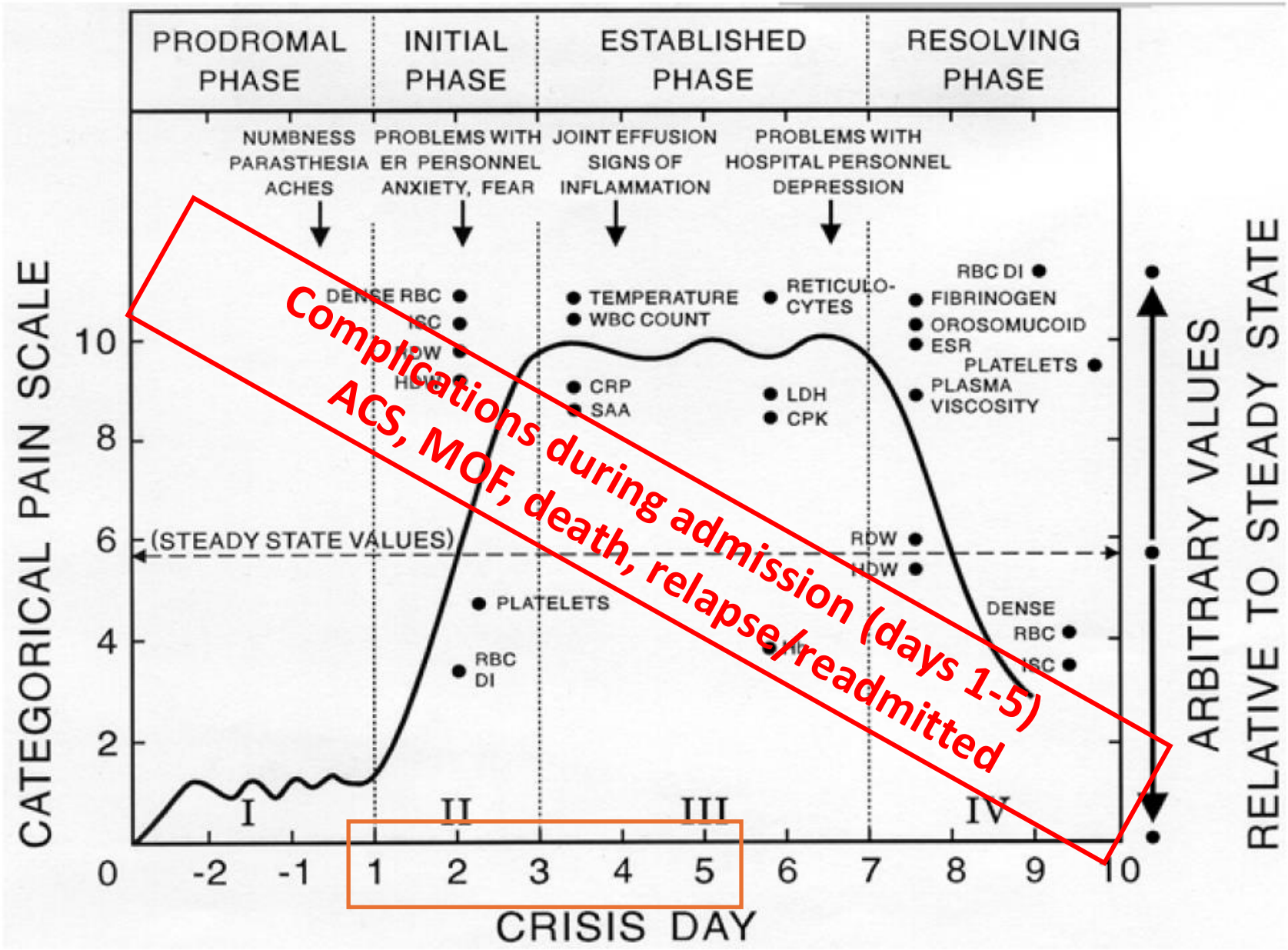


Ballas SK. The sickle cell painful crisis in adults: phases and objective signs. Hemoglobin. 1995;19:323-333.

# Acute painful vaso-occlusive episodes

- SCD genotypes and VOC
  - SS > $S\beta^0$-thalassemia > SC > $S\beta^+$-thalassemia
  - Hb F expression ↓
  - α-thalassemia ↑
- Factors influencing VOC rates
  - Age
  - Female- onset with menstrual cycle, pregnancy
  - Exposure to cold weather
  - Infections
  - Dehydration
  - Mental stress
    - Anxiety
    - Depression

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# Other acute pain syndromes in SCD

- Other complications presenting in association VOC
  - Acute chest syndrome
  - Acute multi-organ failure
  - Splenic sequestration
  - Hepatic  sequestration
  - Priapism

# Chronic painful complications

- 3-6 months since pain onset VOC
  - Bone infarcts
  - Avascular necrosis (AVN) - femoral, humeral
  - Leg ulcers
  - Chronic osteomyelitis
  - Osteoporosis/osteopenia
  - Chronic arthropathy from Fe overload
- Psychological comorbidities
  - Depression
  - Paranoia
  - Hopelessness
  - Despair
  - Social withdrawal

# Neuropathic pain in SCD

- A cause of chronic pain in SCD
  - Central sensitization → persistent acute pain
  - Persistent chronic pain → neuropathic pain
    - Glial activation
    - Aberrant somatosensory processing in central and peripheral NS
- History taking and clinical examination essential for detecting neuropathic component of pain in SCD
- Self-reporting tools for neuropathic pain helpful
- Anticonvulsants used for treatment
  - Gabapentin
  - Pregabalin

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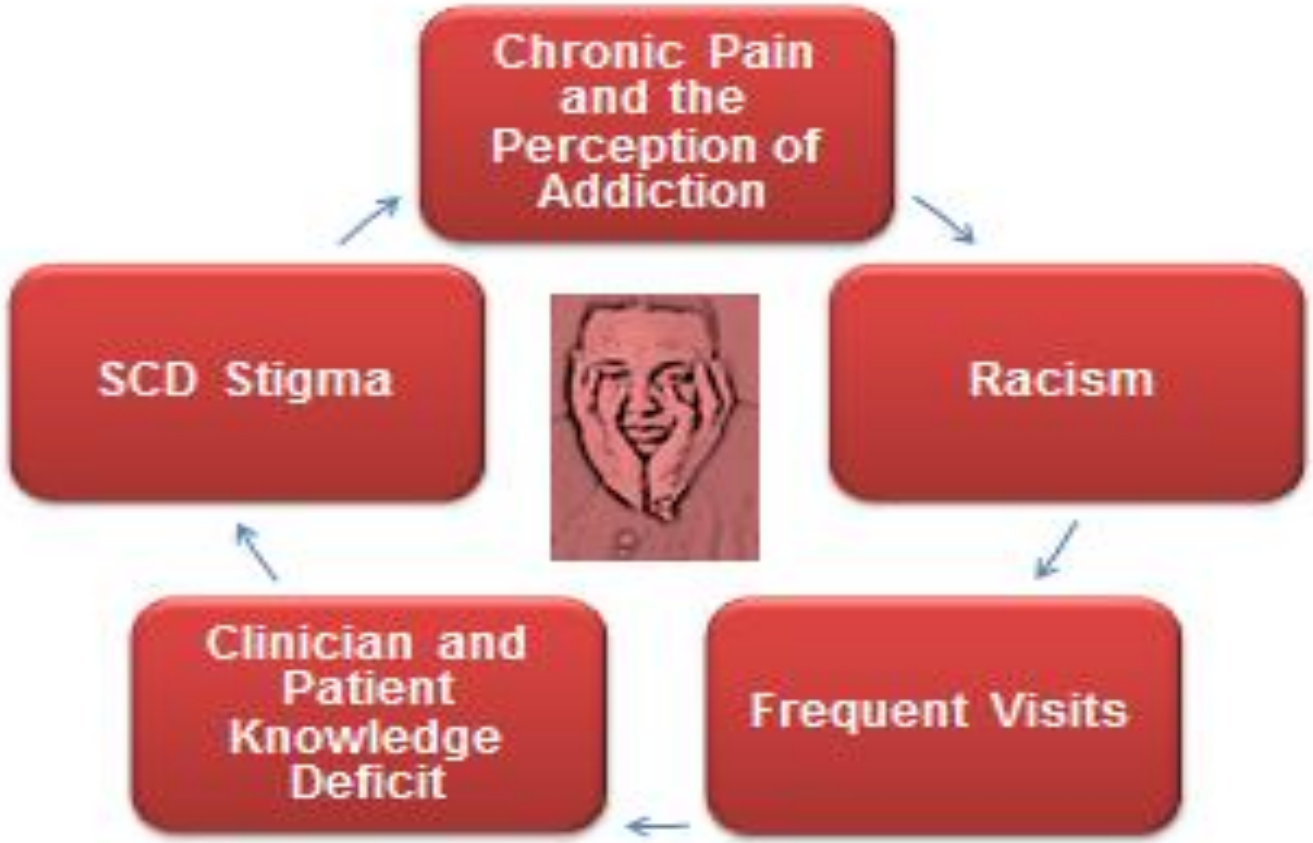
# Barriers to accessing pain care

- Stigmatization
  - Drug seeker/abuser
  - Clinician-patient relationship
    - Lack of empathy
    - Judgmental
    - Injustice
    - Mistrust
  - Injustice aggravates chronic pain
    - Increased stress and disability
    - Microaggressions over time worsens health
    - Deteriorating mental health
- Clinicians
  - Poor knowledge about SCD
  - Think patients fabricate their pain
  - Triage priority of SCD pain less likely to 1 or 2
  - Reluctance to prescribe opioids due to concerns about abuse

# Barriers to Care



# Opioid addiction in patients with SCD

- Prevalence estimates of opioid addiction
  - SCD **0.5%-8%**
  - Other chronic pain syndromes **3%-15%**
  - General population **4.8%**
- Patient's history of undertreatment may influence behaviors
  - Requesting a specific opioid at a specific dose
  - Opioid be administered IV
  - Less indicative of abuse than seeking adequate pain relief

Substance Abuse and Mental Health Services Administration Office of Applied Studies 2009

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# Living with SCD: Challenges

SCD affects more than 6000 Canadians

Canadians living with SCD often face:

- Health-related challenges,
- Misconceptions
- Stigma
- Barriers
  - Racism
  - Healthcare inequities

Impacts the life of patients and their caregivers

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# Symptoms and impact on patients/caregivers

- Fatigue/tiredness
- Bone pain
- Headache
- Low mood/depressed
- Poor sleep
- Worry/anxiety

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# Patient symptoms and impact on caregivers

## Education and Career

- School attendance/Work attendance
- Earning potential

## Health

- Overall well-being
- Mental health

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# Approaches to the management of SCD

| Approach | Definition |
|---|---|
| 1. Supportive | Maintain good health such balanced diet, sleep, hydration, folic acid, etc. |
| 2. Symptomatic | Alleviate the symptoms of SCD. Blood transfusion for symptomatic anemia, analgesics for pain, antibiotics for infections, etc. |
| 3. Preventative | Prevent SCD complications. Vaccination, avoidance of stressful situations, hydroxyurea, transfusion to prevent the recurrence of stroke, etc. |
| 4. Pharmacotherapeutic | Prevent VOCs or treat them soon after onset thus preventing them from getting worse or precipitating other complications. |
| 5. Curative therapy | Ultimate goal of all inherited disorders. Stem cell transplantation and gene therapy |



Ballas SK et al. Complementary Therapies Med 49 (2020) 102327