

# Cyanosis

BY

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# Definition of cyanosis:

- Cyanosis defined as bluish discoloration of skin & mucus membranes due to elevated level of reduced hemoglobin more than **5gm** percent.
- Normal level of Reduced hemoglobin **(1-2)gm** percent of total hemoglobin.

# Types of cyanosis:

Cyanosis classified to three types according to the cause:

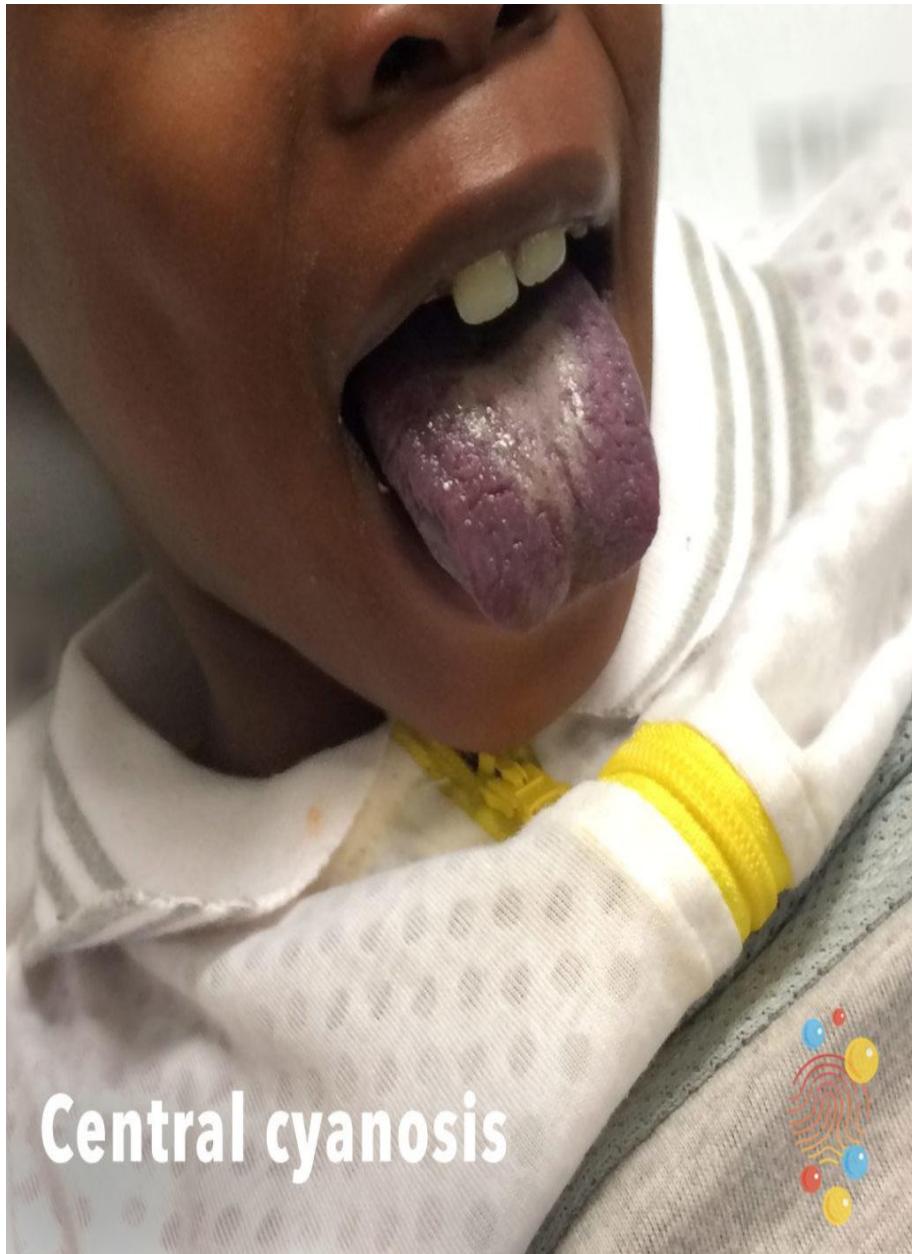
- True cyanosis: (central , peripheral).
- Differential cyanosis.
- False cyanosis: (chemical).

## Central cyanosis:

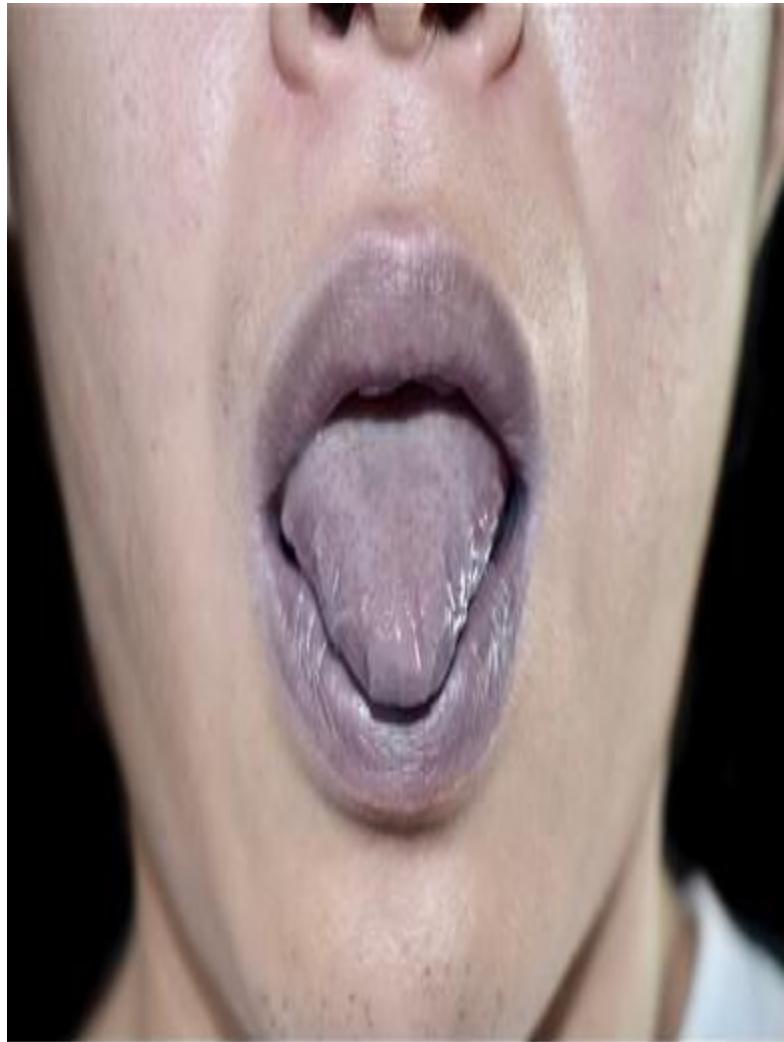
- Is bluish discoloration of skin ,mucus membranes & tongue due to increase level of reduced HB more than 5gm percent as a result of cardiac or chest &central causes.

# Central cyanosis





Central cyanosis



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# Causes of central cyanosis:

- **Cardiac causes:** fallot triology,fallot tetralogy,cyanotic heart diseases(with right to left shunt).
- **Lung causes:** lung fibrosis,COPD.
- **Pulmonary A-V shunt** (liver cirrhosis).

- Prolonged central cyanosis associated with development of (hypoxic) blue clubbing.

# Central cyanosis & cyanotic clubbing





By admission

5 weeks after palliation

10 months after palliation

## **Peripheral cyanosis:**

**Is bluish discoloration of nail beds, finger tips,  
ear lobule,tip of nose, tongue spared.**

# Peripheral cyanosis



# **Causes of peripheral cyanosis:**

- 1. Sluggish circulation** (congestive heart failure).
- 2. Raynaunds** (peripheral artery disease).
- 3. Cold exposure.**
- 4. Shock.**

# Central cyanosis vs peripheral cyanosis

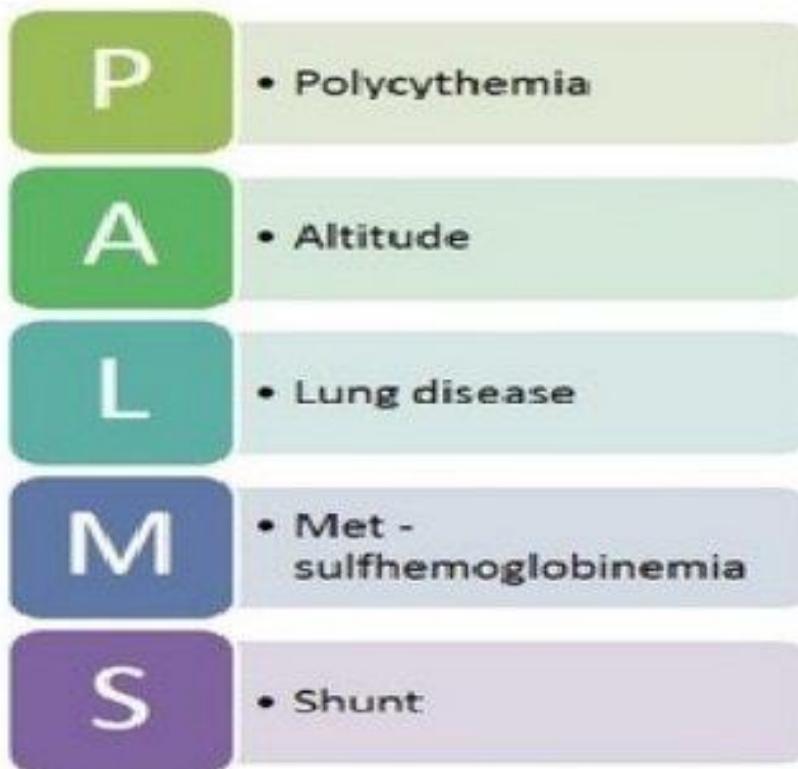
	central cyanosis	Perpheral cyanosis
Area	generalize	localize
Tongue	involve	Not involve
Hand shake	Feel warm	Feel cold
clubbing	Usually present	Not present
On O <sub>2</sub> application	Pulmonary cause improved	Not improved
Application of warming	Not improved	improved
Mechanism	Diminution of oxygen saturation	Diminution of blood flow
Capillary refill time	<2 sec	>2 sec

# ETIOLOGY

## Peripheral cyanosis



## Central cyanosis



*Mnemonic: "COLD PALMS"*



(a) Peripheral cyanosis ((c) iStockPhoto)



(b) Central cyanosis (source:[9])

## Differential cyanosis:

- Cyanosis of both lower limbs without involvement of upper limbs due to :

**1-PDA with preductal aortic coarctation.**

**2-PDA              with              pulmonary              HTN**  
(eisenmenger effect).

## Chemical cyanosis:

- Not true cyanosis as discoloration of skin & mucus membranes due to exposure to (nitrite) methmoglobin formation ,exposure to (sulfonamide) sulfemoglobin formation.

## Work up for diagnosis:

- Pulse oximeter to confirm hypoxia.
- ABG{arterial blood sample} oxygen saturation.
- Provide warmth to correct vasoconstriction to cold.

- CT chest to diagnose lung lesions
- Echocardiography to asses cardiac condition &exclude or confirm congenital disease.

# It is important to say:

- Patient with severe anemia never develop cyanosis as there is no enough hemoglobin for 5gm to be deoxygenated (incompatible with life).

- On the other hand patients with polycythemia more prone to cyanosis as there is excess available hemoglobin to be reduced in addition to sluggish circulation.