

MetHb reduces O₂-carrying capacity. Symptomatic patients and those with high fraction MetHb (%) usually require Rx with methylene blue.

MetHb occurs when RBCs undergo oxidizing stress resulting in ↓O₂ carrying capacity

Dapsone-induced MetHb: please see separate Dapsone guideline

Drugs/toxins (oxidizing agents) that cause most cases:

Nitrites/nitrates: Sodium nitrite/nitrate (food preservatives), GTN, well-water, recreational use of amyl nitrite ('poppers')

Local anesthetics: prilocaine, benzocaine, lignocaine

Antibiotics / antimalarials: dapsone, sulfonamides, chloroquine, primaquine

Others: Rasburicase, propanil, paraquat, aniline dyes, moth balls (naphthalene), potassium permanganate, copper sulphate

Clinical Features

Dependent on MetHb fraction & compensatory response to ↓O₂ carrying capacity

Pulse oximetry is unreliable: usually reads 85-90% despite supplemental oxygen & normal P_aO₂ on ABG

MetHb fraction % in blood and associated clinical effects:

<1	Normal
<10	Asymptomatic
10-20	Cyanosis
20-50	Tachycardia, anxiety, headache, confusion, tachypnoea
50-70	CNS depression, seizures, arrhythmias, metabolic acidosis
>70	Potentially lethal

Management

Cease causative agent/drug

Provide oxygen (cyanosis will not respond but may help O₂-tissue delivery)

Measure MetHb fraction % every 30-60 minutes until down trending, and to assess response to treatment

Indications for antidotal Rx with methylene blue (see separate *Methylene Blue* guideline):

- MetHb fraction % > 20%
- MetHb fraction % > 10% AND symptomatic OR co-existing anaemia / chronic lung disease / cardiac failure
- Initial dose: 1-2 mg/kg (0.1-0.2 mL/kg of 1% solution) IV over 5 minutes, followed by a 20 mL normal saline flush
- Measure MetHb fraction % every 30-60 minutes to assess response, further doses are rarely required.

NOTE:

- Patients with G6PD deficiency are more susceptible to MetHb
- Agents that cause MetHb can also cause haemolysis