

Metformin is associated with severe lactic acidosis. Meticulous supportive care is the mainstay of management. Haemodialysis is required in severe cases.

Toxicity

Metformin OD does not cause hypoglycaemia.

Metformin is associated with lactic acidosis which can be profound and fatal.

- Lactic acidosis can occur in association with therapeutic dosing (↑ likelihood with sepsis, ↓ renal function, elderly)
- More likely to occur with co-existing renal impairment
- ↑ risk if co-ingestants → ↓ renal function or hypotension

OD of <10 g of metformin is normally well tolerated (adult)

Chronic use leading to accumulation and lactic acidosis carries a poorer prognosis than acute poisoning

Clinical features:

Hypoglycaemia is not a feature

Early clinical features include nausea, vomiting, abdo pain

Lactic acidosis develops hours after exposure

- may occur following large acute ingestions or with co-existing renal impairment.

CVS: ↑ HR, ↓ BP due to acidosis or dehydration – may progress to shock

CNS: sedation, coma, seizures

Management

Manage airway, breathing and circulation in standard manner

Decontamination:

50g activated charcoal (1g/kg in children) should be administered within 2 hours of acute ingestion of immediate-release preparation and within 4 hours of modified-release preparation.

MDAC and/or WBI may be indicated in large ingestions (> 50 g in adults) of modified-release preparations (discuss with Clinical Toxicologist)

Supportive care:

Maintain hydration / urine output. Identify and discontinue any nephrotoxic medications.

Lactic Acidosis:

Normal renal function, clinically well and lactate concentration < 10 mmol/L: Rx with supportive care

Patients who are clinically unwell with a raised lactate concentration (> 15 - 20 mmol/L) may require stabilization with **IV NaHCO₃** while considering haemodialysis (discuss with clinical toxicologist)

Haemodialysis is indicated if ANY of the following are present: (discuss with clinical toxicologist)

- lactate > 20 mmol/L, pH < 7.0, shock, worsening clinical state despite supportive care

Continue haemodialysis until lactate < 3 mmol/L and pH > 7.35 - up to 24 hours may be required

Intermittent haemodialysis with a lactate free dialysate and a bicarbonate buffer is the preferred mode

Disposition:

- After acute poisoning if clinically well, lactate < 5mmol/L, and normal pH at 6 hours post ingestion (12 hours for modified release preparation) can be discharged pending mental health assessment.