

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

Toxicity

Metformin toxicity can occur following:

- Acute overdose (< 10 g is usually well tolerated in adult)
- Accumulation (therapeutic dosing in the setting of intercurrent illness with renal impairment)
- Increased risk of toxicity and adverse outcomes: nephrotoxic co-ingestions, older patients

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

Clinical features:

Metformin OD does NOT cause hypoglycaemia.

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.
- acidosis and fluid loss through vomiting may lead to shock

CNS: sedation, coma, seizures

Management

Manage airway, breathing and circulation in standard manner

Decontamination:

Activated charcoal appears to be ineffective at adsorbing metformin

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 < 5 mmol/L, and normal pH at 6 hours post ingestion (12 hours for modified release preparation) can be discharged pending mental health assessment.