Clinical Practice Guidelines:
Toxicology and toxinology/Toxic metals

Date: February, 2015

Purpose: To ensure a consistent approach to the management of Toxic metals poisoning.

Scope: Applies to all QAS clinical staff.

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URL: https://ambulance.qld.gov.au/clinical.html

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**Toxic metals** are a group of metallic elements that have no normal biological role, but are capable of disrupting essential physiological processes when introduced to the body.[1] Other than radioactive metals, they include:[2]

- Antimony
- Arsenic
- Barium
- Beryllium
- Cadmium
- Lead
- Mercury
- Osmium
- Thallium
- Vanadium

Other essential trace elements can become toxic if they occur in high concentrations (e.g. iron), or are present in the wrong ionic form (e.g. chromium).[3]

Acute sources of toxicity are often easily identified, with ingestions leading to gastrointestinal irritation as well as systemic effects, dependant on the compound involved and the level of exposure. Chronic metal poisoning is less well defined, manifesting as general ill health, cancers, or teratogenic malformations.[4] Lithium is used therapeutically as a mood stabiliser but it is potentially toxic in overdose, particularly with chronic exposure.[5]

Other than supportive measures, treatment focuses on the prevention of further absorption, inactivation with chelating agents and elimination of the metal from the body.[4]

### Clinical features

#### Local gastrointestinal effects:
- Vomiting, diarrhoea
- Abdominal pain
- Gastrointestinal haemorrhage

#### Systemic effects:
- Multiorgan dysfunction/failure
  - predominately neurological (lead, lithium, mercury)
  - predominately hepatic (iron)

### Risk assessment

- Risk of toxicity is proportional to dose ingested.[6]
- Very small quantities in children can cause significant toxicity.
Transport to hospital
Pre-notify as appropriate

Consider:
- Oxygen
- IPPV
- IV access
- IV fluid
- Analgesic
- Anti-emetic
- Midazolam

Immediate, life-threatening symptoms?

Manage as per:
- Relevant CPG

Note: Officers are only to perform procedures for which they have received specific training and authorisation by the QAS.