

ACETONE

MEDITEXT(R) - Medical Management

0.0 OVERVIEW

0.1 LIFE SUPPORT

- A. This overview assumes that basic life support measures have been instituted.

0.2 CLINICAL EFFECTS

0.2.1 SUMMARY OF EXPOSURE

0.2.1.1 ACUTE EXPOSURE

- A. Systemic toxicity most commonly occurs after ingestion, inhalation, or, less commonly, after extensive dermal exposure.
- B. SERIOUS EFFECTS - CNS depression is the most common effect, ranging from sedation and dizziness to coma. Respiratory depression and death can occur in significant exposures. The symptomatic patient may need medical supervision for up to 30 hours because of the prolonged elimination half-life of acetone.
- C. OTHER EFFECTS - Nausea, vomiting and hematemesis may result from inhalation or dermal exposure. Extremely high vapor concentrations or splash contact may cause eye discomfort and usually only transient injury. Acetone vapors are mildly irritating to the eyes and mucous membranes. Prolonged or repeated dermal exposure to liquid acetone can cause defatting and drying of the skin.

0.2.1.2 CHRONIC EXPOSURE

- A. There have been no reports that prolonged inhalation of low vapor concentrations result in any serious chronic effects in humans.

0.2.5 CARDIOVASCULAR

0.2.5.1 ACUTE EXPOSURE

- A. Tachycardia and hypotension have been reported with severe intoxication.

0.2.6 RESPIRATORY

0.2.6.1 ACUTE EXPOSURE

- A. Inhalation of highly concentrated vapors may cause respiratory tract irritation. CNS depression from severe exposure by any route may cause respiratory depression.

0.2.7 NEUROLOGIC

0.2.7.1 ACUTE EXPOSURE

- A. Effects resemble those of ethanol intoxication, including lethargy, ataxia, lightheadedness, and incoherent speech. Stupor and coma occur with large ingestions.

0.2.8 GASTROINTESTINAL

0.2.8.1 ACUTE EXPOSURE

- A. Nausea, vomiting and hematemesis have occurred after extreme dermal and inhalational exposure.

0.2.11 ACID-BASE

0.2.11.1 ACUTE EXPOSURE

- A. Mild metabolic acidosis may develop.

0.2.14 DERMATOLOGIC

0.2.14.1 ACUTE EXPOSURE

- A. Skin exposure may lead to erythema and irritation. Acetone dries the skin. Nail brittleness may develop after repeated application.

0.2.17 METABOLISM

0.2.17.1 ACUTE EXPOSURE

- A. Hyperglycemia and ketonemia mimicking diabetic ketoacidosis (DKA) have been commonly reported. Hyperglycemia, polyuria and polydipsia may persist for several weeks.

0.2.21 CARCINOGENICITY

0.2.21.1 IARC CATEGORY

- A. No IARC category has been located for acetone (IARC, 1987; IRIS, 1995).

0.2.22 GENOTOXICITY

- A. Mutagenicity and genotoxicity studies reviewed in the IRIS database have been negative except for one study which reported chromosomal aberrations (IRIS, 1995).

0.3 MEDICAL SURVEILLANCE/LABORATORY

- A. Determine blood glucose, serum bicarbonate and acetone, and urine ketone concentrations. Monitor arterial blood gases if respiratory depression is present.

0.4 TREATMENT OVERVIEW

0.4.2 ORAL EXPOSURE

- A. EMESIS - Emesis is not recommended because of the potential for CNS depression and subsequent aspiration.
- B. GASTRIC LAVAGE: Consider after ingestion of a potentially life-threatening amount of poison if it can be performed soon after ingestion (generally within 1 hour). Protect airway by placement in Trendelenburg and left lateral decubitus position or by endotracheal intubation. Control any seizures first.
 - 1. CONTRAINDICATIONS: Loss of airway protective reflexes or decreased level of consciousness in unintubated patients; following ingestion of corrosives; hydrocarbons (high aspiration potential); patients at risk of hemorrhage or gastrointestinal perforation; and trivial or non-toxic ingestion.
- C. ACTIVATED CHARCOAL: Administer charcoal as slurry (240 mL water/30 g charcoal). Usual dose: 25 to 100 g in adults/adolescents, 25 to 50 g in children (1 to 12 years), and 1 g/kg in infants less than 1 year old.
- D. SYMPTOMATIC AND SUPPORTIVE TREATMENT is generally all that is required.
- E. Monitor urine output and fluid intake in symptomatic patients.
- F. Monitor blood glucose, serum acetone and urine ketones. Monitor blood gases if respiratory depression is present.
- G. Hemodialysis can enhance acetone elimination but should generally only be considered in patients with hemodynamic instability unresponsive to supportive care.

0.4.3 INHALATION EXPOSURE

- A. INHALATION: Move patient to fresh air. Monitor for respiratory distress. If cough or difficulty breathing develops, evaluate for respiratory tract irritation, bronchitis, or pneumonitis. Administer oxygen and assist ventilation as required. Treat bronchospasm with beta2 agonist and corticosteroid aerosols.

0.4.4 EYE EXPOSURE

- A. DECONTAMINATION: Irrigate exposed eyes with copious amounts of tepid water for at least 15 minutes. If irritation, pain, swelling, lacrimation, or photophobia persist, the patient should be seen in a health care facility.

0.4.5 DERMAL EXPOSURE

- A. DECONTAMINATION: Remove contaminated clothing and wash exposed area thoroughly with soap and water. A physician may need to examine the area if irritation or pain persists.

0.5 RANGE OF TOXICITY

- A. Ingestion of 200 mL has produced severe coma, hyperglycemia, and acetonuria in an adult. This would approximate a dose of 2 to 3 milliliters/kilogram.
- B. About 2 to 3 milliliters per kilogram for children may be considered a toxic oral dose.
- C. GENERAL - Ingestion of small amounts of acetone (volume and concentration) such as that found in fingernail preparations generally does not cause significant toxicity except in very young children.