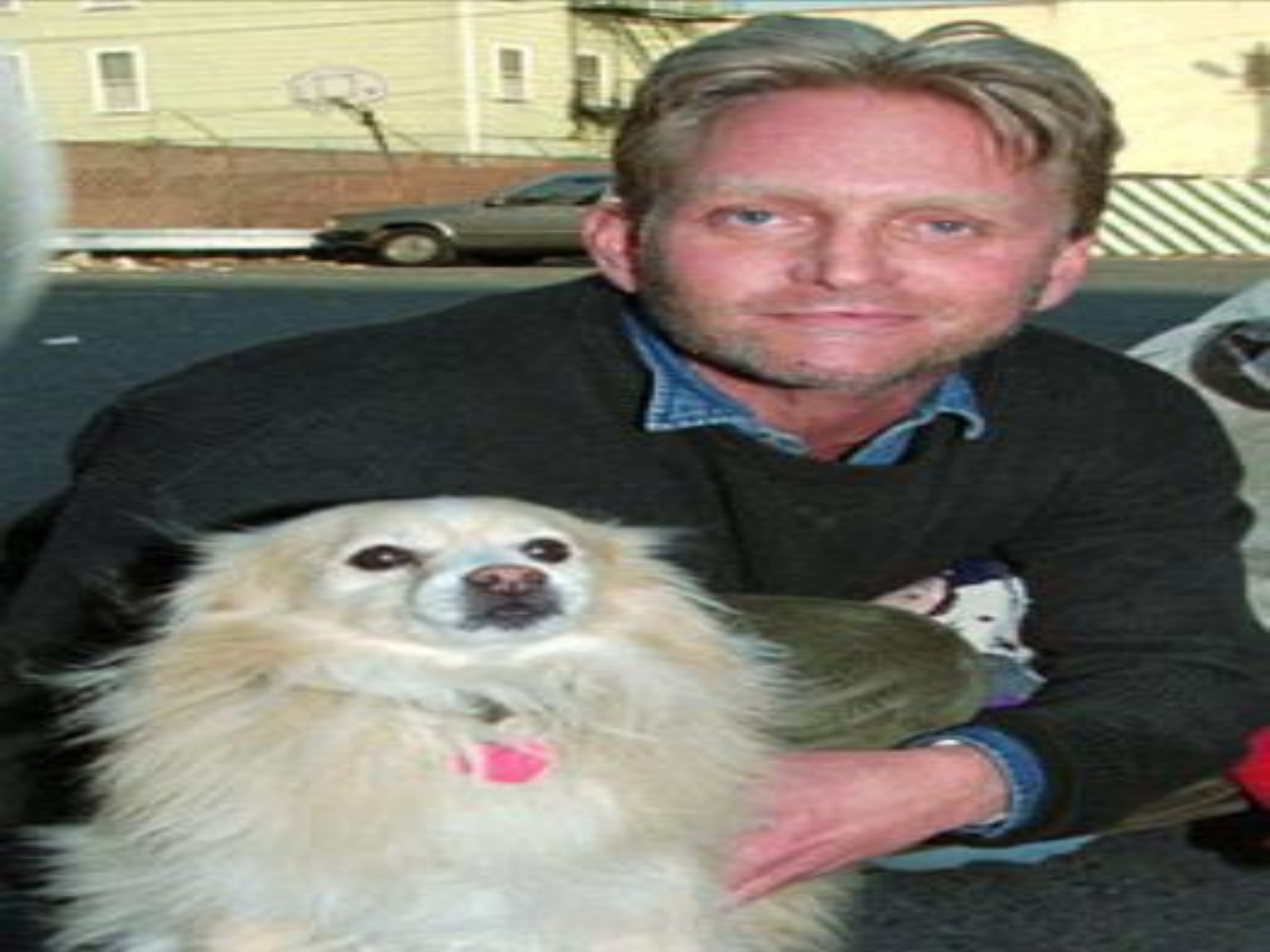
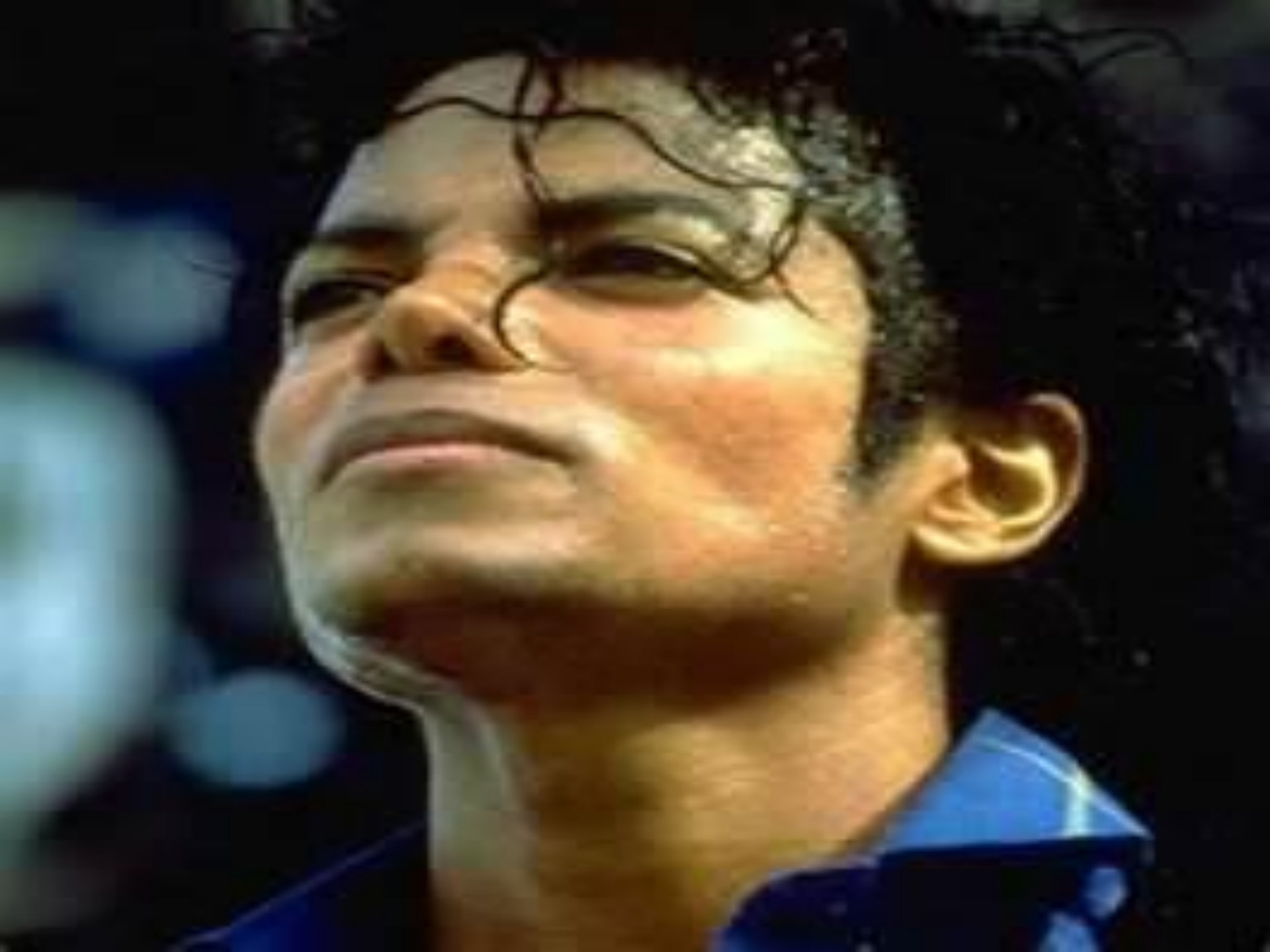
Management of Drug Poisoning

/

Mutah Faculty of Medicine





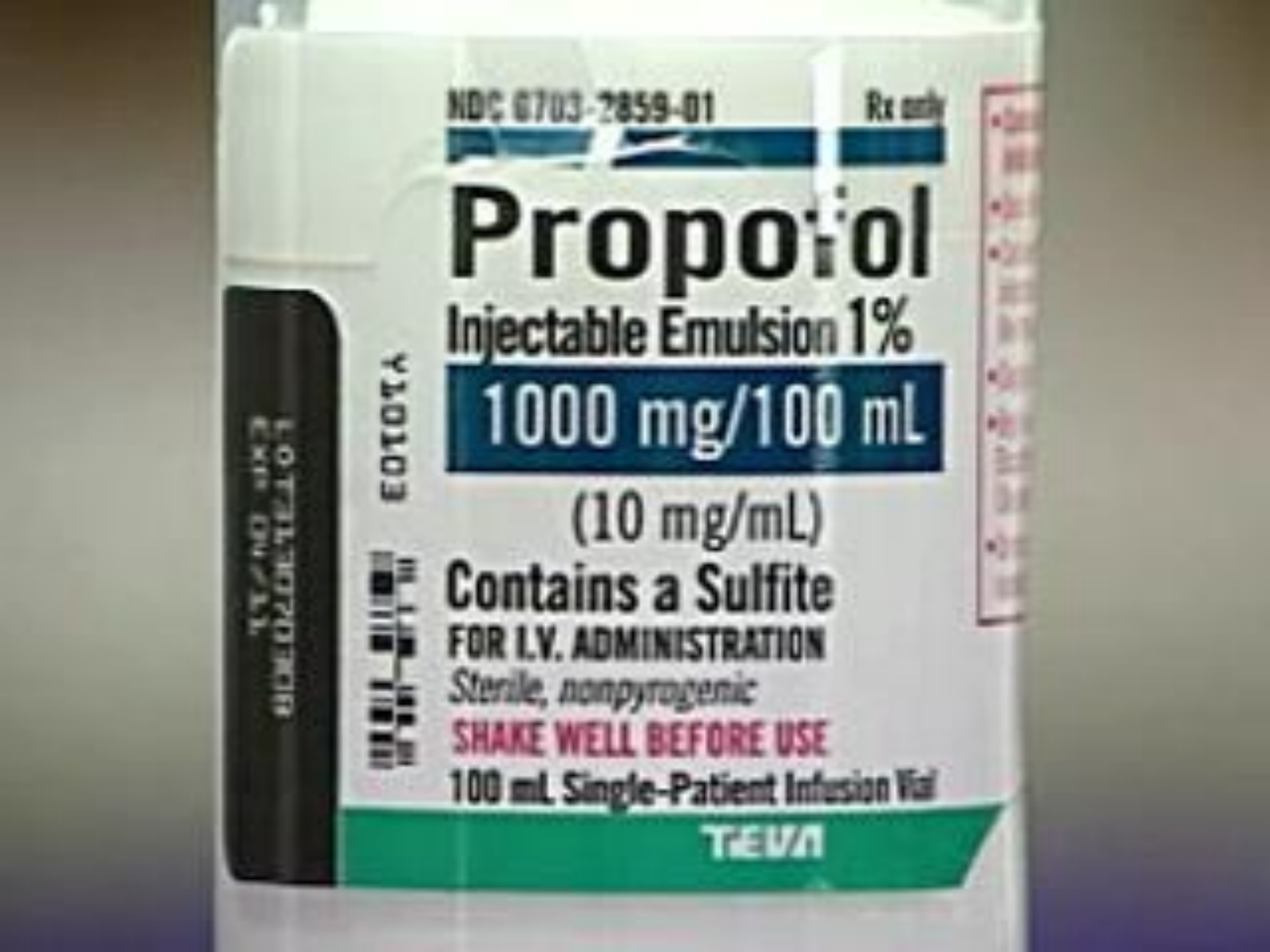

NDC 0703-2859-01
Rx only
Propofol
Injectable Emulsion 1%
1000 mg/100 mL
(10 mg/mL)
Contains a Sulfite
FOR I.V. ADMINISTRATION
Sterile, nonpyrogenic
SHAKE WELL BEFORE USE
100 mL Single-Patient Infusion Vial
TEVA

Table 1. Most frequent primary suspect drugs in overdose deaths	
Drug Name	**Deaths**
acetaminophen	115
acetaminophen/HYDROcodone	76
methadone	75
oxyCODONE	61
salicylate	49
morphine	34
fentaNYL transdermal	31
acetaminophen/diphenhydrAMINE	25
QUEtiapine	24
buPROPion	21
verapamil	20
diltiazem	16
amitriptyline	16
acetaminophen/oxyCODONE	16
cardiac glycoside	15

Poison Control Centers data for 2008[1]

Causes of death in drug poisoning

- CNS depression: Narcotics, sedative-hypnotics
- CVS toxicity: Digitalis, Cocaine
- Cellular hypoxia: Cyanide and CO
- Convulsions: Cocaine
- Organ system damage: Paracetamol
- Accidents

ABCD of Poisoning treatment

- A: Airway
- B: Breathing
- C: Circulation
- D: Dextrose

Prevention of further absorption of the poison:

- Remove patient from the toxic environment
- Measures of decontamination:
- Removing toxins from:
  - Skin
  - GIT:
    - Emesis (not in petrolium nor in corrosive poisoning)
    - Gastric lavage
    - Activated charcoal

Principles of treatment of poisoning

- ABCD of poisoning treatment
  - A: Airway, B: Breathing, C: Circulation, D: Dextrose
- Diagnosis; history, exam, investigations
- Prevention of absorption of the poison:
  - Skin, GIT (Emesis, G lavage, Activated Charcoal)
- Specific antidote
- Enhancing elimination of toxins by:
  - Haemodialysis or alteration of urinary pH

Activated charcoal

- Reduces drug absorption
- Better than emesis or gastric lavage
- Safer, easier, adsorb toxic substances
- Binds to and inactivates many drugs
- Does not bind iron, lithium, corrosive acids and alkali
- Given early within one hour of poisoning

Specific antidote

Paracetamol	Acetylcysteine
Iron	Desferoxamine
Digitalis	Digoxin antibodies
Benzodiazepines	Flumazenil
Opioids	Naloxone
OPI (CE inhibitors)	Pralidoxime

Enhancing Elimination of Toxins

- **Haemodialysis:**
  - Aspirin, Lithium, Carbamazepine
- **Urinary pH alteration:**
  - Urine alkalinazation: aspirin
  - Urine acidification: amphetamines

Examples of Common Poisoning

Paracetamol (Acetaminophen)

- Most common suicide drug
- Ingestion of 7 g total (adults) is toxic
- A highly toxic metabolite (NABQI) is produced in the liver leading to depletion of the protective hepatic glutathione
- Patient is asymptomatic initially
- After 24–36 hours, hepato-renal failure and even death may occur

Paracetamol poisoning

- Early treatment (within 8 hrs) is important
- N-acetylcysteine IV or methionine orally to increase hepatic glutathione

Pharmacokinetics of Paracetamol

- **The highly toxic metabolite is N-acetyl-p-benzo quinonimine (NABQI) conjugates with glutathione**
- **In overdose toxicity:**
  - **Excess NABQI**
  - **Glutathione depletion**
  - **Then NABQI oxidizes thiol group of enzymes**
  - **Leading to cell death**
- **Resulting in hepatic & renal tubular cell damage**

Paracetamol (Acetaminophen)

- Serum level > 200 mg/L after 4 hours of ingestion suggests a risk for liver injury
- Acetylcysteine acts as a glutathione substitute, binding the toxic metabolite
- Should be started within 8–10 hours if possible

Anti-muscarinic agents (Atropine-like drugs)

- Hot, dry, flushed skin
- Blurred vision
- Delirium
- Tachycardia, mydriasis
- Treatment is supportive

Aspirin (Salicylate)

- Ingestion of > 200 mg/kg
- Hyperventilation, respiratory alkalosis, metabolic acidosis
- Hyperthermia
- Convulsions, coma
- CV collapse

Aspirin (Salicylate)

- General supportive care
- Gastric lavage
- Activated charcoal
- IV fluid
- IV sod bicarbonate: renal elimination
- Severe poisoning: Haemodialysis

Organophosphorous insecticide poisoning

- Cholinergic crisis
  - Muscarinic & Nicotinic stimulation
- Pinpoint pupil, sweating, diarrhoea
- Urination, defecation
- Hypotension, bradycardia
- Treatment:
  - Atropine (anti-muscarinic)
  - Pralidoxime (enzyme reactivator)

Other poisoning

- **Iron:**
  - **Childhood poisoning; bleeding**
  - **Desferoxamine**

- **Opioids:**
  - **Drugs of abuse**
  - **CNS & respiratory depression**
  - **Naloxone IV**

Other poisoning

- **Carbon monoxide (CO):**
  - Colorless, odorless gas
  - Results from incomplete combustion
  - Forming carboxyhaemoglobin
  - Interfering with carrying of oxygen
  - Leading to hypoxia

- **Cyanide poisoning:**
  - Syncope, convulsions, coma
  - Treatment: Cyanide antidote kit consists of:
    - Nitrites: induce methemoglobinemia
    - Thiosulfate: converts cyanide to thiocyanate