



Clinical Practice Guidelines: Toxicology and toxinology/Organophosphate/cholinergic

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Date	February, 2021
Purpose	To ensure a consistent approach to the management of organophosphate/cholinergic poisoning.
Scope	Applies to Queensland Ambulance Service (QAS) clinical staff.
Health care setting	Pre-hospital assessment and treatment.
Population	Applies to all ages unless stated otherwise.
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Organophosphate/cholinergic

February, 2021

Organophosphates are pesticides that inhibit acetylcholinesterase enzymes, increasing the action of the neurotransmitter acetylcholine. Acetylcholine excess leads to a cholinergic syndrome that may be fatal.^[1] Carbamates are similar to organophosphates in toxicity, but the clinical features are typically less severe.^[1]

Organophosphates:

- Chlorpyrifos
- Coumaphos
- Diazinon
- Dichlorvos
- Dimethoate
- Fenthion
- Malathion
- Trichlorfon

Carbamates:

- Carbendazim
- Oxamyl
- Carbofuran
- Methomyl
- Methiocarb

Nerve agents:

- Sarin
- Tabun
- Soman
- VX

Pharmaceuticals:

- Rivastigmine
- Pyridostigmine
- Pilocarpine
- Bethanechol

Clinical features



Clinical features are of cholinergic excess. The onset can be delayed up to 12 hours with some agents. All patients with suspected exposures should be transported to hospital for assessment.

Clinical features of Muscarinic excess 'DUMBELS'^[2]

- Diarrhoea
- Urination
- Miosis (constricted pupils)
- Bronchorrhoea/bronchospasm
- Bradycardia
- Emesis
- Lacrimation
- Salivation
- Hypotension (a late sign and suggests severe toxicity)

Clinical features of Nicotinic excess

- Fasciculations
- Tremor
- Muscle weakness
- Respiratory muscle paralysis

Central effects

- Agitation
- Seizures
- Coma

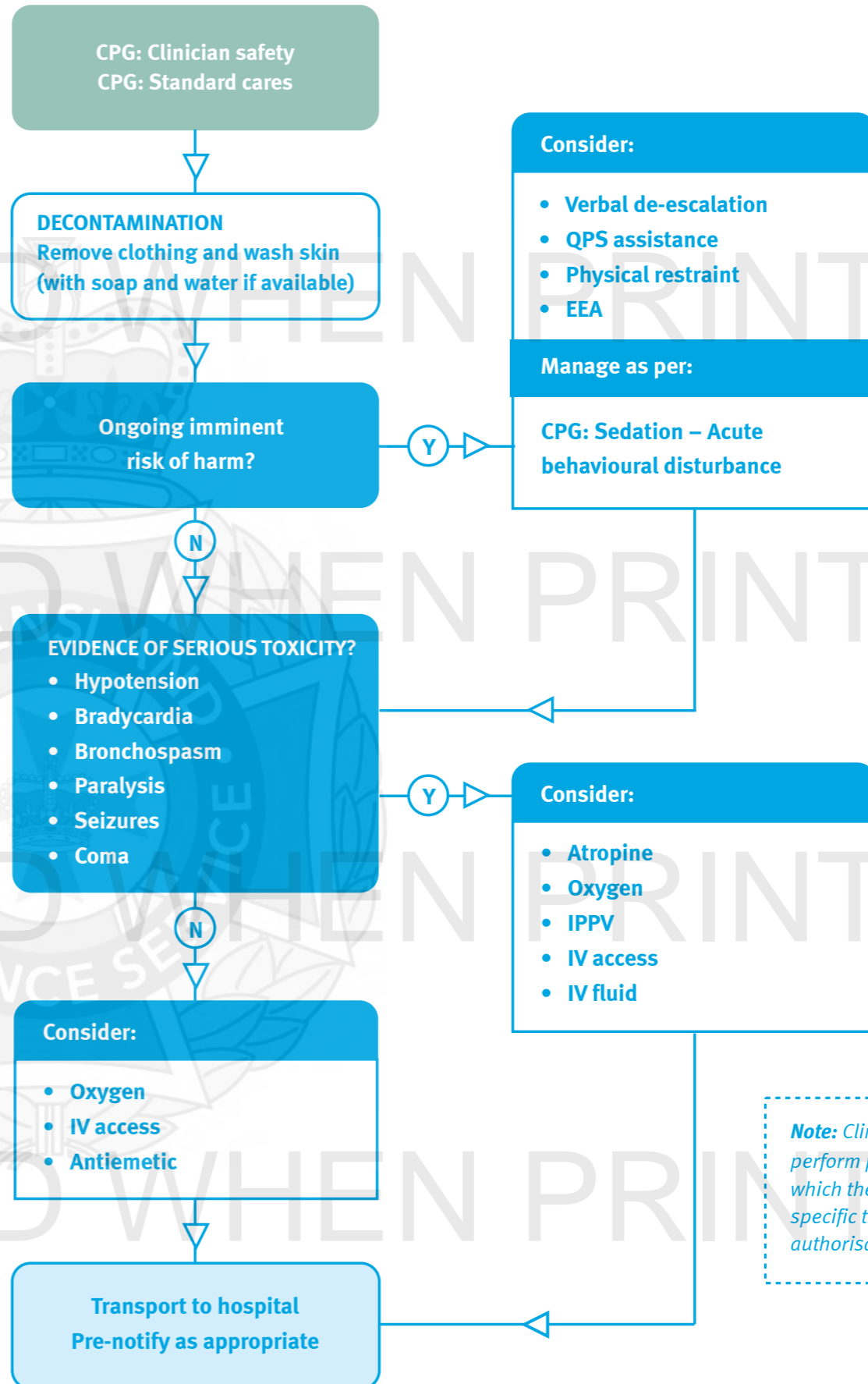
Risk Assessment



- Deliberate self poisoning can be life-threatening.^[3]

+ Additional information

- Universal precautions are sufficient to prevent contamination of others.^[4]
- Atropine is used to block the muscarinic effects of acetylcholine.^[5]
- In life-threatening toxicity, large cumulative doses of atropine may be required.
- A chemical pneumonitis can develop if the hydrocarbon solvent is aspirated.^[1]
- Cholinergic syndrome may also result from nicotinic agents (nicotine patches, tobacco products and plants) and muscarinic agents (mushrooms).
- Inhalational or dermal exposure is rarely life-threatening. The smell of an agent does not indicate exposure as it is usually the solvent and poses no toxicity risk to ambulance officers or bystanders.^[6]



Note: Clinicians must only perform procedures for which they have received specific training and authorisation by the QAS.