

# Pharmacy Bulletin

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## ORGANOPHOSPHATE (OP) POISONING : TREATMENT & MANAGEMENT

In 2008, *Murty et al* in the article published in The American Journal of Forensic Medicine & Pathology titled "**Suicide and ethnicity in Malaysia**"<sup>1</sup> studied the pattern & factors of suicide attempts among the Malaysian population. The data analysis were obtained from suicidal cases from the University Malaya Medical Centre mortuary. The study showed that suicides among males were higher compared to females (164 male (65%) versus 87 female (35%) and age group from 21-30 had the highest total cases of suicide (83 of 251; 33.1%). Among ethnic groups highest rate of suicide were among Chinese with a total of 120 cases (120 of 251; 47.8%) and the commonest method used was jumping from height (49 of 120; 41%), whereas hanging was the commonest method of committing suicide by Indians (49 of 87); while Muslims showed the lowest cases of suicide (18 of 251; 7.2%). In poisoning cases, Indian was the highest ethnic group who uses this method (20 of 37; 54.1%).

Recently 2 patients were admitted to ICU PPUKM due to Organophosphate (OP) poisoning. Both patients were in their early 20s, one ingested malathion and the other drank unidentified liquid/cleanser detergent suspected to be from the organophosphate group. Examples of organophosphates include **insecticides** (malathion, parathion, diazinon, fenthion, dichlorvos, chlorpyrifos, ethion), **nerve gases** (soman, sarin, tabun, VX), **ophthalmic agents** (echothiophate, isoflurophate) **anthelmintics** (trichlorfon) and **herbicides** (tribufos [DEF], merphos) are tricresyl phosphate-containing industrial chemicals.

Generally, signs and symptoms of organophosphate poisoning can be divided into 3 broad categories, ie muscarinic effects, nicotinic effects, and CNS effects. Mnemonics are used to remember the **muscarinic effects** of organophosphates such as **SLUDGME** (Salivation, Lacrimation, Urination, Diarrhea, GI upset, Emesis) and **DUMBELS** diaphoresis and diarrhea; urination; miosis; bradycardia, bronchospasm, bronchorrhea; emesis, excess Lacrimation. **Nicotinic signs** are presented as muscle fasciculations, cramping, weakness, tachycardia, mydriasis and pallor while anxiety, emotional lability, restlessness, confusion, ataxia, tremors, seizures, and coma are the common symptoms due to **CNS effects**.

Listed below are the drug treatment given to patients with OP poisoning:

No	Drug & Indication	Dosage	Comments
1.	<b>IV Atropine Sulphate 1mg/ml</b>  To reduce secretion and to antagonize the effects of excessive concentrations of acetylcholine at end-organs having muscarinic receptors.	IV 1-2mg/dose every 10-20min until respiratory status improves; then every 1-4 hours for at least 24 hours; up to 50mg in first 24 hours and 2g over several days may be given in severe toxication. Over 30g has been given to manage this toxicity. Can be given via IV bolus, IV infusion or IM (if IV access is not possible). Atropine can be given via endotracheal tube (ETT) alternatively.	The endpoint for atropinization is dried pulmonary secretions and adequate oxygenation. Tachycardia and mydriasis must not be used to limit or to stop subsequent doses of atropine. Individuals not poisoned or slightly poisoned by OP may develop signs of atropine toxicity (fever, muscle fibrillations & delirium). Atropine should be discontinued when this symptoms occur.
2.	<b>IV Glycopyrrolate 200ug/ml</b> To reduce bronchorrhea (common symptom of OP poisoning) to reduce salivary, tracheobronchial, and pharyngeal secretions.	Half of the dose used for atropine. Usually 7.5mg to be diluted in 200ml given as continuous infusion. Administer at a rate of 0.2 mg over 1-2 min.	For IV administration, glycopyrrolate may be administered by IM or IV without dilution. May also be administered via tubing of a running IV infusion of a compatible solution
3.	<b>Inj Pralidoxime 500mg/20ml</b> Treatment of muscle weakness and/or respiratory depression secondary to poisoning due to organophosphate anticholinesterase pesticides and chemicals	1-2g IV infusion at rate <0.2g/min. Repeat in 1-2 hours if muscle weakness has not been relieved, then at 10-12 hours intervals if cholinergic signs recur. In very severe poisoning, the dosage rate may be doubled.	Slow administration of pralidoxime is strongly recommended & can be achieved by administering the total dose in 100 ml normal saline within 30 min or longer. Alternatively can be given as a continuous infusion at 500mg/hr based on animal case studies & adult patient reports.
4.	<b>Benzodiazepines (eg diazepam, lorazepam)</b> To control seizures or agitation, as well as to maintain sedation in intubated patients.	<ul style="list-style-type: none"> <li>Diazepam : 5-10mg IV every 10-15 min initially up to max 30mg, then 5-10mg every 2-4h as required</li> <li>Lorazepam : 2-4mg IV every 10-15 min initially up to a max of 8mg</li> </ul>	

The prognosis usually depends on the aetiology of poisoning. Accidental/occupational exposures usually have a favourable outcome. About 10-20% of symptomatic patients with deliberate self-poisoning die, even in the best intensive care units. Some organophosphates (e.g., dimethoate, monocrotophos, parathion) seem to be more likely to cause death than others. Signs that indicate a highly likelihood of death are coma and refractory hypotension.

#### Reference :

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2. <http://emedicine.medscape.com/article/167726-clinical>.
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## Safety Alert !! Atomoxetine (Strattera) : Cardiovascular Changes in Children & Adolescents



Eli Lilly (M) Sdn Bhd recently sent a 'Dear Healthcare Profesional Letter' to inform on important safety information on Atomoxetine (Strattera) Tab. Atomoxetine is a selective norepinephrine reuptake inhibitor indicated for treatment of Attention-Deficit/Hyoeractivity Disorder (ADHD). There is already a **known risk of increased blood pressure and increased heart rate** with the use of STRATTERA.

Please be aware of the following newly strengthened recommendations :

- Atomoxetine should **NOT** be used in patients with **severe cardiovascular disorders** (in which their condition may deteriorate if there are clinically important increase in blood pressure or heart rate eg, **15-20 mmHg in BP or 20 bpm in heart rate**).
- **Use with caution 1)** if underlying medical conditions could be worsened by increase in BP or HR (**hypertension, tachycardia or cardiovascular or cerebrovascular disease**)  
**2) in patients with congenital long QT syndrome, acquired long QT syndrome** (eg due to concomitant use of a drug that prolongs the QT, or a family history of QT prolongation)

Because orthostatic hypotension has also been reported, atomoxetine should be used with caution in any condition that may predispose patients to hypotension, or conditions associated with abrupt heart rate or blood pressure changes.

- **Management:** Measure **Baseline heart rate and blood pressure** in all patients **periodically** during treatment to detect possible clinically important increment.
- **NOTE:** Most patients on Atomoxetine *experience a modest increase in heart rate (mean <10 bpm) and/or increase in blood pressure (mean <5mm Hg) that are not clinically important.* However, data from ADHD clinical trials show that some patients (approximately 5-10% of children & adults) do experience clinically important changes in heart rate (20 bpm or greater) or blood pressure (15-20 mm Hg or greater)
- Use cautiously with anti-hypertensive drugs & pressor agents or other drugs that increase blood pressure.

## DRUGS DISCONTINUED BY MANUFACTURER

### Nelfinavir Mesilate 50mg/g Oral Powder (VIRACEPT®)

1) Roche Pharmaceuticals has discontinued the sale and distribution of **Viracept (Nelfinavir Mesilate) 50mg/g Oral Powder** on 24/10/2011 because the demand for the powder has diminished significantly. However **Viracept 250mg tablet (dispersable\*)** is still available in the market.

\*Disperse tablet in half cup of water while thoroughly stirring with a spoon. Once dispersed, the cloudy bluish liquid should be thoroughly mixed & consumed immediately. The glass should be rinsed with a half cup of water and the rinse should be swallowed to ensure the entire dose is consumed.

### Glucovance® 250/1.25mg Tab

2) Merck Serono has terminated the supply of **Glucovance 250/1.25mg Tab**. The other 2 strengths however are **still available in the market ie 500/2.5mg & Glucovance 500/1.25mg**



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## Merry Christmas & Happy New Year

We would like to wish our Christian colleagues a **Merry Christmas** & to all:  
**Happy New Year!**

*May the good times & treasures of the present  
become the golden memories of tomorrow.*

