DRUG OVERDOSE/ACUTE POISONING

Poisoning can be accidental or intentional. Whatever the cause, the episode should be taken seriously and treatment started promptly. If there are any doubts about the poison, the risks or the management consult:

TOXBASE – www.spib.axl.co.uk (register for a password on the website)
National Poisons Information Service (NPIS) on 0870 600 6266

Assessment and management

1. Ensure you are in no danger (eg from vapour or fumes). Remember that patients collapsed in a contaminated atmosphere should only be removed by those with breathing apparatus and a lifeline.

2. Ensure that any continuing danger to the patient is minimised. Remove the patient from sources of poisoning such as contaminated clothing (do not destroy) or inhaled gases.

3. Assess the need for basic resuscitation. Check whether the patient's:
   - **A**irway is patent
   - **B**reathing is satisfactory. If the breathing has stopped or the pulse is absent call for an ambulance (♥♥♥♥) and start basic life support – see page 5 for children or page 7 for adults (use a non return face-mask if possible)
   - **C**irculation is adequate (control severe bleeding).

2. If the patient is unconscious, follow the advice as for coma (see page 28).

3. Check for hypoglycaemia (blood glucose less than 4.0mmol/L) and if present give glucagon IM or glucose IV (see page 39).

4. Give oxygen in as high a concentration as possible, except in the initial management of paraquat poisoning when oxygen may exacerbate damage to the lungs.

5. If an opiate overdose is suspected, and the patient has depressed respiration, or impaired consciousness, give naloxone (for dose see page 33). If IV access is not possible naloxone may be given IM but remember that the onset of action will be slower and the effect longer lasting.

6. If the patient is hypotensive start fluid replacement with, for example, sodium chloride 0.9%.

Diagnostic pointers to drugs taken in overdose

Respiratory rate	fast	aspirin
	slow	opiates, CNS depressants
Heart rate	fast	antidepressants, sympathomimetics, amphetamines, cocaine
	slow	beta-blockers, clonidine

Blood glucose	raised	corticosteroids, thiazide diuretics, theophylline, iron, caffeine, β_2 agonists, calcium channel blockers
	lowered	insulin, sulphonylureas, salicylates, sodium valproate, propranolol
Blood pressure	raised	amphetamines (including ecstasy), cocaine
Pupils	large	tricyclics, anticholinergics, ephedrine, antihistamines, amphetamines, cocaine
	small	opiates, cholinesterase inhibitors (organophosphates)
Temperature	raised	amphetamines (including ecstasy), cocaine, aspirin
	lowered	tricyclics, barbiturates, phenothiazines
Consciousness	coma	barbiturates, tricyclics, opiates, benzodiazepines, ethanol, methanol, ethylene glycol

Secondary assessment

The clinical situation needs to be assessed, but in some circumstances this will have to be brief (resuscitation, for example, takes priority). Note down the following information about basic exposure:

- time of incident
- extent of exposure (dose and duration)
- route of exposure (inhalation, ingestion, skin contact, injection, bite or sting)
- product name (ingredients, amount, manufacturers name)
- whether intentional or accidental (see Appendix 5 for a guide to assessment of suicide risk).

Take a general history from the patient (or a witness) if possible, noting:

- personal details
- medical history (toxicity may be worsened by particular underlying illnesses)
- details of the substance and the amount taken (look at, and keep any 'used' containers).

In general, take the patient's history at face value accepting that in some patients it may prove to be unreliable. Remember that a potentially fatal overdose of some drugs, such as paracetamol, may not cause symptoms for hours.

Activated charcoal to reduce drug absorption from the gut

If you carry activated charcoal it is worth giving if:

1. The patient presents *within 1 hour* of ingestion of a potentially toxic amount of a drug known to be adsorbed by charcoal; such drugs include:

2.

Analgesics	dextropropoxyphene, paracetamol, NSAIDs, salicylates
Antidepressants	SSRIs, tricyclics
Antiepileptics	carbamazepine, phenobarbitones, phenytoin, valproate
Cardiac drugs	amiodarone, calcium channel blockers, digoxin, disopyramide
Miscellaneous	dapsone, quinine, theophylline

3. The patient presents *1-2 hours after* ingestion of a potentially toxic amount of drug adsorbed to charcoal and known to delay gastric emptying such as salicylates (these require multi-dose activated charcoal), opioids, tricyclic antidepressants or sustained release preparations, eg theophylline.
   The initial **dose of activated charcoal** is:

Child under 12 years	25g (1g/kg in children under 1 year)
Adult	50g

Contraindications - Charcoal should not be given if the drugs are not adsorbed by activated charcoal, such as metals, alcohols, acids and alkalis, or the conscious level is depressed.

Referral advice

- Patients who have developed, or are at risk of developing, life-threatening features should be referred to hospital immediately (♥♥♥♥).
- Patients who have developed features that are not immediately life-threatening (eg vomiting, hyperventilation) should be referred urgently (♥♥♥).

In patients without clinical features, factors that influence referral include:

- the possible drug or toxin taken (with some drugs deterioration occurs late)
- the quantity of drug or toxin taken and length of time since taken
- seriousness of any suicidal intent (see Appendix 5 for features indicating high suicide risk)
- social support (ie whether the patient could be cared for at home).

If possible, and as appropriate, discuss the implications of any overdose with the patient, considering possible referral to specialist psychiatric services.

Non-accidental poisoning in children

Non-accidental poisoning is an uncommon but important form of child abuse. Be suspicious if the child deteriorates unexpectedly following attention by a carer, particularly if this is a repeated event. Once the acute emergency has been dealt with, if you consider the child is, or may be, in need of protection, refer the child and family to social services. If you consider a crime may have been committed, contact the police as soon as possible.

SYMPTOMS AND SOME SPECIFIC MEASURES

Alcohol - Excess alcohol may cause slurred speech, confusion and aggression and puts the patient at risk of aspiration of vomit. If the patient is unconscious follow the advice given for coma on page 28. Wernicke's encephalopathy requires immediate referral (♥♥♥♥**)** for urgent thiamine infusion. Remember to be aware of the possibility of traumatic head injury or hypoglycaemia and do not simply ascribe confusion to alcohol.

Benzodiazepines - Symptoms of overdose range from drowsiness, ataxia and nystagmus to hypotension, respiratory depression and coma. Problems

are particularly likely to arise if the benzodiazepines have been taken with alcohol or another CNS depressant.

Carbon monoxide - Immediate features of exposure include headache, weakness, tachypnoea, dizziness and agitation. Impaired consciousness, respiratory failure, myocardial infarction and cerebral oedema may occur in severe cases. If several people experience symptoms such as headache and vomiting, it is important to consider carbon monoxide poisoning as a possible cause. Give oxygen in as high a concentration as possible while awaiting transfer to hospital.

Caustic chemicals - Ingestion of caustic chemicals may cause severe burns and oedema of the mouth, pharynx, upper airway and upper GI tract. If the patient is conscious and able to swallow give water or milk (3 cupfuls) to dilute the acid or alkali. Do not give neutralising chemicals as the heat released can cause further injury. If vomiting occurs, the oesophagus may be damaged.

Iron tablets - Early symptoms of iron overdose include nausea, vomiting, abdominal pain and diarrhoea. Any patient presenting with these symptoms, or a history of these symptoms, should be referred to hospital even if the symptoms have settled. The patient's vomit and stools may be grey or black. Haematemesis and rectal bleeding may occur and in severe cases coma and shock. Most patients, especially children, will need measurement of serum iron, possibly gastric lavage or whole bowel irrigation, and treatment with desferrioxamine.

Monoamine oxidase inhibitors (MAOIs) - Symptoms, which can be delayed for up to 12 hours after ingestion, include: tremor, sweating, agitation, tachycardia and hyperthermia. Hyper or hypotension may occur and in severe cases the patient may have seizures, respiratory depression and/or cardiac arrest. If the patient presents within one hour of ingesting a potentially toxic amount, give activated charcoal (for dose see page 31) whilst awaiting transfer to hospital.

Opioids - Features of opioid poisoning include a progressive depression of the central nervous system (leading to coma) and respiration (leading ultimately to respiratory arrest). Patients will usually have pinpoint pupils. They may also have hypotension, tachycardia and/or be hallucinating. Initial management depends on the patient's level of consciousness:

- if the patient is conscious and presents within 1 hour of ingesting a potentially toxic amount of an opiate then give activated charcoal (for dose see page 31)
- if the patient has respiratory depression or impaired consciousness then give naloxone and continue to monitor the patient for recurrence of CNS and respiratory depression.

	Dose of Naloxone
Child[1] 1 month-12 years	10 micrograms/kg IV, if there is no response then give 100 micrograms/kg IV (max dose 2mg)
Adult	0.4-2mg IV[2] every 2-3 minutes to a maximum of 10mg

[1]See Appendix 2 for table of age/body weight estimates.
[2]If IV access is not possible the dose can be given IM or SC.

Naloxone should reverse the features of toxicity for at least 10-30 minutes. The duration of action of some opioids (for example, dihydrocodeine, dextropropoxyphene and methadone) can outlast that of an IV or IM dose of naloxone and deterioration may later occur despite initial reversal. Repeated doses, or an infusion, of naloxone may be required. Remember that naloxone may not fully reverse the effects of buprenorphine. If no response is observed after the second dose of naloxone then the diagnosis of opioid toxicity should be questioned.

Paracetamol - As little as 10-15g or 150mg/kg (75mg/kg in 'high-risk' patients) of paracetamol taken within 24 hours may cause severe hepatocellular necrosis. 'High-risk' patients include those taking enzyme inducing agents (eg phenytoin, rifampicin), those who regularly drink alcohol in excess, and those with conditions causing glutathione depletion (eg those with eating disorders, malnutrition or HIV infection). Nausea and vomiting, the only early features of poisoning, usually settle within 24 hours. A potentially fatal outcome following overdose with paracetamol can be prevented if an antidote is given as soon as possible, preferably within 10-12 hours of ingestion. All patients should be referred to hospital for measurement of plasma-paracetamol concentrations and treatment. If the patient presents within one hour of taking a paracetamol overdose, give activated charcoal (for dose see page 31) whilst awaiting transfer to hospital.

Salicylates - Common features of toxicity include tinnitus, vomiting, dehydration, sweating, warm extremities and increased respiratory rate. Severe poisoning can cause coma, convulsions and cardiovascular collapse (such features are rarely seen in children). The patient is likely to be conscious for many hours, even after a large overdose. Salicylate absorption may be slow, especially from sustained-release preparations, so plasma-salicylate levels should be measured. If the patient presents having ingested a potentially toxic amount, give activated charcoal (for dose see page 31) whilst awaiting transfer to hospital.

Selective serotonin re-uptake inhibitors (SSRIs) - these may cause few or no symptoms even after a large overdose. However, many patients experience gastro-intestinal upset and drowsiness, while some develop tachycardia, muscle stiffness and hypertension. Convulsions may occur sometimes up to 10 hours later. If the patient presents within 1 hour of ingesting a potentially toxic amount give activated charcoal (for dose see page 31) whilst awaiting transfer to hospital.

Tricyclic antidepressants - features of overdose include tachycardia, hypotension, arrhythmias, dry mouth, dilated pupils, brisk reflexes and urinary retention. Convulsions, respiratory depression and coma can occur. If the patient presents within one hour of ingesting a potentially toxic amount give activated charcoal (for dose see page 31) whilst awaiting transfer to hospital.