

## **The doctor's bag**

### **What do you really need?**

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**Background.** The doctor's bag should contain essential drugs to treat life-threatening emergencies and other serious medical conditions. Practitioners may require these drugs for treating patients in their offices, on home visits and particularly in rural practice for emergency home and roadside calls.

**Objective.** To evaluate which medications and equipment need to be included in the doctor's bag.

**Discussion.** The selection of the most appropriate drugs provided by the Pharmaceutical Benefits Scheme (PBS) is discussed. Oral and inhaler preparations for certain specific conditions are also included. Storage and safe keeping of drugs is an important consideration.

### **Deciding what you really need**

In choosing the essential drugs it is better to use a limited number of the more common items that are relatively safe and simple to use. The choice of drugs depends on several factors including:

- your practice location,
- the type of clinical conditions likely to be encountered,
- the shelf life and climatic vulnerability of the various drugs (eg, antibiotics, vaccines),
- cost and size of your doctor's bag.

More sophisticated drugs such as those used in cardiac emergencies are best reserved for hospital use.

### **Drugs**

Essential injectable drugs are listed in Table 1. Non injectable drugs that this author considers essential include soluble aspirin, glycerol trinitrate (a sublingual spray is more stable than tablets), indomethacin suppositories (for renal colic), and salbutamol aerosol (Table 2). Other medications that could be considered for inclusion are non injectable oral sedatives or hypnotics, analgesics, antibiotics and antiemetics.

## Equipment

Depending on space this can include a thermometer, anaeroid sphygmomanometer, auroscope and ophthalmoscope diagnostic set, tongue depressors, tourniquet, syringes, intravenous cannulae, needles, swab, torch, oral airway (eg, Revivatube, Guedel or a Laerdal pocket mask) and a spacer device for salbutamol.

**Table 1. Doctor's bag essential injectable drugs**

- Adrenaline
- Benztropine
- Benzylpenicillin
- Diazepam
- Frusemide
- Glucagon
- Haloperidol
- Hydrocortisone sodium succinate
- Metoclopramide
- Morphine
- Naloxone
- Prochlorperazine
- Promethazine.

Some practitioners especially those practising in more remote areas (particularly where an ambulance service is not readily available) carry a portable ECG and defibrillator, for example, Heartstart.

**Table 2. Doctor's bag additional non-injectable drugs**

- Aspirin soluble (oral)
- Glyceryl trinitrate spray
- Indomethacine suppositories
- Salbutamol inhaler
- Temazepam capsules.

The usual stationery items include a script pad, records, including dangerous drug record, pens and a referral form for the accident and emergency department.

## Management of specific problems

### Pain

Morphine sulphate (15 mg/mL).

Uses:

- relief of severe pain such as myocardial infarction, biliary colic and renal colic;
- acute pulmonary oedema.

The usual dose for the above conditions is 5-10 mg by slow intravenous (IV) injection. This is usually combined with an antiemetic such as metoclopramide (10 mg/2 mL) injection to reduce the likelihood of vomiting, a common adverse effect of morphine.

Pethidine can be used in a variety of severe painful conditions but its efficacy is now questionable and dependence is an issue so it may be appropriate to carry morphine only.

### Indomethacin suppositories

These should be considered for analgesia to supplement management of renal colic.

### Paracetamol

Paracetamol (500 mg tablets or 120 mg/5 mL paediatric oral suspension) is useful for mild to moderate pain.

**PBS emergency drugs:** both morphine and pethidine are available and their use should be carefully recorded.

### Migraine: moderate to severe cases

Most cases respond to simple analgesics and an oral antiemetic but moderate to severe cases may require parenteral treatment. The options in probable order of effectiveness are listed in Table 3.

### **Table 3. Treating migraine - the options**

Prochlorperazine	12.5 mg IV
Chlorpromazine	0.5-1 mg/kg IM
Metoclopramide	(10 mg/2 mL) 10 mg IV
Metoclopramide	10 mg IV
<i>plus</i>	
Dihydroergotamine mesylate	(1 mg/mL) 0.5-1.0 mg IV
Haloperidol	5 mg IM or IV
Sumatriptan	6 mg SC
Pethidine	IM injection may be effective for intense migraine but is best avoided.

**PBS emergency drugs:** metoclopramide, dihydroergotamine and pethidine are available; sumatriptan is not available and is relatively expensive.

### **Opiate respiratory depression**

#### **Naloxone HCL (2 mg/5 mL, ie, 0.4 mg/mL)**

This is an essential component of the doctor's bag for treatment of the ever increasing number of patients who present with the adverse effects of opiates, especially street drugs. The dosage is 0.4 mg IV or intramuscular (IM) initially; repeated at 2-3 minute intervals as necessary. Other options include 0.2 mg IV and 0.2 mg IM simultaneously or 0.4 mg IM or subcutaneous (SC) and 0.4 mg IV. Care has to be taken in case respiratory depression recurs or excessive dosage gives neurogenic pulmonary oedema. Respiratory support can be given with a pocket mask.

### **Myocardial infarction**

#### **Aspirin**

One or one half of a 300 mg soluble tablet is first line treatment.

#### **Glycerol trinitrate spray or tablets**

One dose buccal or sublingual initially and then every 5 minutes if necessary (maximum 3 doses).

#### **Morphine sulphate**

Give 5 mg by slow IV injection (with antiemetic). Sometimes 5 mg IV statim bolus is more practical.

## **Metoclopramide**

Give 10-20 mg IV: as antiemetic.

## **Thrombolytics and anticoagulants**

Thrombolytics and anticoagulants such as **streptokinase** and **heparin** can be given but are best deferred until the patient is in the hospital setting and following the usual precautionary guidelines.

## **Arrhythmias**

The management of arrhythmias in the non hospital setting without monitoring is controversial.

**PBS emergency drugs:** the provision is quite generous with atropine, lignocaine and verapamil being available mainly for symptomatic sinus bradycardia, ventricular tachycardia and paroxysmal supraventricular tachycardia respectively. Digoxin used for atrial fibrillation and atrial flutter is not available and this decision is in keeping with the recommendation that it should be used only in a controlled hospital setting.

## **Acute left heart failure**

Patients with acute pulmonary oedema will need to be admitted to hospital but before admission, treatment includes:

### **Frusemide (20 mg/2 mL injection)**

Give 20-80 mg IV (at maximum rate of 4 mg/minute); depending on current usage. It is usual to administer double the dosage if the patient is already taking it orally. For the patient not previously exposed to it, 20-40 mg IV usually suffices.

### **Morphine (5-10 mg IV slowly plus metoclopramide 10-20 IV)**

This is recommended only for chest pain associated with myocardial ischaemia (about 30% of patients have an underlying acute myocardial infarction). For painless acute pulmonary oedema morphine is not routinely used.

### **Glyceryl trinitrate spray (1 dose)**

Most cases of acute pulmonary oedema are due to pressure overload (rather than volume overload) which mean that the current preferred treatment is controlled positive airways pressure (CPAP) delivered by mask.

**PBS emergency drugs:** all these drugs are listed.

### **Hypoglycaemia**

In the PBS list, only glucagon is listed. Glucagon (1 mg/mL) may be given SC, IM or IV injection if oral therapy is not possible. A 50% glucose solution IV is the best way to reverse a deep hypoglycaemic coma but can be difficult to administer and extravasation should be avoided. Hence glucagon followed by oral intake of glucose is preferred if possible.

### **Acute allergic reaction**

#### **Anaphylaxis**

The first line treatment is adrenaline. The adult dose is 0.3-0.5 mg (1:1.000) SC or IM (more severe). This can be repeated every 5-10 minutes if necessary.

If no rapid improvement additional measures include:

- Adrenaline (1 in 10.000) 5-10 mL IV over 2-5 minutes;
- Salbutamol aerosol inhalation or nebulisation if severe;
- Promethazine (50 mg/2 mL solution) 10 mg IV slowly;
- IV fluids;
- Glucagon 1 mg IM or IV (if very severe);
- Hydrocortisone (2-6 mg/kg IV).

All patients who have received adrenaline should be admitted to hospital.

#### **Angioedema and acute urticaria**

Give promethazine 25 mg IM and add adrenaline 0.3 mg SC if there is respiratory involvement or tongue swelling.

#### **Asthma**

The first line of treatment for asthma is:

- Salbutamol (1 mg/1 mL solution) 2.5-10 mg by nebuliser or eight puffs of salbutamol spray into a spacer (preferred).
- Ipratropium bromide (250 microg/mL solution) 250-500 microg by nebuliser can be added.
- Hydrocortisone in both adults (200 mg IV, 6 hourly) and children (4 mg/kg IV, 6 hourly) is recommended. For less severe cases, oral corticosteroids may suffice.

In severe cases give:

- Adrenaline 0.5 mg (adult) IM or SC; 0.3 mg (children).

For anaphylaxis or imminent cardiorespiratory arrest:

- Adrenaline 0.5 mg (adult); 0.3 mg (children) IV or transtracheally.

Parenteral terbutaline, salbutamol and aminophylline are usually unhelpful.

### **Convulsions (generalised status)**

Diazepam (10 mg/2 mL), give 5-20 mg IV (rate not exceeding 2 mg/min).

**Note:** diazepam can be given rectally by diluting 10 mg in 5 mL of isotonic saline and introduced via the nozzle of a syringe into the rectum (10-20 mg in adults; 0.4 mg/kg in children). However, it is very slow acting and has limited value. Clonazepam 1-2 mg IV and midazolam 0.05-0.1 mg/kg IM are often used to control seizures especially focal seizures.

**PBS emergency drugs:** diazepam only is available. Rectal diazepam kits are not available in Australia.

### **Infections**

#### **Benzylicillin (600 mg vial)**

The main indication for this drug is in children with suspected meningococcaemia - 60 mg/kg IV (to a maximum of 4 g) statim (preferably after blood taken for culture). The other indication is for moderately severe pneumonia requiring parenteral therapy - 600 mg IV in adults. If given outside hospital it will not interfere with diagnosis.

A third generation cephalosporin such as cefotaxime could be carried in the doctor's bag but is less important since the reduction in cases of acute epiglottitis.

Benzylicillin, procaine penicillin and erythromycin are the listed antibiotics. However, a case could be made for not carrying any of these drugs with perhaps the exception of benzylicillin.

## **Psychiatric emergencies**

### **Antipsychotic agents**

Haloperidol (5 mg/mL) is preferable to chlorpromazine (50 mg/2 mL) for acute psychotic emergencies.

It is favoured initial drug for psychotic delirium (10 mg IM), for acute schizophrenia (5-10 mg IV or IM) and acute mania in an uncooperative patient (10 mg IV or IM).

### **Diazepam**

Diazepam tablets or injection (10 mg/2 mL) has a variety of recommended uses namely:

- acute anxiety and panic disorder: 5 mg orally bid or 5 mg IV;
- delirium with anxiety and agitation: 5 mg orally bid or 5 mg IV;
- the acutely disturbed or agitated patient: 10-20 mg orally or 5-20 mg IV;
- agitated schizophrenia and acute mania (to supplement haloperidol) 10-20 mg orally or 5-10 mg IV.

**PBS emergency drugs:** Haloperidol, chlorpromazine and diazepam are available in injections.

### **Movement disorders from antipsychotic medication**

A dose of benztropine mesylate (2 mg/2 mL), given 1-2 mg IV or IM is used for movement disorders.

This is available on PBS.

### **Vomiting**

Several drugs are available as 'Doctors Bag' supplies but care should be taken with injections of these drugs in children and the frail who are susceptible to extrapyramidal adverse effects of antiemetic drugs.

### **Metoclopramide (10 mg/2 mL)**

This can be used for most causes of vomiting especially alimentary causes give 10 mg IV or IM over 1-2 minutes.



### **Prochlorperazine (12.5 mg/mL)**

Intramuscular or IV is preferred for labyrinthine causes of vomiting.

### **Haloperidol (5 mg/mL)**

1-2 mg IM is recommended in malignant disease especially if vomiting is due to morphine.

### **Diazepam (10 mg/2 mL)**

A dose of 5 mg IV is effective if vomiting is due to Ménière's disease.

### **Promethazine (50 mg/2 mL)**

Use 25 mg IM for severe travel sickness (eg, sea sickness).

**PBS emergency drugs:** All these drugs are available.

### **Conclusion**

This review includes current recommendations for the minimum number of essential drugs to carry in the doctor's bag. The evidence favouring the use of pethidine over morphine for biliary and renal colic is not convincing and thus it is only necessary to carry the one injectable opioid. Obviously individual GPs have their own preference based on their experience.

### **Summary of Important Points**

- Choice of drugs carried depends on practice location, clinical conditions likely to be encountered, shelf life and storage requirements, cost and the size of the doctor's bag.
- More sophisticated drugs such as those used in cardiac emergencies are better reserved for hospital use.
- Opioid use should be carefully recorded.
- Carrying morphine as the only injectable opioid may be appropriate because of dependency and efficacy issues for pethidine.
- Pain management, migraine, opiate respiratory depression, myocardial infarction, acute heart failure, hypoglycaemia, acute allergic reactions, asthma, convulsions, infections and psychiatric emergencies need to be considered in choosing drugs.