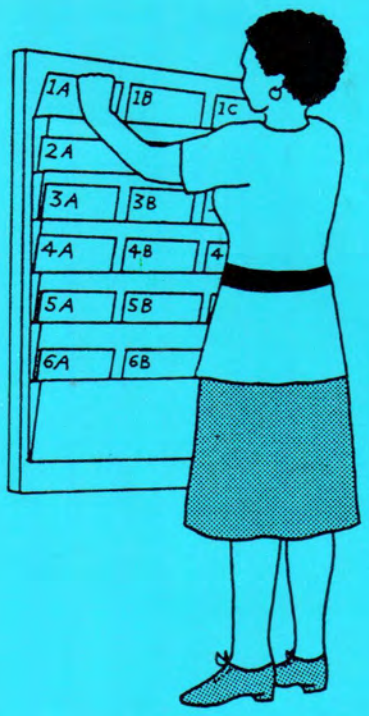
## How to manage a

# Health Centre Store

Building
Layout
Equipment
Managing supplies




# How to Manage a Health Centre Store

## Updated second edition

# Acknowledgements

Updated from the first edition, entitled *How to Look After a Health Centre Store*, by Anthony Battersby. The first edition was produced with the help of Sam McCarter, Richard Inglis Associates and Denise Ayres. The following people also provided help, advice and encouragement: Barbara Bubb, James Burton, Jenny Cameron, Monica Cheesbrough, James Cheyne, Ben Essex, Vic Evans, Alan Fields, John Lloyd, Rosemary MacMahon, David Morley, Gordon Perkins, Martin Phillips, Colin Rogers, John Seaman, Stephanie Simmonds, Paul Sherlock, Eva Skalla, Godfrey Walker, Mark Wells.

The updating and revisions to the second edition were done by Nina Behrman and Kathy Attawell with the generous help of Carolyn Green of ECHO International Health Services, Richard Laing of Management Sciences for Health, Paul Spivey of the School of Pharmacy, The Robert Gordon University and O Brasseur, J F Dunne, Hans Hogerzeil and J S Lloyd of the World Health Organization. Additional illustrations by Ingrid Emsden and production by Celia Till.

**Financial support for the first edition was given by the Mrs Platt-Mills Charitable Trust.**

**The production and printing of this updated second edition was made possible with the support of the States of Jersey.**

Updated second edition

Published by the Appropriate Health Resources and Technologies Action Group (AHRTAG), Farringdon Point, 29–35 Farringdon Road, London EC1M 3JB, UK.



ISBN (AHRTAG) 0 907320 25 2

Printed and bound in England by Russell Press Ltd.

## Foreword to the first edition

Proper management of health centre stores is a vital component in the effective organisation and operation of supply chains for primary health care programmes. One of the main problems faced by health centres in developing countries is how to maintain a steady and reliable supply of essential drugs. This book is especially welcome at a time when it is crucial to increase efficiency of use of available health resources.

It provides basic guidelines for simplified, but sound, approaches for those responsible for running a health centre's medical store. How to store essential drugs and other basic supplies properly, how to arrange for re-ordering of supplies and how to organise store-keeping to make the most efficient use possible of the available supplies.

**James Grant**
**Executive Director, UNICEF**

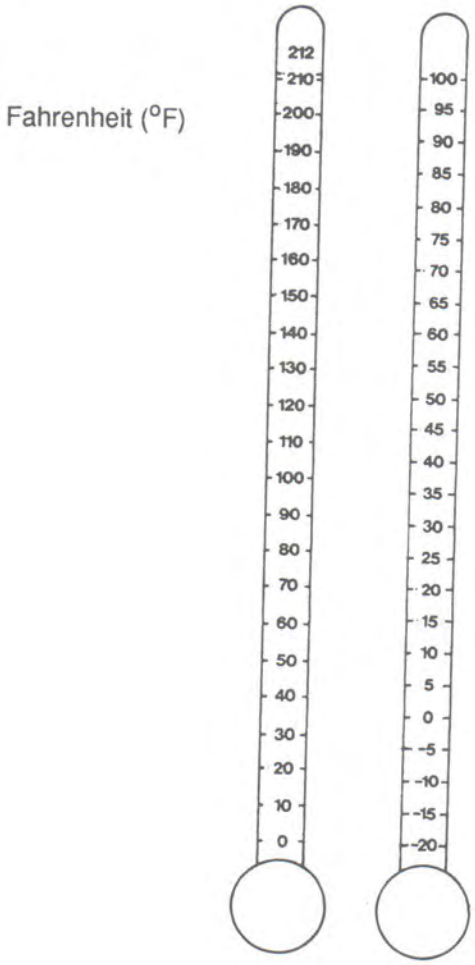
## Introduction to the updated edition

Since *How to Look After a Health Centre Store* was first published in 1983, there have been many improvements in our knowledge about the best way to manage stores and supplies. Shortages of resources, however, remain a problem in many developing countries, and there is still a need for basic guidelines for health workers and others responsible for managing and maintaining a reliable supply of essential drugs.

Stocks of the first edition have been exhausted and, in order to meet demand, AHRTAG is pleased to be able to reprint this updated version. This version has been given a new title, *How to Manage a Health Centre Store*, and information in some sections has been updated where guidelines have changed. It also includes examples of lists of essential drugs and some new illustrations. Comments and feedback from readers would be very welcome and will help us to plan revisions to future editions of the manual.

# Metric-imperial conversion

## Temperature

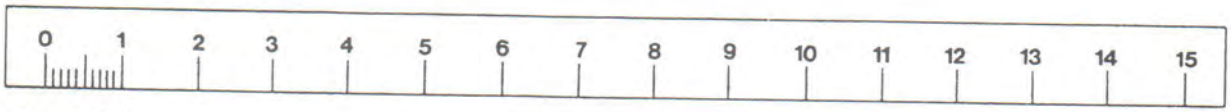



$^{o}C = 5/9\ (^{o}F - 32)$

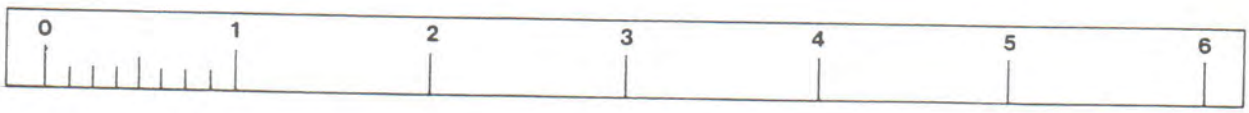
$^{o}F = 9/5\ (^{o}C + 32)$

## Length

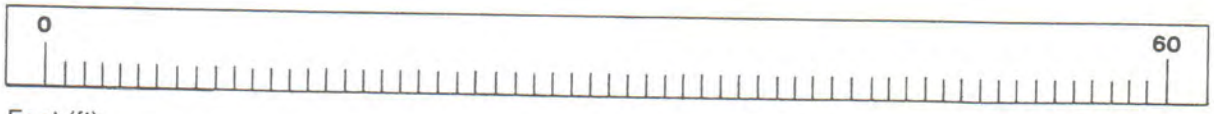
Centimetres (cm)



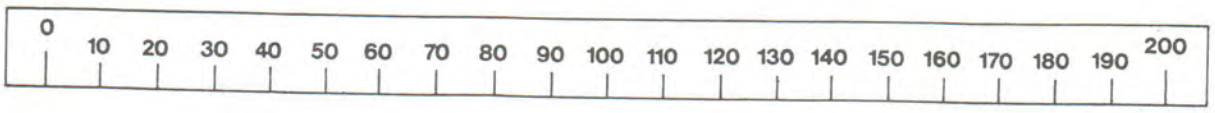

Inches (in)




Metres (m)




Feet (ft)




| | | |
|---|---|---|
| **Length** | 1ft = 1m ÷ 3.3 | 1in = 2.5cm |
| **Area** | $1ft^2 = 1m^2 \div 11$ | |
| **Volume** | 1 pint = 1.76 litres | $1\ ft^3 = 30$ litres |

# Contents

SECTION 1

# Planning and preparing the store

**This section helps you decide on the size of the store, where to locate it and how to prepare it.**

## The size of the store

This depends on how often you receive supplies and the quantities you have to store. Supply intervals at a health centre usually range from one month to six months.

**In your store keep:**

- drugs (you need to keep vaccines and sera, blood and some injectables in a refrigerator)
- contraceptives
- dressings
- laboratory chemicals and supplies (such as slides)
- other consumable items, such as record cards, cleaning materials, insecticide, kerosene, torch batteries, syringe needles, plastic tubing and spatulas, disinfectants and antiseptics
- equipment such as wheelchairs, stretchers, splints and sterilisers.

You will also need space for a desk and a chair.

The following will help you to decide how much floor space you will need:

| Number of people your clinic serves | Supply intervals | Area of store* |
|---|---|---|
| 10,000 | 2 months | 10 $m^2$ |
| 10,000 | 4 months | 20 $m^2$ |
| 20,000 | 2 months | 20 $m^2$ |
| 20,000 | 4 months | 40 $m^2$ |
| 40,000 | 2 months | 40 $m^2$ |
| 40,000 | 4 months | 80 $m^2$ |
| 80,000 | 2 months | 80 $m^2$ |
| 80,000 | 4 months | 100 $m^2$ |

**Throughout this book metric dimensions and sizes are used. If you use imperial dimensions and sizes, a conversion chart is shown before the contents section.*

## Where to locate the store

If your store is inside an existing building, use an internal room on the ground floor which is near the front door. This is likely to be the most secure location and, with good ventilation, is the coolest place.

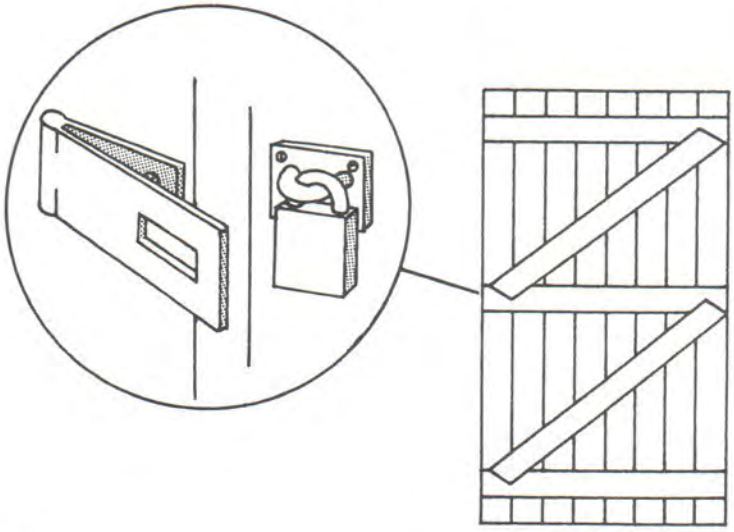
If the store is upstairs, make sure the floor is strong enough. To do this measure the wooden beams under the floorboards. They should not be smaller than 15cm x 5cm. If the floor is concrete, it should be strong enough.

If the store is in a separate building, make sure that it is shaded, easy to get to, and near other buildings. It should be away from the kitchen and sterilising area.

## How to prepare the store

**Security**

First of all your store must be secure. This is particularly important for doors and windows. Simple ways to do this are shown below.

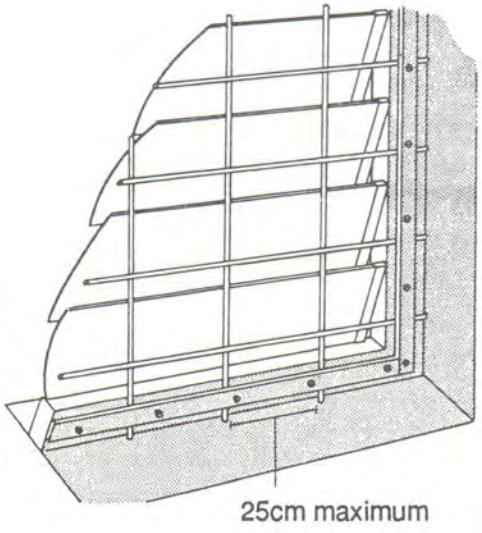


**Doors**

The ledged and braced door shown above is cheap, strong and easily made. A strong hasp and staple lock, secured with a padlock (as shown) is recommended for all locks on and inside the store.

### Windows

Windows should be high up so that the shelves do not block them. Use glass which you cannot see through or curtains or blinds to shade the store from the sun. Cover all windows with (8g) weld mesh or metal bars and mosquito mesh. While it is important to keep out direct sun, there must be enough light inside the store for you to see clearly. Mistakes may happen if you cannot read labels, for example.

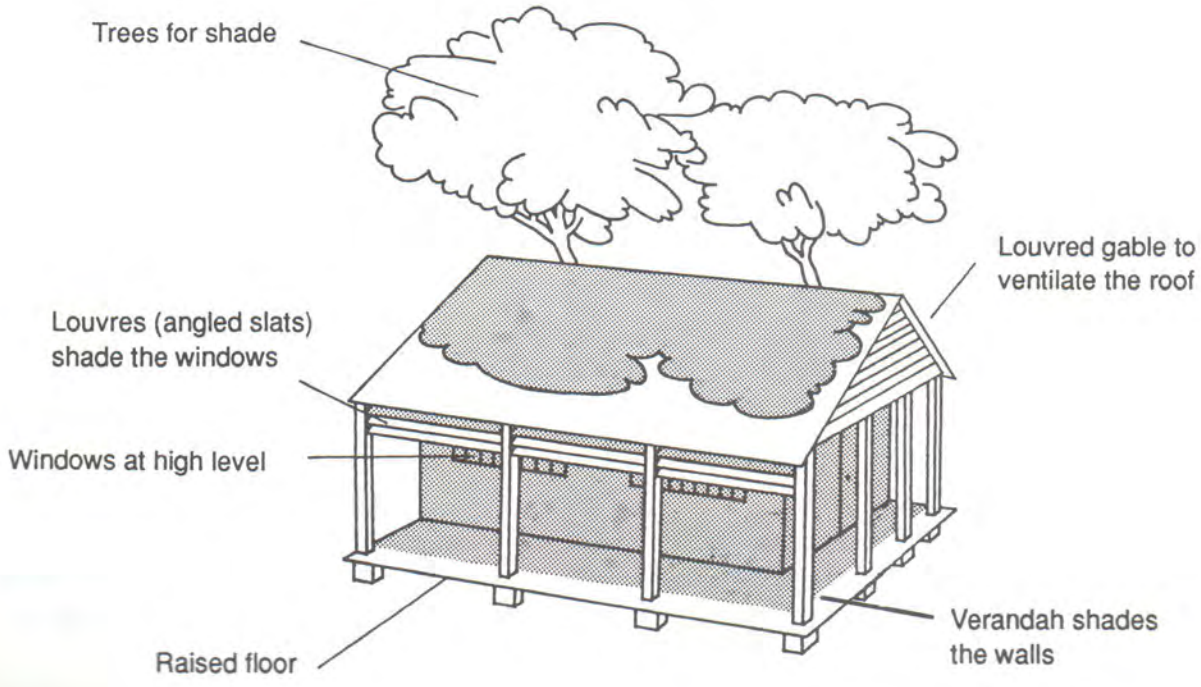



## Cooling

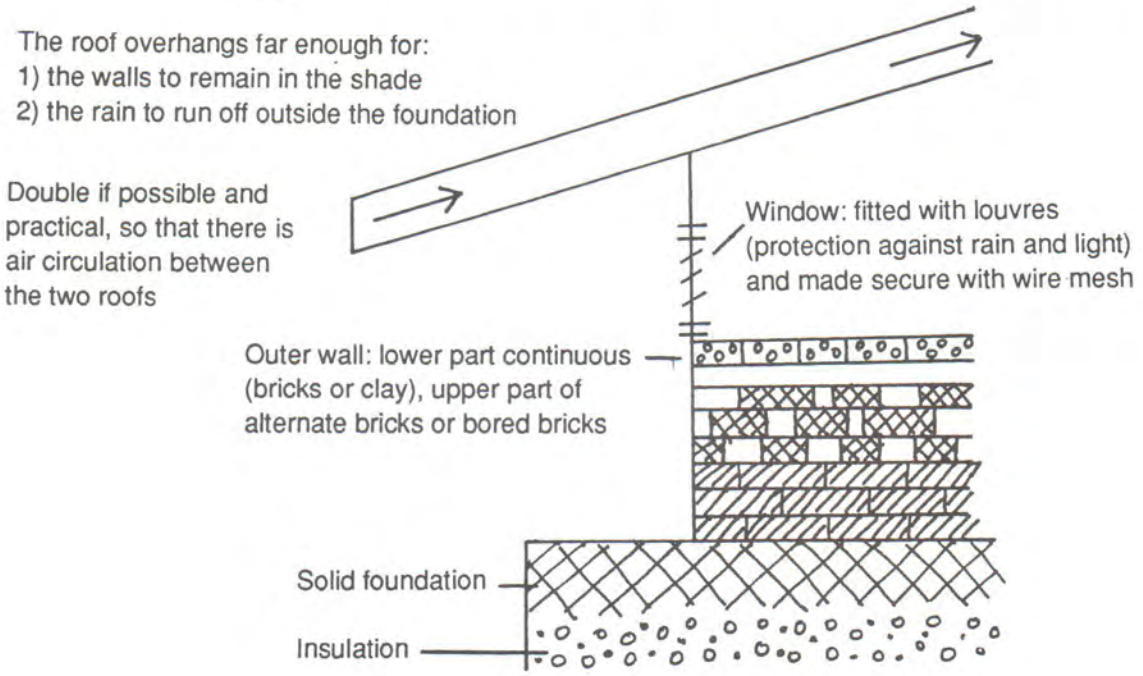
If the store gets hot, the heat may spoil some items. There are two ways to keep it cool inside.

1 **Stop the heat from the sun getting in** To do this keep the room shaded and insulated. The simplest form of roof insulation is thatch. But you can also use fibreboard roof lining.

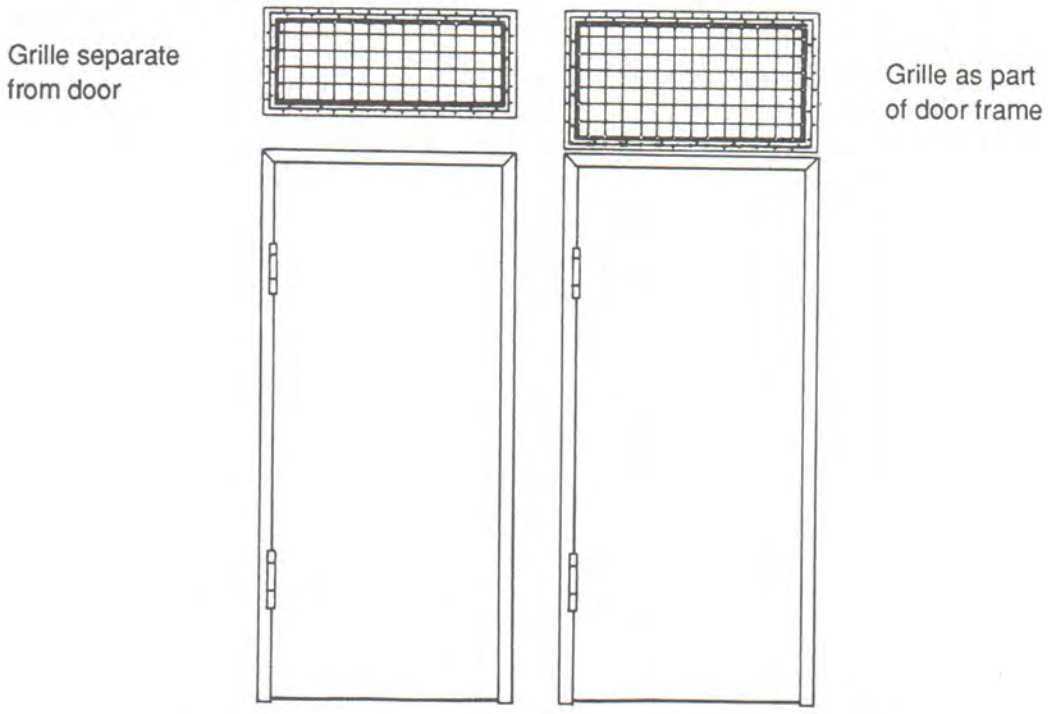
2 **Get rid of the heat by ventilation** The picture below shows a well-shaded and ventilated building.



If possible, the roof should be big enough to shade the windows, as shown below.




Make sure there is good movement of fresh air through the store. If necessary, make an air grille, like the ones shown below.




**Drainage**

Make sure that the store building is well drained. There should be gutter channels and pipes running down from the roof, and/or drainage channels around the outside of the building. This is to prevent water collecting in puddles which could encourage mosquitoes.

## Finishes

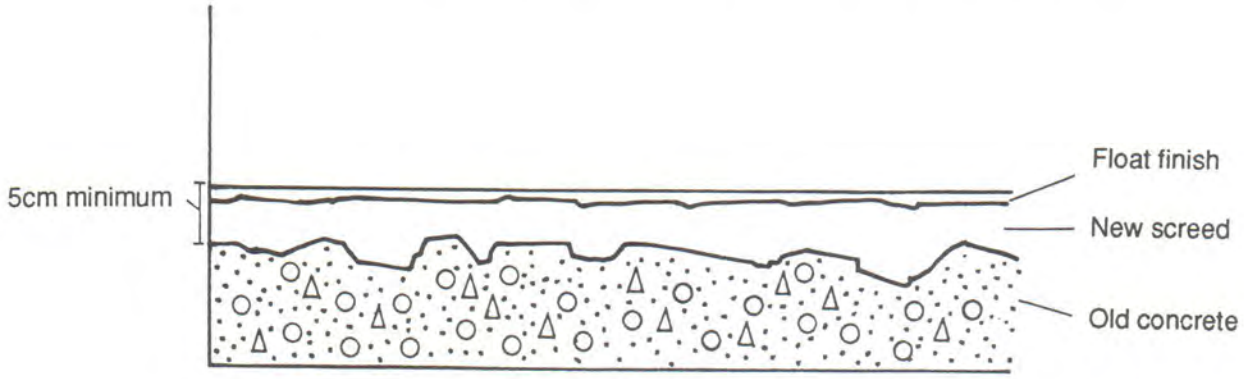
It is easier to clean the store and keep it free from insects if all walls, the floor and the ceiling are smooth and painted.

### Walls

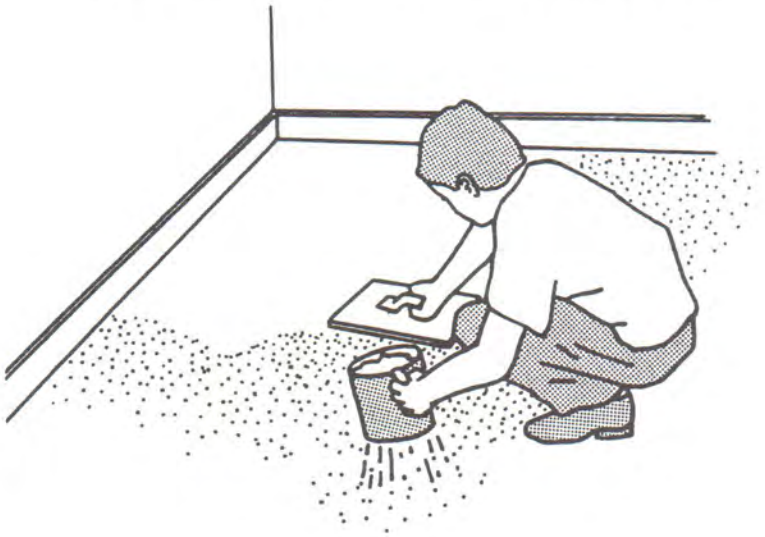
Walls should be as smooth as possible. They should be plastered and then painted with at least two coats of washable paint. They should be repainted at least every five years.

### Floors

The floor should be smooth. If the floor is concrete and damaged, repair it by laying a layer of screed (cement and sand). For this, mix one part cement to four parts of sand. Even if the floor seems in good condition, give it a thin layer of cement. Remember, termites can get in through the smallest crack.



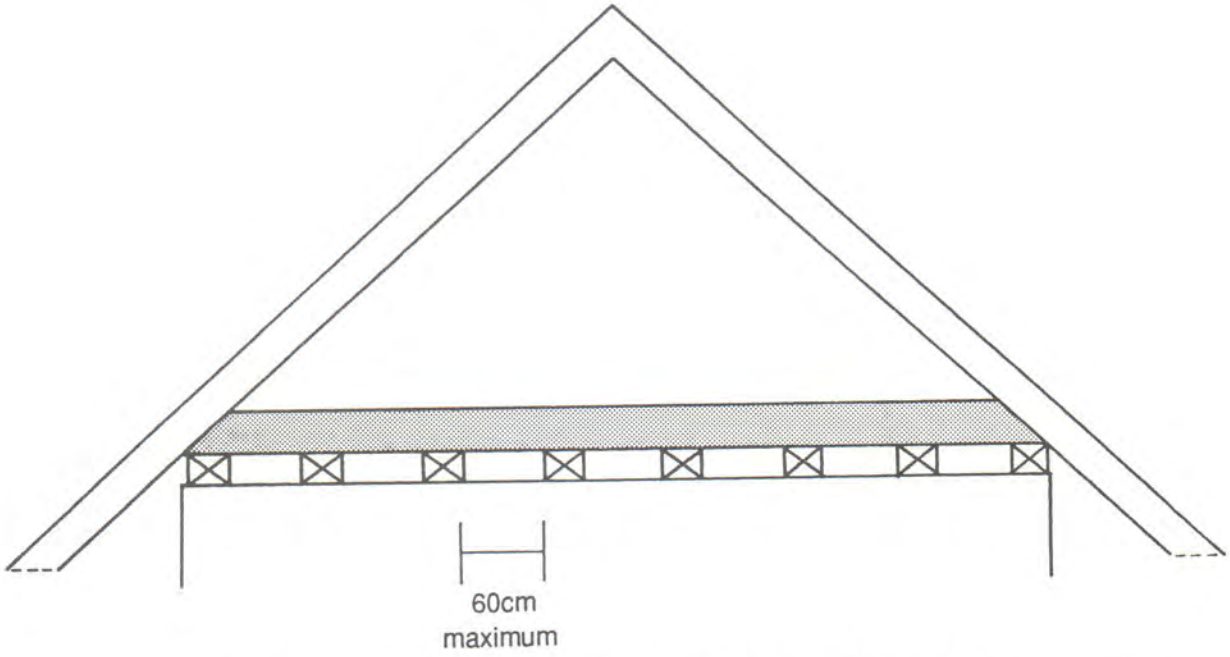

Smooth the screed layer and sprinkle it with cement. Use a tin with holes in the bottom to sprinkle the cement. Smooth off the final coat with a trowel. This makes a smooth, hard surface when it is dry.



To prevent the new floor from cracking, allow it to dry very slowly. Water it with a light sprinkle of water every four hours (but not at night) for about one week. This is called 'curing' the floor.

### Ceiling

If there is no ceiling, make one of hardboard or plasterboard on top of wooden beams like this. A ceiling improves insulation and helps to prevent pests and dirt getting into the store.




If the beams are more than 60cm apart, the board will sink in the middle.

It is also possible to make a ceiling from strong cardboard, for example from old supply boxes, in which case the roof beams should be about 40cm apart.

## Pest proofing

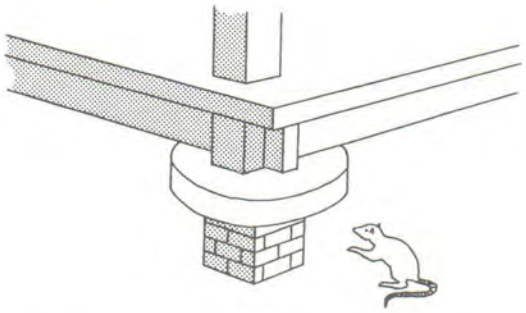
To pest proof your store means to stop pests getting into it. There are four main groups of pests: bats, rats, flying insects and termites. It is important to keep them out of the store.

### Bat proofing

If the store has a space between the ceiling and roof, cover all the openings with a fine wire mesh. This keeps the bats out.

### Rat proofing

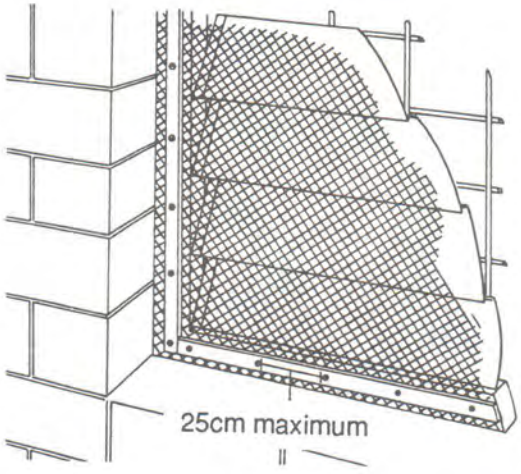
Make sure there are no holes in the walls or gaps under the door. If you are making a special building, one way to make it rat proof is to raise it up on a concrete floor slab, or on stone mushrooms as shown.



It is a good idea to keep the building off the ground to be able to clean underneath it. If possible, cover the area around and underneath the building with gravel or short grass. This reduces the amount of dust.

### Flying insects

In an existing building make sure there are no holes in the walls, floor or ceiling. Keep all stores clean. Fit the windows and gable louvres with mosquito mesh. Fit the mesh to a wooden frame, and screw it to the outside of the window, as shown in the diagram below. This makes the mesh easy to replace when there are any holes in it.

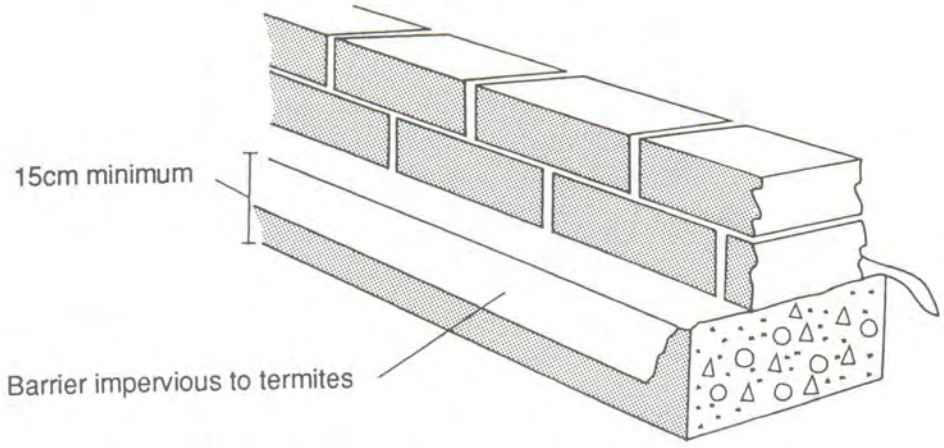



### Termites

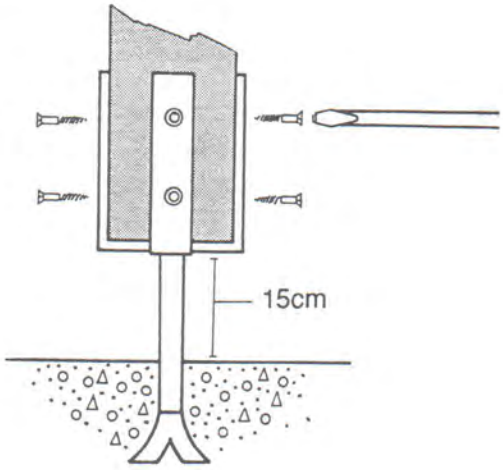
Termites cause damage to the building and the stock. You can deal with them in three ways:

1 **Timber treatment** If you are building a new store, you can treat the timber. It is useless to apply preservative by painting it on. All timber in the building should be pressure impregnated with preservative. If this is not possible, soak the cut timber for 24 hours in the preservative. Make sure that the preservative soaks into the cut ends of the wood.

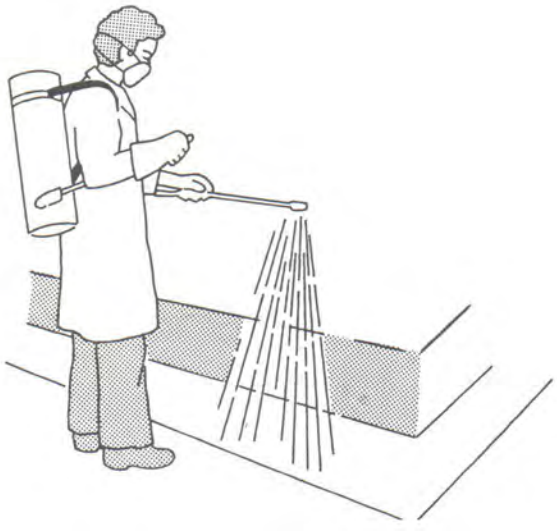
2 **Physical barriers** In a new building you can use a termite proof course, as in the diagram.




Use brick wherever possible, but where timbers stand on the ground, you can use metal shoes as shown in the diagram below. These shoes stop the termites from reaching the timber.




3 **Insecticides** You can also poison the ground around the store using a chemical insecticide such as pentachlorophenol or permethrin. Make sure that no insecticide contaminates your supplies, and follow all recommended safety precautions such as wearing a mask and gloves while using insecticide.



### Infestation

If your store becomes infested with pests, you must kill them all. But first, take everything out of the store and clean it thoroughly. You can then use the following methods:

- poisons – for rats, bats and mice; place the poison where only the pest can reach it
- cats – to eat rats and mice
- insecticides – spray or powder to kill termites, cockroaches and flying insects.

Before you put things back, make sure they are completely free of pests, eggs or nests. Once you clear these pests from the store, keep it clean. A clean store keeps away pests.

## Electricity and lighting

A store needs at least two power points if you have electricity: one with a permanent connection for a refrigerator, and the other to fit a plug for any other equipment. If there are no power points, ask a qualified electrician to put them in.

In the cupboard which contains controlled or dangerous drugs, you can fit a red light which comes on when the door is opened. Put lights above the passageways and a security light on the outside of the building. If there is no electricity, hang kerosene lamps on hooks. Hang them so that the heat from the lamps does not cause a fire or damage the supplies.

It is important that there is enough light inside the store to see clearly. If the store is likely to be used at night, the light inside must be good enough to read and write by.

## Fire protection

A fire extinguisher should be available in every drug store. If this is not possible, place buckets of sand near doorways to use in case of fire.

- Smoke detectors should be fitted if possible.
- Fire extinguishers should be serviced every year, and fire drills held every six months.
- Smoking should be strictly forbidden in the store, and inflammable materials should be stored in a separate building (or at least a separate room) if possible (see page 11).
- Fire exits should be clearly marked, and fire precaution signs like those below displayed in appropriate places in the store.

Fire hazard No naked flame Fire extinguisher

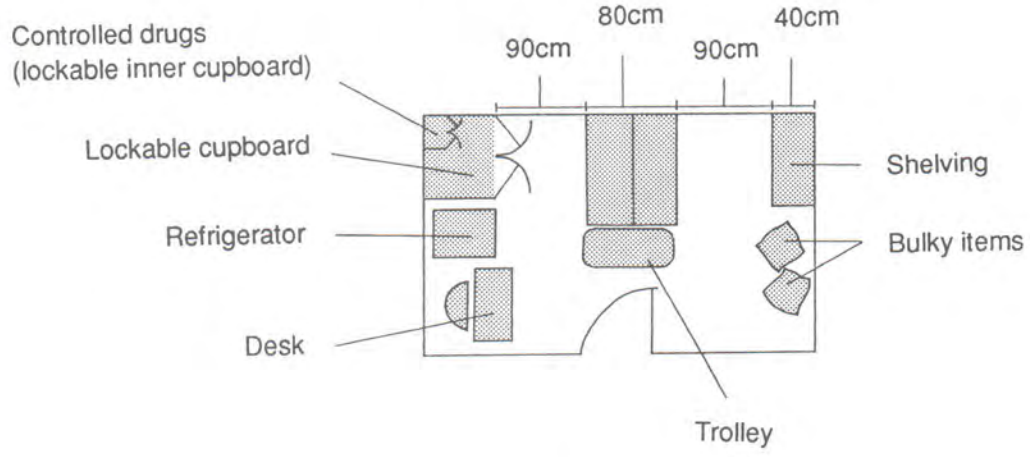
No smoking No water on fire Fire hose reel Caution explosives

# SECTION 2 Organising the store

**This section explains how to arrange the store to make the best use of space.**

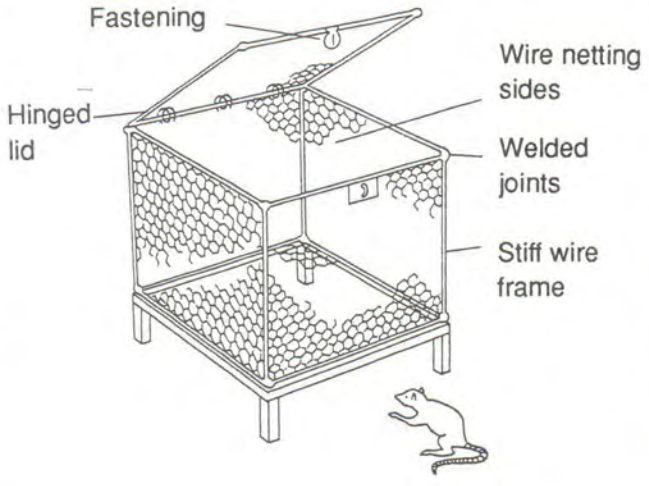
## Layout

Many supplies can be stored on shelves. Arrange shelves in lines with a passageway in between at least 90cm wide. If you put shelves all round the edge of the room, you waste a lot of space in the middle. A good arrangement is shown in the following diagram:




If possible, store bulk food like dried skimmed milk (DSM) in a separate store. To keep food in good condition store it off the ground. If you spill any, clear it up at once to avoid attracting insects or rats. Keep the food as dry as possible. Make sure that there are no holes in the roof, and that you put the contents from broken bags into new bags and seal them. Keep good empty bags for this purpose.

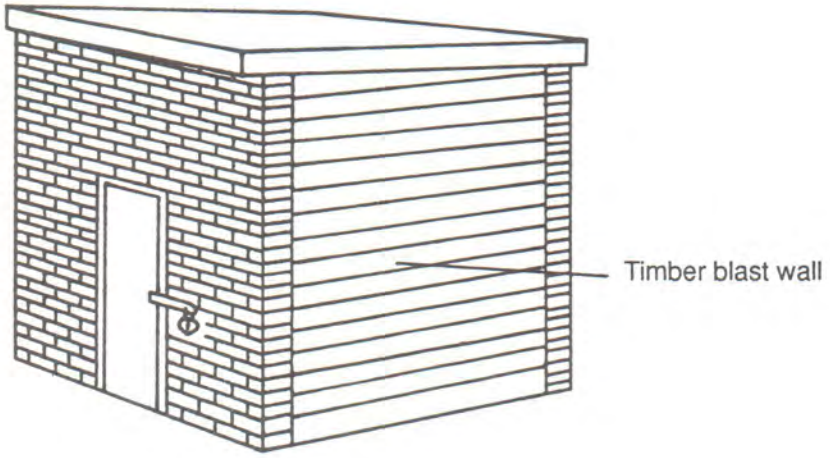
If rats are a problem in your area, for protection place the food inside a wire cage like this:



If theft is a problem, you can also keep antibiotics and drugs liable to abuse in a locked cupboard.

**Fuels**

Keep even a small amount of fuel (such as kerosene for the fridge) in a separate store. Inflammable anaesthetics or laboratory chemicals should be stored with the fuel. The separate store should be at least 20m away from other buildings. One wall or the roof should be of lightweight materials. So if there is an explosion, the force follows the line of the lightest material. This reduces the damage.




**Controlled drugs**

Store controlled or dangerous drugs very carefully. Keep them in a special cupboard with a double lock. If you do not have a special cupboard, use a cupboard which is inside another cupboard. You should be able to lock both cupboards. The cupboard can have a light (see page 9) to show when it is open. One person should be responsible for locking the cupboard, and for keeping the keys. Make clear who is responsible for this when the first person is away.

**Temperature controlled supplies**

You must keep some supplies cold: vaccines, sera, anti-toxins and some drugs all need refrigeration. Do *not* use the refrigerator for food and drink. Open it as rarely as possible. The refrigerator should be at least 15cm away from walls. If it is fuelled by kerosene or gas, keep it away from any draughts.

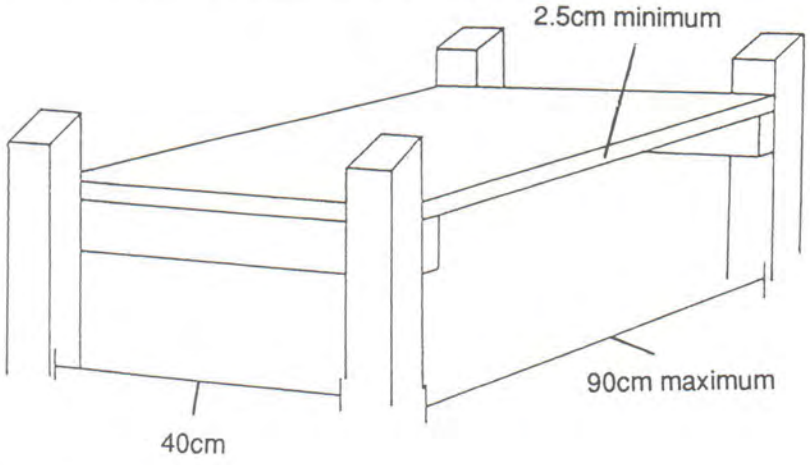
Refrigerator care is described in *How to Look After a Refrigerator* (a manual in the same series as this one), and in several WHO publications (see Appendix III). A list of models suitable for storing vaccines is published by UNICEF (see Appendix III).

# SECTION 3 Storage equipment

**This section describes equipment you need, the size of the equipment and how to make it.**

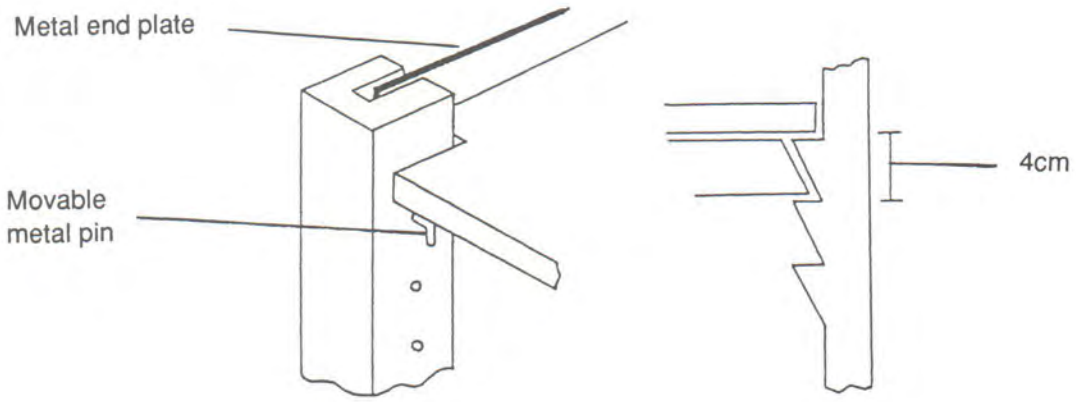
## Shelves

The diagram below shows the maximum measurements for wooden shelving. If the supports are too far apart, the shelves sink in the middle. If the shelves are too deep, it is difficult to reach items at the back.




### Adjustable wooden shelves

These diagrams show ways of making adjustable shelving.



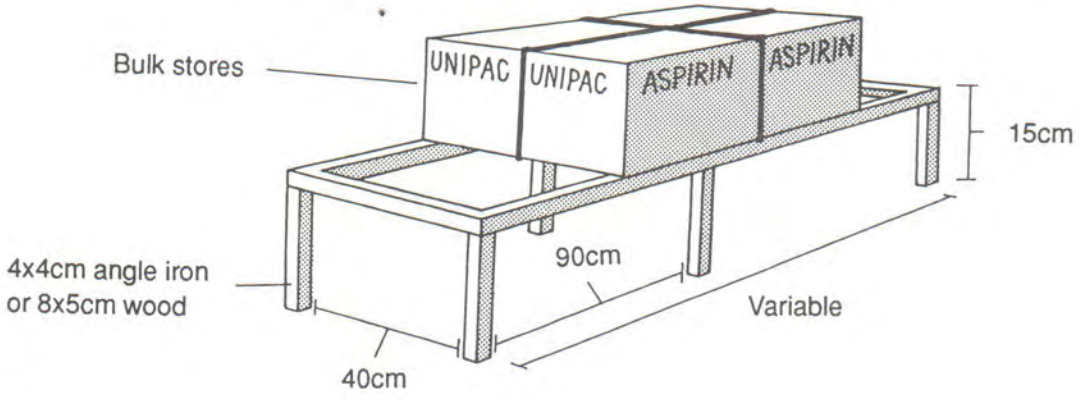
### Metal shelving

There are several factory made shelving systems which use angle iron frames. You can make the shelves from local wood.

Build the bottom shelf 15cm above the floor, so that you can keep the floor clean. Build the top shelf no more than 180cm above the floor. Otherwise it is difficult to reach items which you store there.

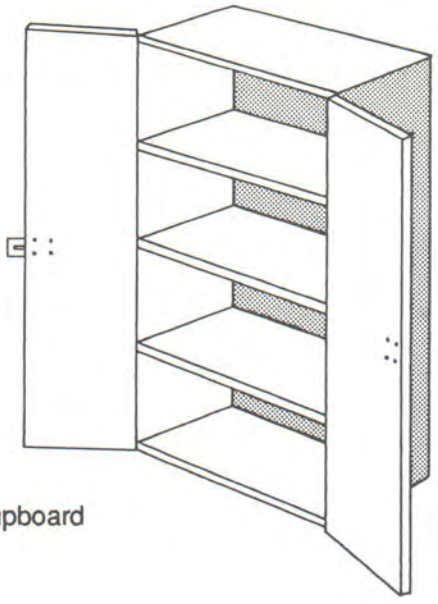
If you cannot reach items on the top shelf, stand on a stool or a pair of steps. Steps should be safe and stable enough for you to use both hands to reach items on the shelves. Never stand on the shelves, or on a box of drugs.

Put bulky items on simply made metal or wooden frames (see below). Stand these away from the wall so that you have a clear space all round them. This prevents termites getting into the supplies.

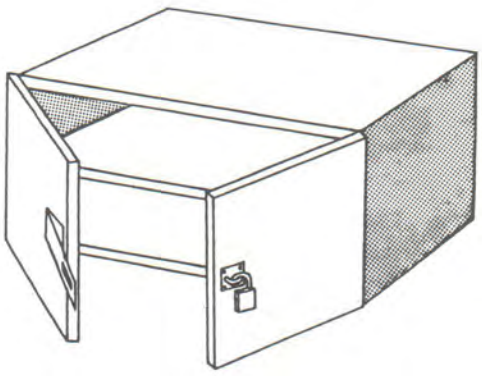



## Cupboards

These are the two types of cupboard which you may need. You need cupboards to store supplies which you must keep secure and free from dust or light. You should be able to lock the cupboard doors and adjust the shelves. If they are made from wood they should be raised up off the floor, to protect the contents from damp and pests.



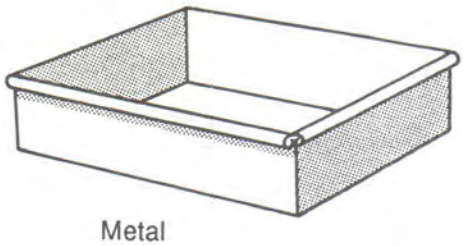
Floor cupboard



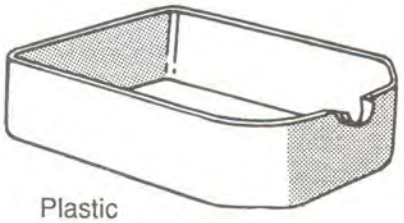
Wall cupboard

## Containers

You can make simple containers to hold small items of equipment. To do this, cut plastic or metal containers in half. You can roll back the edges of the cut metal to make a safe finish.

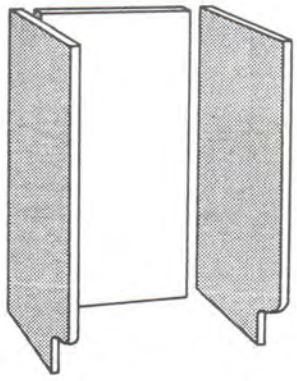


Metal



Plastic

It is especially important to store small items of equipment carefully. You can easily lose or break them. One way of doing this is to make a special 'dispenser'. The diagrams below show how to make a dispenser from plywood.



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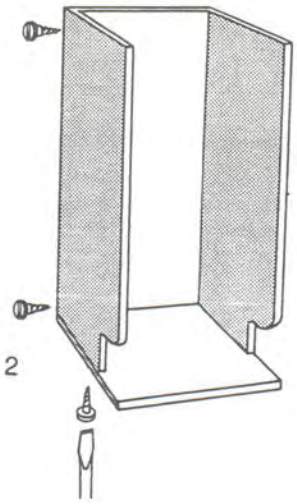
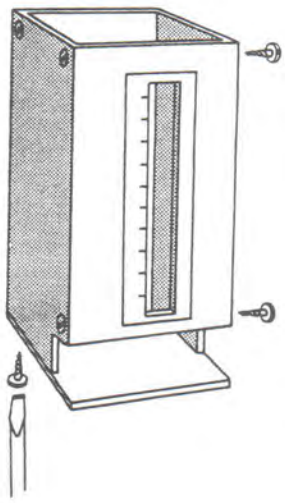
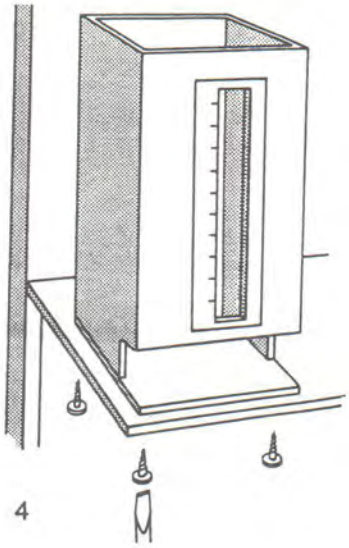


2



3

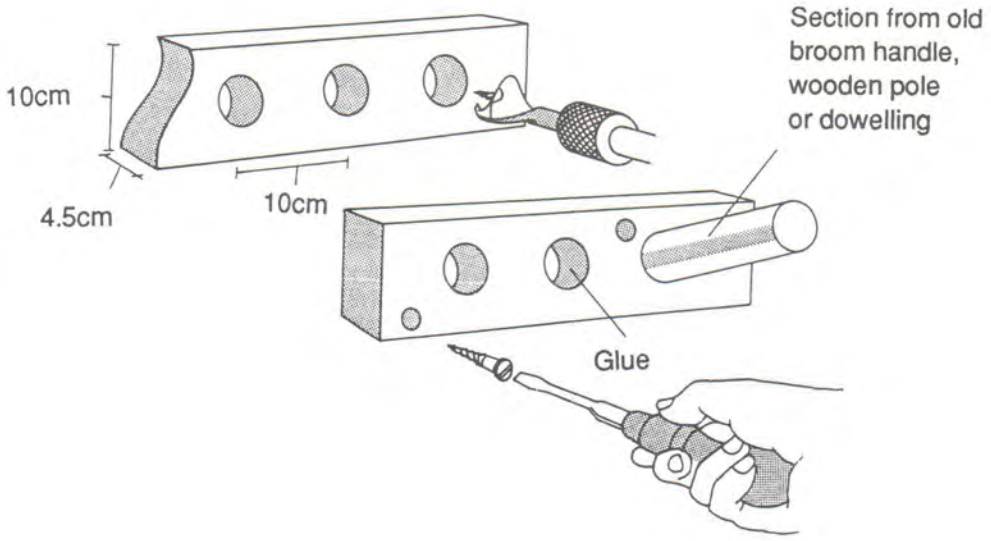


4

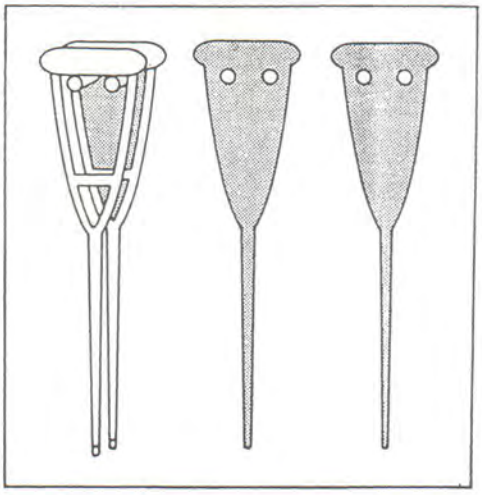
To make the scale, stand 10 of the items to be dispensed against a card. Then mark a pencil line at the site of each one. This can be put onto the dispenser and shows how many there are in the dispenser.

## Hooks

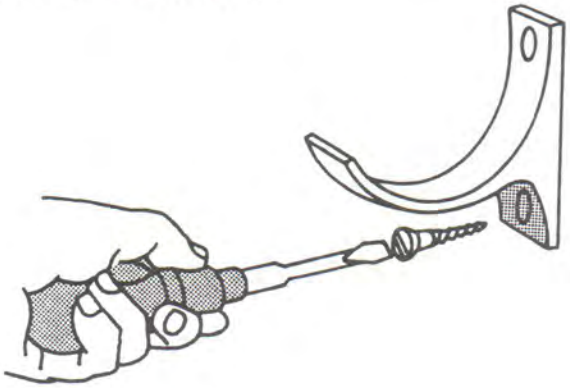
You can hang some items on the walls of the store. These include large items like crutches and stretchers or long items like tubing. You can make a simple hook rack as follows:




Where particular items like crutches hang, paint an outline of the item on the wall. Then you can see when the item is missing.

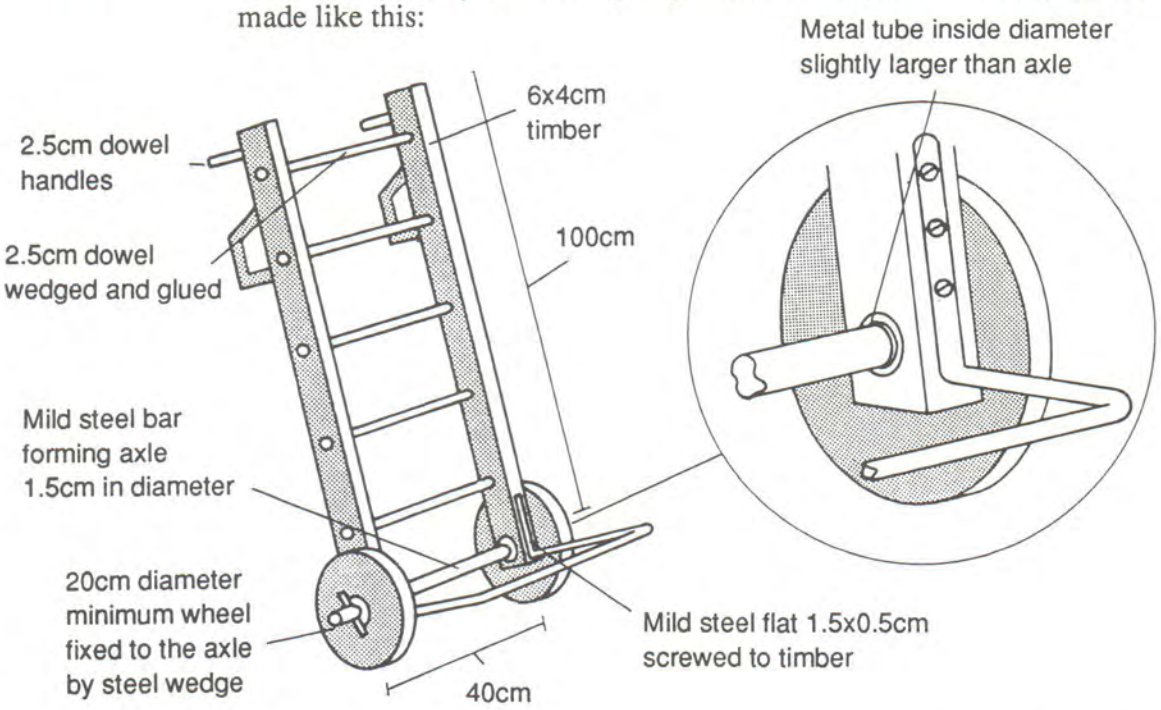


You can make a good hook for these things from a plastic or galvanised metal gutter bracket like this:



## Trolleys

You may need a trolley to move supplies about in the store. You may also need a sack trolley for moving large items. A simple sack trolley can be made like this:




## Refrigerator

You need a refrigerator to store your vaccines, sera and some drugs. It is important to check the refrigerator temperature every day, and to keep it in good order. See *How to Look After a Refrigerator* and Appendix III for more information.

SECTION 4

# Obtaining supplies

**This section explains how to calculate the quantities of supplies you need, decide your supply period and method of supply, place orders, pack and receive supplies.**

## Calculating quantities of supplies

There are seven main types of supplies that you need to obtain for your clinic:

- drugs (including vaccines)
- contraceptives
- domestic items
- laboratory supplies
- stationery
- spare parts
- non-expendable equipment.

In addition you need to obtain other essential items of equipment, and possibly food, from time to time. WHO have published a book called *On Being in Charge* (see Appendix III), which gives more information on how to manage drugs and equipment. WHO has also produced a management course on logistics and the cold chain (see Appendix III).

### Drugs

You probably have a standard list of drugs. This section explains how to decide for the first time how much you need, in the absence of any other instructions.

The following three tables are *examples* which show:

- Table I – the types of illnesses, a calculated number of cases and suggested drug treatment
- Table II – a standardised treatment course
- Table III – how many drugs you need over three months for a population of 10,000.

Tables I and III are examples – the figures are only illustrative. Use Tables I and II together only to calculate your needs. They are not for making prescriptions. Use these as a basis to discuss your needs with someone from another health centre.

If there is no health centre nearby, use the list in Table III for the first time you order. However, this is just an example and you need to be aware that this list and the quantities are specific to refugee camps and the type and amount of illness occurring in these circumstances. When you next order supplies, adjust the quantities as follows:

- Check for each drug how much you used during the supply period.
- Check this again by checking the number of patients you treated and what dose they were given. If there is a difference between the two figures, this may show you what your wastage is. *For example:* from your stock records you find that you issued 4,000 aspirin. But you only treated 500 patients with 6 tablets each (i.e. 3,000 aspirin). There are 1,000 tablets you cannot account for. Check to see how many there are in the dispensary, say 600. You now know that you have wasted 400, i.e. 10 per cent.
- Add this wastage figure to the quantities issued (i.e. 4,000 + 400 = 4,400). This gives you the quantity you should order. Remember, only order complete tins. So if you need 4½ tins of aspirin, order 5.
- Make sure you have enough drugs for a reserve. This means adding about 25 per cent to your *first* order. Then increase each supply period by the amount used and by the wastage.
- Remember – drugs have an expiry date. And all lose their strength with time, so do not order more than you need. In Appendix I there is a list of 29 drugs showing the recommended storage conditions, their stability characteristics and signs of deterioration. Always follow instructions for storage temperatures and expiry dates given by manufacturers.

**Table I: Example – types of illness, calculated number of cases, and drug treatment for a population of 10,000 over 3 months**

| Symptoms | Predicted 'incidence' of symptoms | | Suggested drug treatments (predicted no. of contacts) |
|---|---|---|---|
| | % | No. of cases | |
| ***Age 0–14 years (5,000 people)*** | | | |
| Respiratory | 30 | 1,500 | Upper respiratory tract:<br>Paracetamol tablets (400)<br>Acetylsalicylic tablets (350)<br>Lower respiratory tract:<br>Phenoxymethylpenicillin syrup (300)<br>Phenoxymethylpenicillin tablets (350)<br>Benzylpenicillin injections (100) |
| Diarrhoea | 20 | 1,000 | Oral rehydration sachets |
| Malaria | 13 | 650 | Chloroquine syrup |
| Helminths | 10 | 500 | Piperazine syrup (500)<br>Mebendazole tablets (200) |
| Skin, trauma | 10 | 500 | Benzyl benzoate lotion (200)<br>Benzoic acid and salicylic acid ointment (100)<br>Iodine or chlorhexidine solution (200) |
| Anaemia/malnutrition | 8 | 400 | Ferrous salt and folic acid tablets (400)<br>Vitamin A capsules (400) |
| Eyes | 5 | 250 | Tetracycline eye ointment |
| Ears | 4 | 200 | Amoxycillin oral solution |
| ***Age 15 years and over (5,000 people)*** | | | |
| Respiratory | 20 | 1,000 | Upper respiratory tract: Acetylsalicylic tablets (700)<br>Lower respiratory tract: Tetracycline tablets (300) |
| Musculoskeletal | 15 | 750 | Acetylsalicylic tablets (500)<br>Paracetamol tablets (250) |
| Digestive | 15 | 750 | Piperazine (300)<br>Mebendazole tablets (200)<br>Aluminium hydroxide tablets (250)<br>Senna tabs (200) |
| Diarrhoea | 15 | 750 | Oral rehydration sachets |
| Genitourinary | 12 | 600 | Sulphadimidine tablets (300)<br>Procaine benzylpenicillin injections (300) |
| Malaria | 10 | 500 | Chloroquine tablets |
| Skin, trauma | 5 | 300 | Benzyl benzoate lotion (150)<br>Gentian violet (50)<br>Chlorhexidine (25) Iodine solution (25) Tetracycline ointment |
| Anaemia/malnutrition | 5 | 250 | Ferrous salt and folic acid tablets (250)<br>Vitamin A capsules (250) |
| Eyes | 3 | 150 | Tetracycline eye ointment |

**Table II: A standardised treatment course**

*Note: Children's dosages are dependent on age and body weight, and should be adjusted accordingly.*

| Drug | Form | Course | Quantity per course | Remarks |
|---|---|---|---|---|
| Acetylsalicylic acid | Tablets 300mg | Adults: 2 t.d.s x 2 days | 12 tablets | Not recommended for children |
| Aluminium hydroxide | Tablets 500mg | Adults: 1 q.d.s. x 5 days | 20 tablets | To be chewed |
| Amoxycillin syrup | 125mg/5ml | Children: 125mg t.d.s. x 5 days | 1 bottle of 100ml | |
| Benzoic acid and salicylic acid | Ointment 25g | | | |
| Benzyl benzoate | Solution 25% | All: 100ml (approx.) | 100ml (approx.) | For external use. Dilute for children to minimise irritation |
| Chloroquine | Tablets 150mg base<br>Syrup 50mg base/5ml | Adults: 4 stat x 2 days plus 2 stat x 1 day<br>Children: 10mg/kg | 10 tablets<br>Average 15ml | Assumes single dose intervention |
| Ferrous salt and folic acid | Tablets 60mg iron plus 1mg folic acid | Adults: 1 t.d.s x 30 days<br>Children: 1 o.d. x 10 days | 90 tablets<br>10 tablets | |
| Gentian violet | Solution 1% | All: 1 t.d.s. x 3 days | | For external use |
| Iodine/chlorhexidine | Solution 2.5%/5% | | | For external use |
| Oral rehydration salts | Sachets | All: 3 sachets | 3 sachets | |
| Paracetamol | Tablets 500mg | Adults: 2 t.d.s. x 2 days<br>Children: ¼–½ t.d.s. x 2 days | 12 tablets<br>1½–3 tablets | |
| Piperazine | Tablets 500mg<br>Syrup 500mg/2.5ml | Adults: 8 stat<br>Children: 20ml stat | 8 tablets<br>20ml | For treatment of roundworms |
| Phenoxymethyl-penicillin | Syrup 250ml/5ml<br>Tablets 250mg | Children: 125mg q.d.s. x 5 days<br>Children: 125mg q.d.s. x 7 days | 1 bottle of 60ml<br>14 tablets | |
| Procaine benzylpenicillin | Injection 3g (3 million IU) | Adults: 600,000 IU IM stat x 5 days | 1 vial | |
| Vitamin A | Capsules 200,000 IU | All: 1 stat | 1 capsule | Not for pregnant women |
| Senna | Tablets 7.5mg | Adults: 2 stat | 2 tablets | |
| Sulphadimidine | Tablets 500mg | Adults: 2 b.d. x 5 days | 20 tablets | |
| Tetracycline | Tablets 250mg<br>Ointment 10% 5g tube | Adults: 1 q.d.s. x 7 days<br>All: q.d.s. x 7 days | 28 tablets<br>1 tube | |

*o.d. = once daily*
*b.d. = twice daily*
*t.d.s. = 3 times a day*
*q.d.s. = 4 times a day*
*stat = at once*

**Table III: Basic drugs and medical supplies needed for 3 months for a population of 10,000 (1,000 patients per month)**

The World Health Organization New Emergency Health Kit provides an example of drugs and medical supplies needed for 10,000 people for approximately 3 months. The kit consists of ten basic units (each unit for 1,000 persons for 3 months) and one supplementary unit.

**Basic unit (for 1,000 persons for 3 months)**

| | | |
|---|---|---|
| **Drugs** | | |
| Acetylsalicylic acid, tab 300mg | tab | 3,000 |
| Aluminium hydroxide, tab 500mg | tab | 1,000 |
| Benzyl benzoate, lotion 25%[1] | bottle 1 litre | 1 |
| Chlorhexidine (5%)[2] | bottle 1 litre | 1 |
| Chloroquine, tab 150mg base | tab | 2,000 |
| Ferrous sulphate and folic acid, tab 200 + 0.25mg | tab | 2,000 |
| Gentian violet, powder | 25g | 4 |
| Mebendazole, tab 100mg | tab | 500 |
| ORS (oral rehydration salts) | sachet for 1 litre | 200 |
| Paracetamol, tab 100mg | tab | 1,000 |
| Sulphamethoxazole and trimethoprim, tab 400 + 80mg (cotrimoxazole) | tab | 2,000 |
| Tetracycline eye ointment 1% | tube 5g | 50 |
| **Renewable supplies** | | |
| Absorbent cotton wool | kg | 1 |
| Adhesive tape 2.5cm x 5m | roll | 30 |
| Bar of soap (100–200g) | bar | 10 |
| Elastic bandage (crepe) 7.5cm x 10m | unit | 20 |
| Gauze bandage 7.5cm x 10m | roll | 100 |
| Gauze compresses 10 x 10cm, 12ply, non-sterile | unit | 500 |
| Ballpen, blue or black | unit | 10 |
| Exercise book A4, hard cover | unit | 4 |
| Health card and plastic cover | unit | 500 |
| Small plastic bag for drugs | unit | 2,000 |
| Notepad A6 | unit | 10 |
| Thermometer Celsius/Fahrenheit | unit | 6 |
| Protective glove, non-sterile, disposable | unit | 100 |
| Treatment guidelines for basic list | unit | 2 |
| **Equipment** | | |
| Nail brush, plastic, autoclavable | unit | 2 |
| Bucket, plastic, approx. 20 litres | unit | 1 |
| Gallipot, stainless steel, 100ml | unit | 1 |
| Kidney dish, stainless steel, approx. 26 x 14cm | unit | 1 |
| Dressing set (1 stainless steel box approx. 17 x 7 x 3cm; 1 pair surgical scissors, sharp/blunt, 12–14cm; 1 Kocher forceps, no teeth, straight, 12–14cm; 1 dissecting forceps, no teeth, 12–14cm) | unit | 2 |
| Dressing tray, stainless steel, approx. 30 x 15 x 3cm | unit | 1 |
| Drum for compresses, approx. 15cm H, diam. 14cm | unit | 2 |
| Foldable jerrycan, 20 litres | unit | 1 |
| Forceps Kocher, no teeth, 12–14cm | unit | 2 |
| Plastic bottle 1 litre | unit | 3 |
| Syringe Luer, disposable, 10ml | unit | 1 |
| Plastic bottle, 125ml | unit | 1 |
| Scissors straight/blunt, 12–14cm | unit | 2 |

***Continued on next page***

*1. According to WHO recommendations benzyl benzoate solution 25% concentration is being supplied. The use of 90% concentration is not recommended.*

*2. Chlorhexidine 20% needs distilled water for dilution, otherwise precipitation may occur. 5% solution is WHO standard. Alternatives include the combination of chlorhexidine 1.5% and cetrimide 15%*

**Table III continued**

**Supplementary unit (for 10,000 persons for 3 months)**

| Drugs | | |
|---|---|---|
| ***Anaesthesics*** | | |
| Ketamine, inj. 50mg/ml | 10ml/vial | 25 |
| Lidocaine, inj. 1%[1] | 20ml/vial | 50 |
| ***Analgesics*** | | |
| Pentazocine, inj. 30 mg/ml[2] | 1ml/ampoule | 50 |
| Probenecid, tab 500mg[3] | tab | 500 |
| *RECALL FROM BASIC UNIT:* | | |
| *Acetylsalicylic acid, 300mg/tab* | (10 x 3,000) 30,000 | |
| *Paracetamol, 100 mg/tab* | (10 x 3,000) 30,000 | |
| ***Anti-allergics*** | | |
| Dexamethasone, inj. 4mg/ml | 1ml/ampoule | 50 |
| Prednisolone, tab 5mg | tab | 100 |
| Epinephrine (adrenaline), see 'respiratory tract' | | |
| ***Anti-epileptics*** | | |
| Diazepam, inj. 5mg/ml | 2ml/ampoule | 200 |
| Phenobarbital, 50mg | tab | 1,000 |
| ***Anti-infective drugs*** | | |
| Ampicillin, tab 250mg[4] | tab | 2,000 |
| Ampicillin, inj. 500mg/vial [4] | vial | 200 |
| Benzathine benzylpenicillin, inj. 2.4 MIU/vial | vial | 50 |
| Chloramphenicol, caps 250mg | caps | 2,000 |
| Chloramphenicol, inj. 1g/vial | vial | 500 |
| Metronidazole, tab 250mg | tab | 2,000 |
| Nystatin, non-coated tablet[5] | 100,000 IU/tab | 2,000 |
| Phenoxymethylpenicillin, tab 250mg | tab | 4,000 |
| Procaine benzylpenicillin, inj. 3–4 MU/vial[6] | vial | 1,000 |
| Quinine, inj. 300mg/ml[7] | 2ml/ampoule | 100 |
| Quinine sulphate, tab 300mg | tab | 3,000 |
| Sulphadoxine + pyrimethamine, tab 500mg + 25mg[8] | tab | 300 |
| Tetracycline, caps or tab 250mg[9] | caps or tab | 2,000 |

***Continued on next page***

*1. 20ml vials are preferred, although 50ml vials may be used as an alternative.*
*2. Because of narcotic drugs regulation, pentazocine has been chosen as an alternative to morphine or pethidine.*
*3. To be used with penicillin in the treatment of gonorrhea.*
*4. Ampicillin tablets and injections to be used only in neonates and pregnant women.*
*5. For the treatment of oral candidiasis.*
*6. The combination of procaine benzylpenicillin 3 MU and benzylpenicillin 1 MU (procaine penicillin fortified) is used in many countries and may be included as an alternative.*
*7. For the treatment of cerebral and resistant malaria cases. Intravenous injection of quinine must always be diluted in 500ml glucose 5%.*
*8. For the treatment of resistant malaria strains (check national protocols).*
*9. For the treatment of cholera and chlamydia infections.*

**Table III continued**

**Supplementary unit (for 10,000 persons for 3 months)** ***continued***

| | | |
|---|---|---|
| *RECALL FROM BASIC UNIT:* | | |
| *Mebendazole, tab 100mg* | (10 x 500) 5,000 | |
| *Cotrimoxazole, tab 400 + 80mg* | (10 x 2,000) 20,000 | |
| *Chloroquine, tab 150mg base* | (10 x 2,000) 20,000 | |
| ***Blood, drugs affecting the*** | | |
| Folic acid, tab 1mg | tab | 5,000 |
| *RECALL FROM BASIC UNIT:* | | |
| *Ferrous sulphate and folic acid, tab 200 + 0.25mg* | *(10 x 2,000) 20,000* | |
| ***Cardiovascular drugs*** | | |
| Methyldopa, 250mg[10] | tab | 500 |
| Hydralazine, inj. 20mg/ml | 1ml/ampoule | 20 |
| ***Dermatological*** | | |
| Polyvidone iodine 10%, sol., 500ml[11] | bottle | 4 |
| Zinc oxide 10% ointment | kg | 2 |
| Benzoic acid 6% + salicylic acid 3% ointment | kg | 1 |
| *RECALL FROM BASIC UNIT:* | | |
| *Tetracycline eye ointment, 1%* | *(10 x 50) 500* | |
| *Gentian violet, powder 25g* | *(10 x 4) 40* | |
| *Benzyl benzoate, lotion 25%, litre* | *(10 x 1) 10* | |
| ***Diuretics*** | | |
| Furosemide, inj. 10mg/ml | 2ml/ampoule | 20 |
| Furosemide, tab 40mg | tab | 200 |
| ***Gastro-intestinal drugs*** | | |
| Promethazine, tab 25mg | tab | 500 |
| Promethazine, inj. 25mg/ml | 2ml/ampoule | 50 |
| Atropine, inj. 1mg/ml | 1ml/ampoule | 50 |
| *RECALL FROM BASIC UNIT:* | | |
| *Aluminium hydroxide, tab 500mg* | *(10 x 1,000) 10,000* | |
| ***Oxytoxics*** | | |
| Ergometrine maleate, inj. 0.2mg/ml | 1ml/ampoule | 200 |
| ***Psychotherapeutic drugs*** | | |
| Chlorpromazine, inj. 25mg/ml | 2ml/ampoule | 20 |
| ***Respiratory tract, drugs acting on the*** | | |
| Aminophylline, tab 100mg | tab | 1,000 |
| Aminophylline, inj. 25mg/ml | 10ml/ampoule | 50 |
| Epinephrine (adrenaline), inj. 1mg/ml | 1ml/ampoule | 50 |

***Continued on next page***

*10. For the treatment of hypertension in pregnancy.*
*11. Polyvidone iodine has been chosen because the use of iodine tincture in hot climates may result in toxic concentrations of iodine by partial evaporation of the alcohol.*

## Table III continued

**Supplementary unit (for 10,000 persons for 3 months)** ***continued***

| | | |
|---|---|---|
| ***Solutions correcting water, electrolyte and acid-base disturbances***[12] | | |
| Compound solution of sodium lactate (Ringer's Lactate), inj. sol., with giving set and needle | 500ml/bag | 200 |
| Glucose, inj. sol. 5%, with giving set and needle[13] | 500ml/bag | 100 |
| Glucose, inj. sol 50% | 50ml/vial | 20 |
| Water for injection | 10ml/plastic vial | 2,000 |
| *RECALL FROM BASIC UNIT:* | | |
| *Oral rehydration salts* | (10 x 200) 2,000 | |
| ***Vitamins*** | | |
| Retinol (Vitamin A), caps 200,000 IU | caps | 4,000 |
| Ascorbic acid, tab 250mg | tab | 4,000 |
| **Renewable supplies** | | |
| Scalp vein infusion set, disposable, 25G (diam. 0.5mm) | unit | 300 |
| Scalp vein infusion set, disposable, 21G (diam. 0.8mm) | unit | 100 |
| IV placement canula, disposable, 18G (diam. 1.7mm) | unit | 15 |
| IV placement canula, disposable, 22G (diam. 0.9mm) | unit | 15 |
| Needle Luer IV, disposable, 19G (diam. 1.1mm x 38mm) | unit | 1,000 |
| Needle Luer IM, disposable, 21G (diam. 0.8mm x 40mm) | unit | 2,000 |
| Needle Luer SC, disposable, 25G (diam. 0.5mm x 16mm) | unit | 100 |
| Spinal needle, disposable, 20G, (64mm – diam. 0.9mm) | unit | 30 |
| Spinal needle, disposable, 23G, (64mm – diam. 0.7mm) | unit | 30 |
| Syringe Luer, resterilisable, nylon, 2ml | unit | 20 |
| Syringe Luer, resterilisable, nylon, 5ml | unit | 100 |
| Syringe Luer, resterilisable, nylon, 10ml | unit | 40 |
| Syringe Luer, disposable, 2ml | unit | 400 |
| Syringe Luer, disposable, 5ml | unit | 500 |
| Syringe Luer, disposable, 10ml | unit | 200 |
| Syringe conic connecter (for feeding), 60ml | unit | 20 |
| Feeding tube, CH5 (premature baby), disposable | unit | 20 |
| Feeding tube, CH8, disposable | unit | 50 |
| Feeding tube, CH16, disposable | unit | 10 |
| Urinary catheter (Foley), n° 12, disposable | unit | 10 |
| Urinary catheter (Foley), n° 14, disposable | unit | 5 |
| Urinary catheter (Foley), n° 18, disposable | unit | 5 |
| Surgical gloves sterile and resterilisable n° 6.5 | pair | 50 |
| Surgical gloves sterile and resterilisable n° 7.5 | pair | 150 |
| Surgical gloves sterile and resterilisable n° 8.5 | pair | 50 |
| *RECALL FROM BASIC UNIT:* | | |
| *Protective glove, disposable* | *(100 pairs x 10) 1,000* | |
| Sterilisation test tape (for autoclave) | roll | 2 |
| Chloramine, tabs or powder | kg | 2.5 |
| Thermometer (oral/rectal) dual Celsius/Fahrenheit | unit | 10 |

***Continued on next page***

*12. Because of the weight, the quantity of infusions included in the kit is minimal. Look for local supply, once in the field.*

*13. Glucose 5%, bag 500ml, for dilution of quinine/injection.*

**Table III continued**

**Supplementary unit (for 10,000 persons for 3 months)** ***continued***

| | | |
|---|---|---|
| Spare bulb for otoscope | unit | 2 |
| Batteries R6 alkaline AA size (for otoscope) | unit | 6 |
| *RECALL FROM BASIC UNIT:* | | |
| *Thermometer (oral/rectal) Celsius/Fahrenheit* | *(6 units x 10) 60* | |
| *Ballpens* | *(10 units x 10) 100* | |
| *Hardcover exercise book* | *(4 units x 10) 40* | |
| *Health card and plastic cover* | *(500 units x 10) 5,000* | |
| *Plastic bag for drugs* | *(2,000 units x 10) 20,000* | |
| *Small notepads* (A6) | *(10 units x 10) 100* | |
| Urine collecting bag with valve, 2,000ml | unit | 10 |
| Finger stall 2 fingers, disposable | unit | 300 |
| Suture, synthetic absorbable, braided, size DEC.2 (000) with cutting needle curved 3/8, 20mm triangular | unit | 24 |
| Suture, synthetic absorbable, braided, size DEC.3 (000) with cutting needle curved 3/8, 30mm triangular | unit | 36 |
| Surgical blade (surgical knives) n° 22 for handle n° 4 | unit | 50 |
| Razor blade | unit | 100 |
| Tongue depressor (wooden, disposable) | unit | 100 |
| Gauze roll 90m x 0.90m | roll | 3 |
| Gauze compresses, 10 x 10cm, 12 ply, sterile | unit | 1,000 |
| *RECALL FROM BASIC UNIT:* | | |
| *Absorbent cotton wool* | *(1kg x 10) 10* | |
| *Adhesive tape 2.5cm x 5m* | *(30 rolls x 10) 300* | |
| *Bar of soap (200g/bar)* | *(10 bars x 10) 100* | |
| *Elastic bandage (crepe), 7.5cm x 10m* | *(20 units x 10) 200* | |
| *Gauze bandage 7.5cm x 10m* | *(100 rolls x 10) 1,000* | |
| *Gauze compress 10 x 10cm, 12 ply, non-sterile* | *(500 units x 10) 5,000* | |
| **Equipment** | | |
| Clinical stethoscope, dual cup | unit | 2 |
| Obstetrical stethoscope (metal) | unit | 1 |
| Sphygmomanometer (adult) | unit | 2 |
| Razor non-disposable | unit | 2 |
| Scale for adult | unit | 1 |
| Scale hanging 25kg x 100g (Salter type) and trousers | unit | 3 |
| Tape measure | unit | 5 |
| Drum for compresses, H: 15cm, diam. 14cm | unit | 2 |
| *RECALL FROM BASIC UNIT:* | | |
| *Drum for compresses, H: 15cm, diam. 14cm* | *(2 units x 10) 20* | |
| Otoscope and set of paediatric speculums | unit | 1 |
| Tourniquet | unit | 2 |
| Dressing tray, stainless steel, approx. 30 x 15 x 3cm | unit | 1 |
| Kidney dish, stainless steel, approx. 26 x 14cm | unit | 1 |

***Continued on next page***

**Table III continued**

**Supplementary unit (for 10,000 persons for 3 months)** ***continued***

| | | |
|---|---|---|
| Scissors straight/blunt, 12–14cm | unit | 2 |
| Forceps Kocher no teeth, 12–14cm | unit | 2 |
| *RECALL FROM BASIC UNIT:* | | |
| *Kidney dish, stainless steel, approx. 26 x 14cm* | *(1 unit x 10) 10* | |
| *Gallipot stainless, 100ml* | *(1 unit x 10) 10* | |
| *Dressing tray, stainless steel, approx. 30 x 15 x 3cm* | *(1 unit x 10) 10* | |
| *Scissors straight/blunt, 12–14cm* | *(2 units x 10) 20* | |
| *Forceps Kocher no teeth, 12–14cm* | *(2 units x 10) 20* | |
| Abscess/suture set (7 instruments and box) [14] | unit | 2 |
| Dressing set (3 instruments and box) [15] | unit | 5 |
| *RECALL FROM BASIC UNIT:* | | |
| *Dressing set (3 instruments and box)* | *(2 units x 10) 20* | |
| Pressure steriliser, 7.5 litres (type: Prestige 7506, double rack, ref UNIPAC 01.571.00) | unit | 1 |
| Additional rack Public Health Care 2ml/5ml, ref. Prestige 7531 | unit | 2 |
| Pressure steriliser, 20–40 litres with basket (type UNIPAC 01.560.00) | unit | 1 |
| Kerosene stove, single burner (type UNIPAC 01.700.00) | unit | 2 |
| Water filter with candles, 10/20 litres (type UNIPAC 56.199.02) | unit | 3 |
| Nail brush, plastic, autoclavable | unit | 2 |
| *RECALL FROM BASIC UNIT:* | | |
| *Plastic bottle, 1 litre* | *(3 units x 10) 30* | |
| *Syringe Luer, disposable, 10ml* | *(1 unit x 10) 10* | |
| *Plastic bottle, 125ml* | *(1 unit x 10) 10* | |
| *Brush plastic (nail brush) autoclavable* | *(2 units x 10) 20* | |
| *Bucket plastic, 20 litres* | *(1 unit x 10) 10* | |
| *Foldable jerrycan, 20 litres* | *(1 unit x 10) 10* | |
| Portable weight/height chart (UNIPAC 01.455.70) | unit | 1 |
| Clinical guidelines (diagnostic and treatment manual) [16] | | 2 |

*14. Abscess/suture set (7 instruments and box):*
- *1 stainless steel box approx. 20 x 10 x 5cm*
- *1 dissecting forceps with teeth, 12–14cm*
- *1 Kocher forceps with teeth, straight, 12–14cm*
- *1 Pean forceps straight, 12–14cm*
- *1 pair surgical scissors sharp/blunt, 12–14cm*
- *1 probe, 12–14cm*
- *1 Mayo-Hegar needle holder, 18cm*
- *1 handle scalpel, n° 4*

*15. Dressing set (3 instruments and box):*
- *1 stainless steel box approx. 17 x 7 x 3cm*
- *1 pair surgical scissors sharp/blunt, 12–14cm*
- *1 Kocher forceps, no teeth, straight, 12–14cm*
- *1 dissecting forceps, no teeth, 12–14cm*

*16. 'Clinical Guidelines – Diagnostic and Treatment Manual' is available at cost price in English, French and Spanish from Médecins sans Frontières.*

*Source: The New Emergency Health Kit, WHO, Geneva, WHO/DAP/90.1.*

## Vaccines

The vaccines which you require include:

| | |
|---|---|
| BCG | Tuberculosis |
| DPT | Diphtheria, Pertussis, Tetanus |
| DT | Diphtheria, Tetanus |
| TOPV | Trivalent oral polio vaccine |
| Measles | |
| TT | Tetanus toxoid |

You may also have these vaccines:

| | |
|---|---|
| Rabies | |
| CSM | Cerebral Spinal Meningitis |
| Hepatitis B | |

Heat and light destroy vaccines, and they usually have a limited shelf life, so it is important that you have a refrigerator and keep just the right amount of vaccines in your store. Use the following table to calculate your needs. If you do not know how many immunisations you carry out in a supply period, make an estimate and then correct it for the next time.

**Table IV: Maximum vaccine stocks**

| Amount you expect to use | Reserve stock (assumed to be 25% of the supplies used) | Maximum stock at the start of any supply period |
|---|---|---|
| 2 | 1 | 3 |
| 4 | 1 | 5 |
| 5 | 2 | 7 |
| 6 | 2 | 8 |
| 8 | 2 | 10 |
| 10 | 3 | 13 |
| 20 | 5 | 25 |
| 40 | 10 | 50 |
| 50 | 13 | 63 |
| 60 | 15 | 75 |
| 80 | 20 | 100 |
| 100 | 25 | 125 |
| 200 | 50 | 250 |
| 400 | 100 | 500 |
| 500 | 125 | 625 |
| 600 | 150 | 750 |
| 800 | 200 | 1,000 |
| 1,000 | 250 | 1,250 |
| 2,000 | 500 | 2,500 |
| 4,000 | 1,000 | 5,000 |
| 5,000 | 1,250 | 6,250 |
| 6,000 | 1,500 | 7,500 |
| 8,000 | 2,000 | 10,000 |
| 10,000 | 2,500 | 12,500 |
| 20,000 | 5,000 | 25,000 |
| 40,000 | 10,000 | 50,000 |
| 50,000 | 12,500 | 62,500 |
| 60,000 | 15,000 | 75,000 |
| 80,000 | 20,000 | 100,000 |
| 100,000 | 25,000 | 125,000 |

*Source: Manage the Cold Chain, WHO/EPI.*

## Contraceptives

The contraceptives which you probably stock are pills, condoms, injectables, and IUDs (intra-uterine devices).

The number of people who will use each type of contraceptive is different according to the policy in your country, and you should follow national guidelines if possible.

The following table will help you to calculate how many you require.

### Pills and condoms*

| Number of cycles/ condoms which you supplied in last supply period | Stock level (cycles/condoms) | |
|---|---|---|
| | Minimum stock | Maximum stock |
| <50 | 15 | 70 |
| 100 | 30 | 140 |
| 150 | 45 | 210 |
| 200 | 60 | 280 |
| 250 | 75 | 350 |
| 300 | 90 | 420 |
| 350 | 105 | 490 |
| 400 | 120 | 560 |

**This is based on a 10% wastage, and a 25% reserve stock.*

With these quantities you may have different types of contraceptives, for example high or low dose pills, plain or coloured condoms. Make a note of the quantities of each type you stock.

You may need more condoms if these are being promoted for the prevention of sexually transmitted diseases, especially HIV/AIDS, in addition to use as contraceptives.

The number of IUDs you stock will depend upon demand. This may vary, so keep a minimum stock of 5 and check how many are fitted each month.

### Injectables*

| Number of injections which you gave in the last supply period | Stock levels | |
|---|---|---|
| | Minimum stock | Maximum stock |
| <30 | 10 | 50 |
| 60 | 20 | 100 |
| 90 | 30 | 150 |
| 120 | 40 | 200 |
| 150 | 50 | 250 |
| 180 | 60 | 300 |

**This is based on a 30% waste, a reserve stock of 25%, 10 dose vial.*

## Domestic items

This is a checklist to help you remember which items you need:

- Soap
- Bleach
- Disinfectant
- Cleaning cloths
- Insecticide
- Toilet paper
- Matches
- Detergent
- Razor blades
- Scouring powder
- Gas bottles (if used)
- Kerosene (if used)

## Laboratory supplies

The type and quantity of laboratory supplies depends upon the type and number of investigations you carry out. A health centre laboratory can only provide a good service on which you can depend if it is closely connected with the district hospital laboratory. This helps standardisation and quality control of techniques and proper maintenance of equipment. It also supports and encourages the health centre laboratory worker.

The hospital laboratory must therefore issue the equipment, reagents and stationery for the health centre laboratory. These supplies must be regular and reliable. It should also issue instructions for the use and storage of chemicals and reagents to the health centre.

## Stationery

This is a checklist of items you may need:

- Immunisation cards*
- Under 5 cards*
- Mothers' cards*
- Exercise books
- Store keeper's ledgers
- Report forms
- Adults' cards**
- Graph paper
- Referral forms
- Typing paper and envelopes
- Pens, pencils, pins, rubbers, staples
- Carbon paper
- Sellotape
- Labels

*You can calculate the quantity of these items as follows: take the number of newborn children who receive a first immunisation per month. Add 30 per cent of this number and multiply by 3. This gives you the quantity you require for three months. For example: 100 newborns + 30 = 130 x 3 = 390.

**Use the figures in Table I (page 19) to calculate the number of cards you need. In the table there are about 10,000 attendances in three months, i.e. your clinic serves 10,000 people and each person comes to the clinic on average four times a year. So you will need about 10,000 cards to begin with.

## Spare parts for refrigerators

You need to keep some spare parts for your refrigerator. The type and quantity depend on the type of refrigerator you have. Before you decide which spare parts to keep consider whether:

- they are necessary
- someone has the necessary tools and can fit the part.

The following lists show the essential spares for different types of refrigerator.

**Kerosene refrigerators**
Extra kerosene (at least one can)
1 filter cloth
2 wick trimmers (if you use cotton wicks)
1 burner of the right size
1 funnel
2 wicks of the right size
4 lamp glasses (if glass) of the right size (or 1, if metal)
1 flue brush

**Electric refrigerators (absorption)**
1 electric element
Fuses or fuse wire
Screwdriver (to change the element)
Electric (compression) and solar refrigerators
Fuses or fuse wire

**Gas refrigerators**
1 gas cylinder
1 gas pipe

In addition to these parts, it is useful to keep a spare seal for the door or lid. A damaged seal greatly reduces the efficiency of the refrigerator.

When you order new equipment from the district store, make sure you order any spare parts which you need at the same time, e.g. lamp glasses and wicks for kerosene refrigerators, bulbs for lamps, rings for microstat syringes, etc.

**Non-expendable equipment**

Some items are essential. Check that you have those listed below. You should receive this equipment from a standard government catalogue.

| Item | Description | Quantity |
|---|---|---|
| Flashlight | Prefocused 2 cell, plastic right angled | 1 |
| Auriscope | Set electric with spatulate spine battery and bulb | 1 |
| Applicator | Metal ear and nose double ended | 5 |
| Magnifying glass | | 1 |
| Lamp | Alcohol brass 150ml | 1 |
| Forceps | Tissue 150mm stainless steel spring type 1x2 teeth | 2 |
| Holder | Needle curved Metzenbaum stainless steel | 1 |
| Measure | 1,000ml with handle stainless steel | 1 |
| Funnel | Lab 75mm diameter polypropylene | 1 |
| Bottle | Plastic 1,000ml square | 3 |
| Stapler | | 1 |
| Cold box | 25 litre | 1 |
| Ice packs | | 1 set |
| Container with lid | | 4 |
| Vaccine carrier and ice packs | 2 litre | * |
| Dressing forceps | | * |
| Spirit lamp | | * |
| Wind shield | | * |
| Container of spirit | | * |
| Carrying case | | * |
| Vaccine vial holder | | * |
| Plastic cap | | * |
| Soap box | | * |
| Ampoule file | | * |

**Quantity depends on the number of outreach clinics*

*Source: Primary Child Care I: A Manual for Health Workers, M. King, OUP and Emergency Health Kit list.*

If you cannot obtain these items locally, they are available from your local UNIPAC representative. When you need to replace equipment, for example to replace something broken, your records should show that you have one of the items in your health centre. When you receive a new one, your supplying store will record that you have two until you return the broken one. Remember not to throw away broken or worn out equipment until you are told to by your supplying store.

## Supply periods

If you receive supplies, for example, every three months, then your supply period is three months. However, this period is different for different types of supplies. For example, you may receive vaccines once a month, because they are very delicate and can easily be spoilt; and your supply period for stationery may be six months. When you decide how often to receive supplies consider the following:

- how easy is it to reach the store which supplies you?
- do you have to go there for other reasons, e.g. to collect salaries, make reports or buy food?
- do you have your own transport?

For example, you may have to go to the supplying store once a month. If you have transport and it is an easy short journey, you may decide to collect supplies every month. On the other hand you may be far away and without transport. You may have to depend on a delivery at longer intervals for most of your supplies. If you have to depend on a bus, you can only collect a very limited amount of supplies at one time.

## Collection and delivery of supplies

Once you decide on the supply period, you need to decide whether to collect supplies yourself or to depend on delivery.

**The advantages of collection are:**

- you see the supplying store keeper and discuss what you need
- you can do other business
- you can meet other health centre managers
- you can use different types of transport
- you can find any mistakes at once and correct them
- you can make sure the supplies are handled correctly
- security is easier.

**The disadvantages are:**

- it uses up a lot of staff time
- it is often difficult to get transport
- if the store keeper is not expecting you, he or she may be away
- it may cost more.

**The advantages of delivery are:**

- it often costs less
- it does not take a lot of staff time
- it can be combined with the visit of a supervisor.

**The disadvantages are:**

- a vehicle is needed
- if the delivery journey is long, the supplies which can be spoilt by heat are at greater risk
- it may make the supply period too long, especially if there is a season when the roads are difficult to use

- it is often difficult to get another item if the one which you ordered is out of stock
- security is more difficult
- you have to make sure that someone is in the store to receive the delivery.

## How to place an order

When you have decided how much you need, you can place an order. It is usual to use a standard order form, e.g:

G. P. & S. 80374.

**REQUISITION: MEDICAL SUPPLIES**

№ 309475

For Medical Store use only
Account No.
Issue Voucher No.

Medical Store,
P.O. Box 291
OYO

Consignee TIBASA CLINIC
Postal address TIBASA RURAL COUNCIC
P.O. BOX 62
OYO STATE
Forwarding instructions:
Rail, RMS, Post, Road, Air
(Delete inapplicable)

Fifth copy
Requisitionist's date-stamp
20/9/94

CHARGEABLE TO: TIBASA RURAL COUNCIL

| ITEM (N.B.–One size only per line. One item only per line.) | Quantity required | FOR MEDICAL STORE USE ONLY: Code number | Amended code number | UNIT | Quantity supplied |
|---|---|---|---|---|---|
| MICROSCOPE SLIDES | 2 | 19321 | | BOX 100 | |
| BOTTLES PLASTIC CLEAR DISPENSING 100ml | 3 | 20601 | | 20 | |
| ADRENALINE 1mg/ml 1ml amp. | 1 | 20812 | | BOX 10 | |
| BENZYLPENICILLIN 3g 5 MEGA UNITS | 20 | 20832 | | EACH | |
| PROCAINE PENICILLIN 20ml | 10 | 31400 | | 10 | |
| BANDAGES CREPE 50 MM | 20 | 32619 | | EACH | |
| WOOL COTTON ABSORBENT 500g | 10 | 32631 | | EACH | |
| CALAMINE LOTION 15% | 5 | 33401 | | 750ml | |

NJ Brown S.C.N.
*Requisitionist's signature and office held*

Certifies goods as detailed received in good order and condition.

*Recipient's signature and office stamp*

Approved by:

NOTE
On receipt of the consignment please certify the third copy and return without delay.

Date received at Medical Store

Medical Store reference

Date order completed:

Checked by:

Bin cards posted by:

Assembled by:

*Reproduced courtesy of Ministry of Health, Zimbabwe*

When you complete an order form, remember the following points:

- State exactly what you need and how much you need. If you order from a standardised catalogue, follow exactly the ordering procedure in the catalogue. Make sure you write down the code number for each item.
- List items in the order in which they appear in the catalogue. (Your priority items include: those to refill your life-saving stocks, those which you use the most, and those with a short shelf life.)
- Specify the maximum weight of the parcels you can handle.
- Make sure that all your parts of the form are complete and that you keep a dated and signed copy.
- Make sure that you can read all the copies.

## How to receive supplies

Make sure that you check the supplies for signs of damage before you accept them. These include:

- damage to the box which you can see
- leakage stains
- the sound of broken glass from inside the box
- tape or cord which has been removed

When you open the boxes, carefully check the contents against the packing slip and the copy of your original order.

Before you make a complaint:

- check the loose packing to make sure you have not missed any small items
- check the packing slip – some items you ordered may have been out of stock
- check the temperature of supplies which are sensitive to heat – they should be between +2°C and +8°C.

If there are any shortages or damage, report it *at once* with an explanation, such as 'undersupplied', 'broken on arrival', etc. You may have a standard form for this.

Vaccines often have a temperature monitor. If there is any colour on the indicator, tell your supervisor and the supplying store that the cold storage for transport is not suitable. If there is no colour, record the temperature yourself on the delivery note. Make sure that vaccines and other heat sensitive supplies are placed in the refrigerator at once.

As you check your supplies, enter the items into your stock records. Use the packing note serial number as a reference number on the stock records. This is described further in Section 6.

If the drugs have passed their expiry date, you should not use them (unless your supervisor tells you to).

Accept gifts and samples only if you are told to by your supervisor. If you accept them, make sure that:

- they are appropriate for the needs of your health centre
- they are of suitable quality and strength
- they have not expired
- the dose is clearly marked
- you can read all of the label (especially on foreign products).

If you have ordered some drugs by mistake, notify the store which supplies you and follow their instructions.

SECTION 5

# Looking after supplies

**This section helps you to develop a system for storing supplies so that they are protected, you can find them easily, and can recognise drugs that are spoilt.**

## Developing a system for storing supplies

1 Separate all the controlled or dangerous drugs from the other drugs which you have in the store. These drugs are controlled by special laws, and you must store them in a special cupboard with a double lock. If you do not have a special cupboard, use a cupboard inside another cupboard. You should be able to lock both cupboards. You should have only a small quantity of dangerous drugs in a health centre.

2 You must always have essential drugs in stock. Store them in a cupboard or on a shelf which you can reach easily. Mark the cupboard or shelf clearly, in alphabetical order, with the generic name of the drugs. Do not use a maker's trade name. Make sure that a responsible person has the keys when you are not available, or fit a locked emergency cupboard outside the store.

3 Clearly mark each section of the store so that you can see where to look for supplies. For example, you could divide it into sections for:

- essential drugs
- dressings
- instruments
- domestic supplies
- stationery
- equipment and spare parts
- laboratory supplies
- toxic substances.

Keep inflammables separately, away from the main store. A separate locked building is best (see page 11).

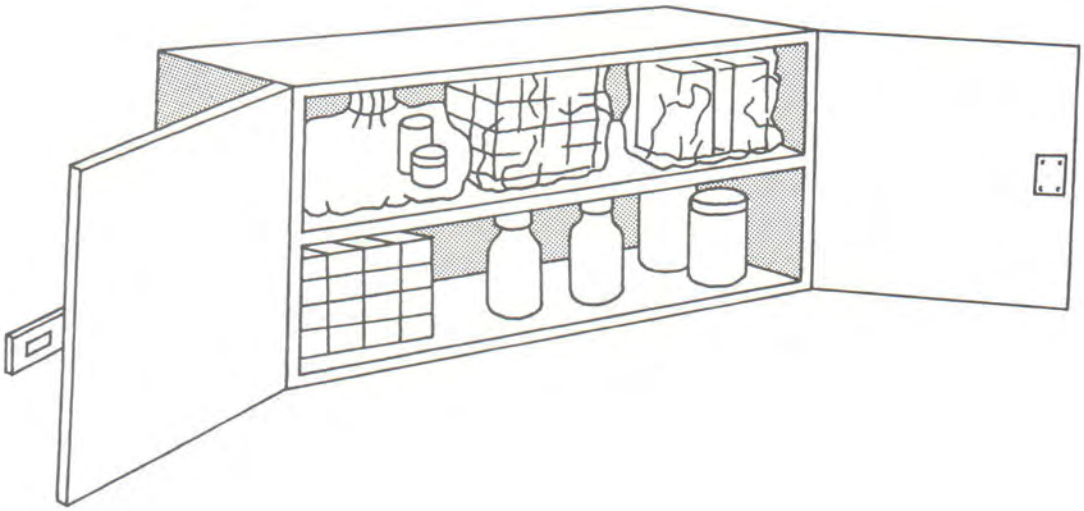
4 When you place the stock on the shelves or in the cupboards, arrange the oldest at the front of the shelf and the newest at the back. This system can be based on 'first in first out', called FIFO, or 'first expiry, first out', called FEFO. It is very important to do this because all drugs

have a limited life or 'shelf life'. This should be marked by an expiry date on the bottle or packet and you must not use the drug after that date. This expiry date applies only to the drug in its original state. Once it has been reconstituted, it may need to be kept in the refrigerator and used within a few days. Reconstituted vaccines must be used for one day only.

*Always check the expiry date on all drugs you receive, and make sure to use first those that are due to expire soonest.*

**Two-shelf system**

If your store is very small use a two-shelf system to store your drugs as follows:



1 When you receive your drugs, divide them into two parts. Put one part on the bottom shelf and seal the other part in bags on the top shelf.

2 When you use up the bottom shelf send an order for more drugs. Meanwhile start to use the top shelf. By the time you finish the top shelf, your new order should arrive.

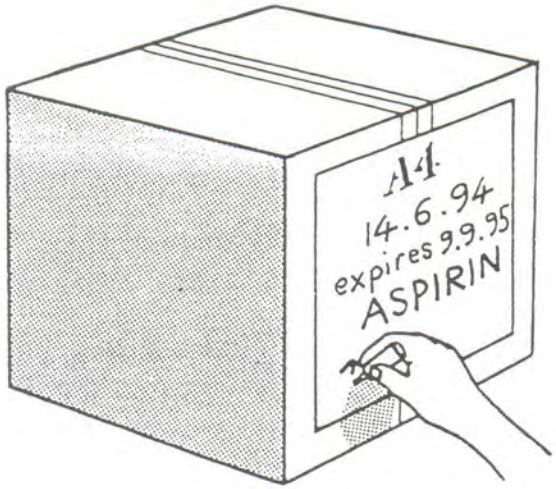
3 The amount you put on each shelf depends on how long it takes for your new order to arrive. For example, if you receive four months stock and it takes two months to receive your order, then divide the shelves equally. On the other hand, if you have four months stock and it only takes one month to re-supply, then the bottom shelf can have three quarters, and the top shelf one quarter of your stock.

## Marking drugs

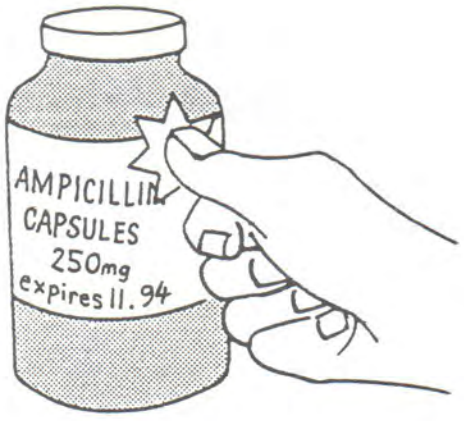
1 Mark all your drugs clearly. If you have containers which have lost their labels, do not use the drugs in them.

2 If you have a large quantity of a particular drug, make sure that the outer carton has the following marked on it:

- product name, and form and strength
- quantity (e.g. 20 tins x 500 tablets)
- location code
- date received
- expiry date (if applicable).




3 Check your drugs and mark all those that expire this year. Use them first.



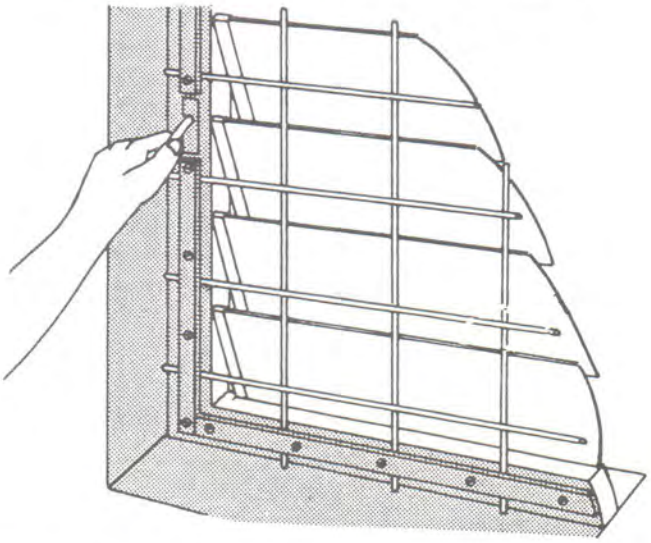
# Protecting supplies

You need to protect supplies from humidity, sunlight, heat, physical damage, dirt and pests.

## Humidity

Damp (or humid) air attacks drugs in unsealed containers, and in some sealed ones, and can spoil them very quickly. It is important to keep damp air away from your drugs. You can reduce the effects of humidity in the following four ways.

1 Make sure you have good ventilation; keep the windows or air vents of your store open. (But make sure the windows are not open enough for anyone to climb in, if you are away from the store.)



2 Make sure the lids on the tins of tablets are tight and *never* open a new container until an already open one of the same drug is finished.

3 Use a fan to circulate fresh (outside) air around the store. But this needs electricity and some maintenance.

4 If possible, use an air conditioner. For a store of $20m^2$ you need a 3kw unit to cool the air by several degrees. However, this is very expensive, depends on an even supply of electricity, and needs regular maintenance.

Remember, the hotter it is in the store, the damper the air may be. Keep the store cool, but be prepared for condensation caused by cooling damp air. Good ventilation will reduce condensation.

## Sunlight

The direct rays of the sun and even diffuse daylight can spoil some drugs, such as ergometrine for injection. To protect drugs against the sun:

- shade the windows, or use curtains if they are in direct sunlight
- keep drugs in cartons
- do not store or pack them where the sun can shine on them
- use opaque plastic or dark glass bottles if available
- do not transfer drugs from dark containers to clear ones (drugs are probably light-sensitive if they are supplied in dark containers).

## Heat

Heat affects many drugs. It can melt ointments, creams, suppositories and pessaries, and makes some drugs unfit for use very quickly. You must try to protect them from heat. All your supplies keep better if they are cool. The drugs you must keep in a refrigerator (at +2°C to +8°C) are:

- vaccines
- sera and blood products
- anti-toxins
- insulin
- reconstituted antibiotic injections and syrups
- ergometrine injections.

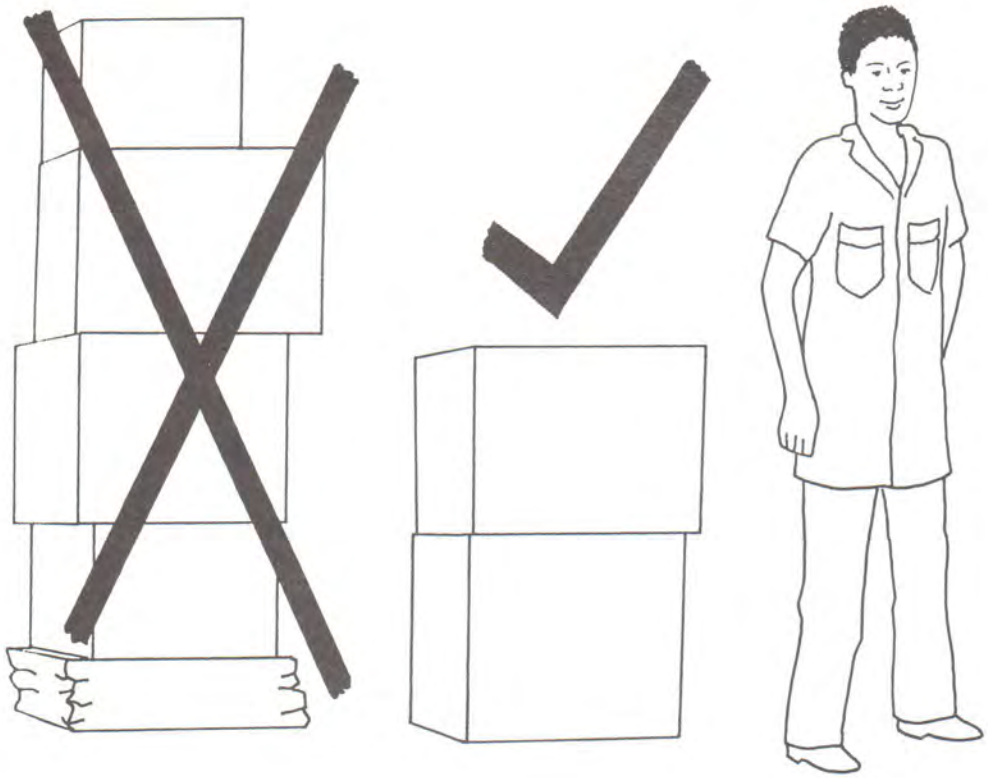
Remember **you must not freeze** DPT, DT, TT vaccine or injectable contraceptives. If you do you will spoil them (see Annex II).

## Physical damage

Some supplies can be damaged by crushing or breaking: for example, you can easily crush tablets and ampoules. To avoid physical damage:

1 Do not make tall piles of heavy items. Tall piles increase the risk of crushing, and also make it difficult to reach the supplies at the top of the stack.

2 Make sure there are no sharp edges and corners in the store – which may damage cartons – by binding them with tape.



### Dirt and pests

If your store is dirty it encourages pests which may damage the supplies. Dirt also makes labels difficult to read. Make sure you clean the store at least twice a week. To clean the store, dampen the floor or scatter wet tea leaves before sweeping, or use water and a mop. Use a damp cloth to wipe walls and shelves. If possible use a vacuum cleaner.

Make sure the area around the outside of the store is also clean. If there is grass, it must be kept short.

## Security

Many supplies in your health centre store are valuable, and some of them are dangerous if misused. To keep the store secure:

1 Make one person responsible for looking after all the supplies; appoint someone else to be in charge when this person is absent.

2 Keep the store locked: two people should be responsible for keeping the keys.

3 Make sure that the security measures described on pages 2–9 are in working order.

4 Keep drugs at risk of theft in the locked cupboard with controlled drugs.

5 Make sure that you carry out checks as described on pages 49–50.

6 Make arrangements for out of hours emergency service.

### Loss

If you find that items are missing from your store you should take the following steps.

1 Check the stock:
- recheck the stock entries to make sure there are no errors on paper
- make sure the item is not in a different part of the store.

2 Report to your supervisor in writing:
- when you noticed the loss (time and date)
- any possible reason for the loss.

3 Arrange for another supply of the missing item if necessary.

### Theft

If there has been a break-in to the store, tell your supervisor and the police at once.

1 Place essential drugs and vaccines in safe storage. If vaccines have been in high temperatures, do not use them unless your supervisor tells you to.

2 Touch nothing else until the police have completed their investigations.

3 Check to see what has been stolen.

4 If you have a night watchman, make sure he is present to answer questions.

5 Check where all the staff are.

6 When the police have finished, clear up and make the store secure. Then re-order the stolen items.

7 Write a report to your supervisor including:
- what has been stolen (and give the value if possible)
- a description of the break-in – include a police report if you have one
- steps which you have taken to secure the store
- any remaining shortage which you cannot replace.

## Recognising drugs and supplies that are unfit for use

No matter how careful you are, you may find that some of your supplies are unfit for use. It is often impossible to tell if supplies are spoilt but here are a few tips to help you.

- **Smell** When some items, such as aspirin, have been damaged by too much heat and damp, they smell differently or more strongly. If a tin of aspirin smells strongly of vinegar when you first open it, the aspirin are useless.

- **Colour** Some drugs lose or change their colour when they are spoilt. Make sure you know what colour a tablet or injection should be. If it is a different colour or colours, do not use it. For example, ergometrine injection should *not* be used if the colour is different from clear water or discoloration can be seen with the naked eye.

- **Damp** When tablets are damp, they break up or stick together. You should not use them because they may break when used.
- **Drying out** Condoms are normally lubricated. If they have dried out you should not issue them because they may break when used.
- **Melting** Oral rehydration salts (ORS) may melt above 30°C. If you find ORS packets which are dark brown and sticky and the contents will not dissolve, do not use them. Capsules also may soften with heat. If you find capsules are stuck together, do not use them. If suppositories, pessaries, creams and ointments have melted and become runny, do not use them.
- **Clarity** Use the test shown in Appendix II to see if DPT, DT and TT have been damaged by freezing.

SECTION 6

# Organising supplies

**This section explains how to keep stock cards and special registers, avoid running out of supplies, stocktake and building check, check use, reorder, and get rid of expired drugs.**

## Stock control

### Stock cards

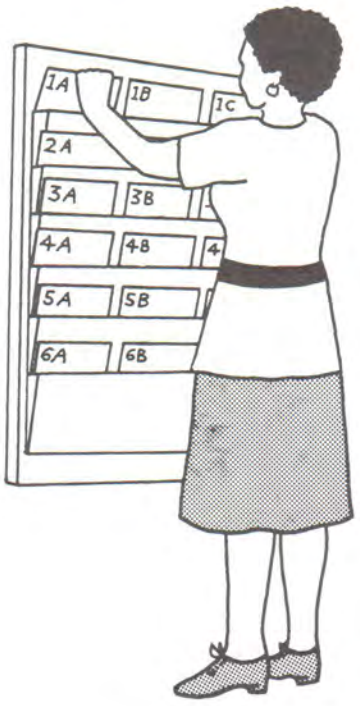
This is the simplest method of recording the movement of supplies. For each receipt or issue, record the following:

- date
- received from
- issued to
- delivery or order number
- quantity received or issued
- balance now in stock
- remarks – any other details
- your signature or initials.

A completed example is shown on the next page.

Under the 'Issued to' column, enter any drugs you give out to your treatment room, village health workers or other health centres.
In the 'Quantity' column, enter whole units only, e.g. a whole jar of tablets. Do not keep partly used units in the store room. Keep them in the treatment area.

Under the 'Item' description, use the same description as the supplying store. Each item has its own card. For example, aspirin for children will be on a different card from adult aspirin.
'Units' shows the unit measure used for the item, e.g. tablets, 10 dose vials, capsules, 250ml bottles, etc.
'Minimum stock' or 'Re-order level' shows the minimum quantity at which to place your order for more stock.



The 'Remarks' column allows you to record your findings when you check the stock. You should check your stock every month, before ordering more supplies. You can also record information such as expiry dates in this column.

The card could also show the location of the item in the store. For large items which you store in separate places, show both the places.

Store these cards together in a box or keep them together on a board. (Pin a polythene bag to the board for each card.) You can keep the cards in a suitable place near the entrance to the store or with the stock in the correct place on the shelves.

STOCK CARD

ITEM: ASPIRIN 300 mg CODE NO: 24-0600

UNIT: 1000 PRICE: 2,12 MIN. STOCK: (in units) 25

(Minimum Stock = quantity you use in 3 months)

When ordering: Order the same quantity as the MINIMUM STOCK.

| DATE | RECEIVED FROM | ISSUED TO | QUANTITY RECEIVED | QUANTITY ISSUED | BALANCE | REMARKS | SIGNATURE |
|---|---|---|---|---|---|---|---|
| 8/9-94 | BALANCE | BROUGHT | FORWARD | | 3 | | RM |
| 11/9-94 | GMS | | 25 | | 28 | | RM |
| 13/9-94 | | TR | | 1 | 27 | | RM |
| 14/9-94 | | RHC "x" | | 2 | 25 | | RM |
| 17/9-94 | | TR | | 1 | 24 | | CB |
| 20/9-94 | | 10 VHW | | 5 | 19 | | CB |
| 23/9-94 | RHC "x" | | 2 | | 21 | | CB |
| 23/9-94 | | TR | | 1 | 20 | | RM |
| 27/9-94 | | OR | | 1 | 19 | | RM |
| 29/9-94 | | TR | | 1 | 18 | | RM |
| 5/10-94 | | TR | | 1 | 17 | PHYSICAL COUNT | RM |
| 8/10-94 | | TR | | 1 | 16 | | RM |
| 10/10-94 | GMS | | 25 | | 41 | | CB |

*Source: 'Ordering and Stock Control', ZEDAP Training Unit, Zimbabwe Ministry of Health.*

You can summarise information from stock cards by transferring to a stock control book. These may be available from your medical stores, or you can make one from an ordinary exercise book. If you complete the book every month, before you place a monthly order, it will make ordering simpler than using individual stock cards. A stock control book page can look like this:

Must be filled in once a month from the stock cards. Fill your Medical Stores Requisition from this book.

ITEM: ASPIRIN 300 mg CODE NO: 24-0600

UNIT: 1000 PRICE: 2.12 MIN. STOCK: (in units) ~~24~~ 25

If you order this item: Order the same quantity as the MINIMUM STOCK

| DATE | PREVIOUS PHYSICAL COUNT | STOCK RECEIVED | QUANTITY USED | PRESENT PHYSICAL COUNT (= BALANCE) | QUANTITY TO BE ORDERED | SIGN |
|---|---|---|---|---|---|---|
| 25/1-94 | 13 | 25 | 8 | 30 | Nil | RM |
| 27/2-94 | 30 | Nil | 8 | 22 | 25 | RM |
| 25/3-94 | 22 | Nil | 9 | 13 | 25 | RM |
| 26/4-94 | 13 | 25 | 8 | 30 | Nil | RM |

## Inventory

You can record some items, especially equipment, better in an inventory. This is a book which has one page for each item. These pages are divided up into columns similar to those of stock cards. Use these only for equipment.

**Re-order level** 5 **Location** S2 **Units** Each **Maximum stock** 10 **Page no.** 30

**Description** Stethoscope standard

| Date | Received from | Issued to | Invoice no. | Quantity | Location | Balance check | Signature |
|---|---|---|---|---|---|---|---|
| 1/8/94 | District store | | 128 | 4 | Store | 4 | PC |
| 1/9/94 | | OPD | | 2 | Treatment | 2 | KB |
| 1/10/94 | | Mobile 1 | | 1 | Mobile 1 | 1 | PC |
| | | | | | | | |

The 'Signature' column is where the person taking charge of the item signs for it.

The 'Location' column is to record where you normally keep the item, so that you may carry out a physical check at a later date.

**Special registers**

Record controlled or dangerous drugs in their own register. You should sign this each time you issue or receive one of these drugs. Keep this register in the double-locked cupboard with the drugs.

## Re-ordering supplies

There are several ways to re-order your supplies, including the following three ways.

**Fixed quantities (the 'kit system')**

You order the same amount each time.

| Advantages | Disadvantages |
|---|---|
| • very simple | • you may have too much or too little at certain times of the year |
| • saves staff time | • you may not have enough to meet unexpected demand |
| • makes the job of the supplying store easier | • you may always order too much |
| • does not depend on the supplying store receiving an order | |

In some places, this system may be used only for emergencies.

**Semi-fixed ('top-up') quantities**

This system is very useful for outreach workers who normally receive supplies from health centres. These workers have a box with fixed spaces for each item. When they re-order they check the box spaces, and order enough to refill them. In some cases this system allows stores to order quantities up to a set maximum (often 'maximum stock' or three months' consumption).

| Advantages | Disadvantages |
|---|---|
| • simple and quick | • not all workers need the same quantities or types of supplies |
| • easy for the supplying store | • difficult to check |
| | • limited to a small scale |

**Variable quantities**

This system lets you make allowances for seasonal differences in demand, and change your supplies to meet your particular requirements.

| Advantages | Disadvantages |
|---|---|
| • varies to meet demand | • takes time to prepare |
| • cheap | • depends on the requesting store to complete an order |
| | • requires regular stocktakes |

If you need supplies which have to be kept cool, remember to send a cold box with ice packs with your order.

## How to avoid running out of supplies

It may be very difficult to keep up your supplies, especially if there are shortages in the central supply. However, there are steps you can take to try to avoid running out of supplies. To make sure that you always have some supplies, it is best to keep a reserve or 'safety' stock.

### Reserve stock

You probably find that during the year demand changes at certain times, for example, during:

- the dry or wet season
- harvest/planting
- religious festivals.

These are expected, and you can plan for them. However, there are events which you cannot plan for, such as:

- a breakdown of the supply vehicle
- epidemics
- an unexpected change of prescribing policy
- shortage of supplies
- natural disasters.

For these unexpected events you need a reserve stock. The reserve stock you need will vary according to local circumstances. But, generally, you can calculate reserve stock as equal to a quarter of the stock which you use during a supply period. *For example*, if you use 40,000 aspirins during a supply period of three months, your reserve stock should be 40,000 ÷ 4 = 10,000. You should aim to have no less than 10,000 aspirins in stock at all times. Alternatively, you can calculate reserve stock as one month's supply.

When you receive new stock make sure that you use the old reserve first – always use drugs with the earliest expiry date. Put some of the new stock aside as reserve.

### Re-order level (minimum stock)

To make sure that your new supplies arrive before you run out, you must know when to re-order. This is called the 're-order' or 'minimum stock' level. You need to re-order your supplies before you reach your reserve stock. Otherwise if there is an unexpected delay you may run out. There are several ways of calculating the re-order level, but the simplest is to use the amount of stock you use in three months (or during the period of time it takes between ordering and receiving supplies).

For example, if you have used, or expect to use, 40,000 aspirins in three months, this is your minimum stock level for aspirin. You may find that your minimum stock level changes over time, and you can adjust it accordingly in your records and ordering.

You can decide whether or not to order a particular drug each month by looking at each page of your stock book. If the balance of a drug is less

than the minimum stock level, you need to place an order. If the balance is more than the minimum stock level, you do not need to order that drug.

You can mark the re-order point for each item with a line drawn on the shelves. Or you can place a card in the stack at the re-order point.
If you need to order, order the minimum quantity for each item. In the example above, this would be 40,000 aspirins.

**Maximum stock**

Your supplies must not reach the expiry date before you can use them. The supplying store also has to distribute its stock fairly. For these two reasons, you must have a maximum stock level. A maximum stock level stops you from over-ordering supplies.

To find your maximum stock level for a particular item, take the re-order level (in this example three months' stock), and add the amount needed for one supply period. If your supply period is one month, then your maximum stock is four months' worth. You should never have more than this in stock.

**Rationing supplies**

If there are unavoidable shortages you may have to ration the use of supplies, especially drugs. Then you have to make difficult choices. You could base these on the following:

- age – e.g. only treat people below a certain age
- response to treatment – e.g. serious cases only
- possibility of recurrence.

It is very difficult to make these choices. But if you are short of supplies, make the best possible use of them. Remember, even if you do not make these choices, you still select the patients you treat. 'First come first treated' is a form of selection, but may not be the best use of your supplies.

**Use another drug**

If you are going to run out of a particular drug, check your supplies. See if there is another drug which you can use instead. Then use the drug in short supply for essential cases and use the substitute for routine cases. But if you do not have a suitable substitute, always tell the patients concerned, so they can try and make other arrangements. Do not give placebos ('dummy' medicines which have no effect).

## Checking use of supplies

You need to check the use of supplies for four reasons:

1 You may find you do not use some items. Find out why, and if necessary return them to the supplying store.

2 You must make sure that you do not waste consumable items, for example by letting them expire on the shelves of your store.

3 You must make sure that you keep items like sterilisers, refrigerators and vehicles in good condition. They can break down easily.

4 You must make sure that you look after other items, like furniture and linen.

Make a timetable for checking the use of all the supplies in your health centre. Some need checking once a year. These include furniture and soft furnishings. Check items which can break down easily once a month. Check other items at least three times a year.

## Disposal of expired drugs and supplies

Some items, for example worn out needles and syringes, part-used vials of vaccine and expired drugs will need to be disposed of. Ensuring that expired drugs are properly disposed of or destroyed should usually be the responsibility of some sort of committee, to prevent the possibility of an individual abusing them, for example through resale. The best way to dispose of drugs is to burn them in an old oil drum with holes in it. Before you burn anything, open jars, ampoules and vials; otherwise they may explode. After burning, bury what remains. It is particularly important to dispose safely of used syringes and needles, so that they are not reused or children do not find them, because dirty needles can transmit infections such as hepatitis and HIV.

If you cannot burn expired supplies, first make them unusable by taking them out of their containers, soaking tablets or capsules in water or breaking ampoules. Then bury what is left in a hole in the ground at least 40cm deep. Do not throw expired drugs away inside their wrappings.

You can pour *non-corrosive* liquids down the drain if the drain goes into a septic tank. But beware of pouring solvents down plastic pipes: for example, chloroform can dissolve the plastic. After you have disposed of expired drugs, pour lots of water into the drain to clean it. Then wash your hands.

You may have to return some expired items, e.g. drugs and vaccines, to the supplying store. In this case, clearly mark them 'expired supplies'

# Stock taking and building check

You must check your stock regularly. This means counting what you have on the shelves and comparing the counted figures with the records. If you find a difference, find out the cause. You should carry out the stock check at least three times a year and, if necessary, more often and at no fixed time. Drugs and vaccines should be checked every month.

The following can be used as a checklist for keeping your store in good condition.

| | | | Yes | No |
|---|---|---|---|---|
| **Inside** | Windows | Frames in good condition | | |
| | | Glass unbroken | | |
| | | Glass clean | | |
| | | Mosquito mesh unbroken | | |
| | | Security mesh unbroken | | |
| | Doors | Frame in good condition | | |
| | | Door in good condition | | |
| | | Hinges in good condition | | |
| | | Lock in good condition | | |
| | Ventilators | Security mesh unbroken | | |
| | Ceiling | Flat (no sinking in the middle) | | |
| | | Clean | | |
| | Walls | Paint in good condition | | |
| | | Clean | | |
| | Floor | Smooth and unbroken | | |
| | | Clean | | |
| | Shelves | Undamaged | | |
| | | Flat (no sinking in the middle) | | |
| | | Shelf marking clear | | |
| | Cupboards | Undamaged, locks are working | | |
| | Refrigerator | Follow checks in *How to look after a refrigerator*; most importantly, check that the temperature in the main compartment is between +2°C and 8°C | | |
| | Pests | Free from vermin, flying insects and termites | | |
| | Services | Lights are working | | |
| | | Power outlets are working | | |
| | | Kerosene/gas/water supply good | | |
| **Outside** | Roof | In good condition (not leaking) | | |
| | Gutters | In good condition and free of blockages | | |
| | Walls | In good condition | | |
| | Verandah | In good condition | | |
| | Surrounding area | Clear of long grass, rubbish and dust | | |

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| | | Door in good condition | | |
| | | Hinges in good condition | | |
| | | Lock in good condition | | |
| | Ventilators | Security mesh unbroken | | |
| | Ceiling | Flat (no sinking in the middle) | | |
| | | Clean | | |
| | Walls | Paint in good condition | | |
| | | Clean | | |
| | Floor | Smooth and unbroken | | |
| | | Clean | | |
| | Shelves | Undamaged | | |
| | | Flat (no sinking in the middle) | | |
| | | Shelf marking clear | | |
| | Cupboards | Undamaged, locks are working | | |
| | Refrigerator | Follow checks in *How to look after a refrigerator*; most importantly, check that the temperature in the main compartment is between +2°C and 8°C | | |
| | Pests | Free from vermin, flying insects and termites | | |
| | Services | Lights are working | | |
| | | Power outlets are working | | |
| | | Kerosene/gas/water supply good | | |
| **Outside** | Roof | In good condition (not leaking) | | |
| | Gutters | In good condition and free of blockages | | |
| | Walls | In good condition | | |
| | Verandah | In good condition | | |
| | Surrounding area | Clear of long grass, rubbish and dust | | |

SECTION 7

# Issuing supplies and dispensing

**This section explains about issuing supplies and how to pack them, organising a dispensary and dispensing drugs.**

## Issuing supplies

### Equipment

Some items of equipment are kept in different parts of the health centre. For example, glass slides, microscope, centrifuge and laboratory supplies are in the laboratory. These are the responsibility of the laboratory technician. In the maternity clinic the nurse is responsible for baby scales and delivery kits.

When you have issued these items to the responsible staff, keep a record in your inventory in the store. This is described in Section 6 page 45.

### Consumables and domestic items

You can issue these items by using an issue voucher. This is a simple form recording:

- the date of issue
- the item which you issue
- how much or how many you issue
- which part of the health centre uses it
- who is responsible for its use and their signature.

Keep one copy of this voucher in the store. Give the other copy to the person who collects the supplies. It is a good idea to have fixed times for issuing supplies. If you have a large centre, with several departments, you may need to make a timetable. This shows each department when they can collect supplies. For smaller centres you may issue supplies at a set time each day.

You may find it simpler to use a stock control or inventory book (see page 45) for issuing supplies, and that you do not need to also use issue vouchers.

### Drugs

Drugs which you supply from the store go in large quantities to the dispensary. The dispensary then supplies the other parts of the health centre.

If you are supplying another centre such as an aid post or clinic, you probably issue their drugs from the store.

When you issue supplies, use the following guidelines:

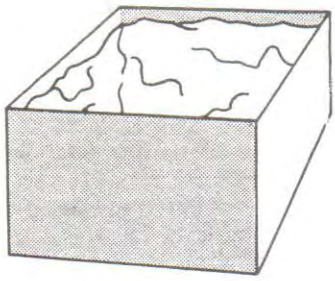
- Before issuing supplies, answer any queries about the order.
- For items with an expiry date, issue them in date order. They must not reach their expiry date before the next supply period.
- Note those items that have reached their re-order level and re-order them.
- Make sure that the caps of any bottles or tubes of ointment which you issue are tight, and that the supplies are in good condition.
- Put those items which need protection, such as vaccines, in a suitable cold box with ice packs; if indicators are included, check that they are correctly filled in.
- Check that items of equipment are working.
- All the spares which you supply must be suitable for the equipment for which they are requested.
- Fill in the issue voucher correctly, and record the number on the stock card.
- Supply all the items requested or give an explanation for their absence.

## How to pack supplies

The packing of supplies is most important. Badly packed items may break, and heat can spoil badly packed vaccines and sera.

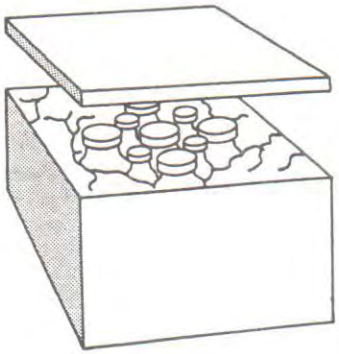
To pack supplies which do not need to be kept cold, you need the following materials:

- a wooden or cardboard box approximately 60 x 60 x 60cm
- plastic bags
- adhesive tape
- cord
- scissors
- glue
- packing material (such as paper or straw).

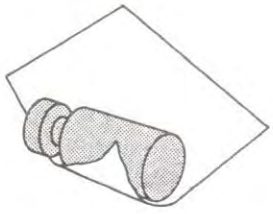


1 Line the box with packing material.

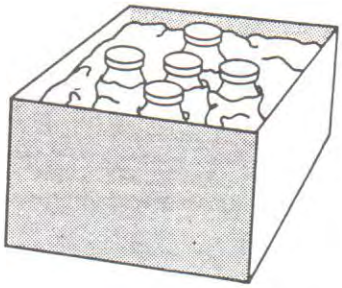
2 Wrap the large bottles in paper.



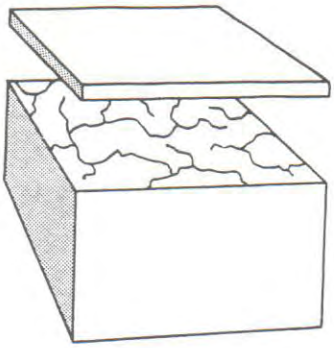
3 Place the large bottles in the centre of the box.



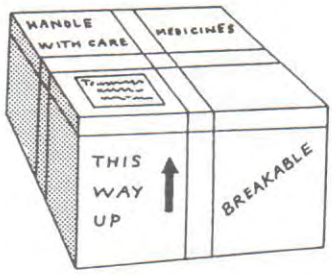
4 Wrap small items in paper and put them into the gaps.



5 Fill plastic bags with paper you have cut up, or with clean straw. Put bottles or other small breakable items in them and put these into the remaining gaps.



6 Fill the remaining gaps with paper. Put paper on top and put on the lid.




7 Seal the box with tape and cord. Make sure that you label it clearly with the address and name of the person who is to receive it. When necessary use labels such as *Glass, Urgent medical supplies, Inflammable chemicals, This way up*, etc.

For supplies that need to be kept cold, *How to Look After a Refrigerator* explains how to pack a cold box and a vaccine carrier.

# Organising a dispensary

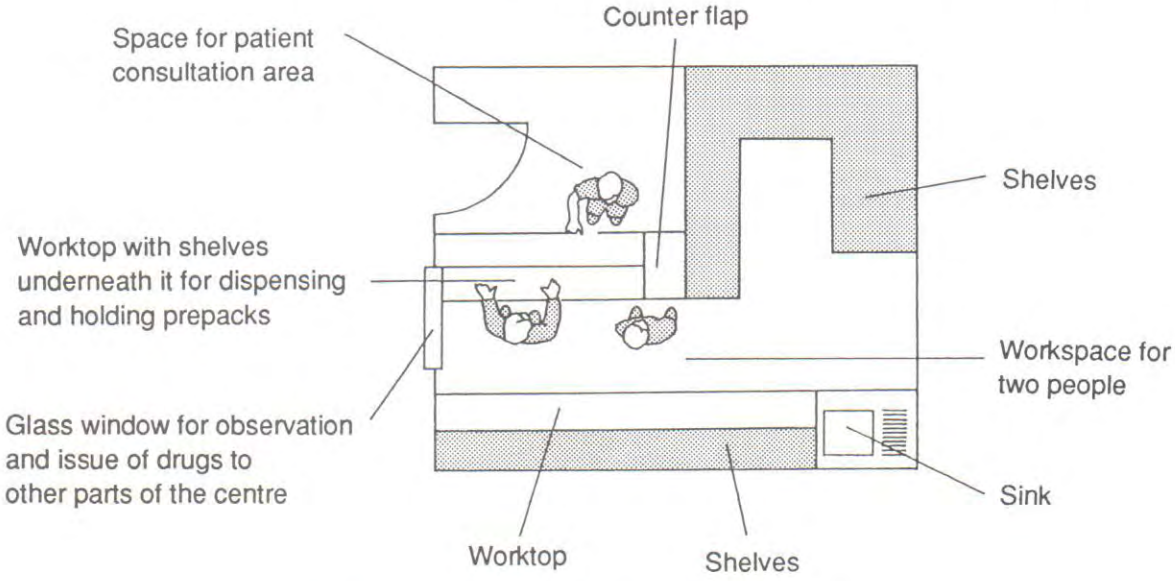
## Layout

A well organised dispensary will serve patients and other parts of the health centre more efficiently.

Arrange the dispensary so that you have room for:

- the patients to collect their drugs and discuss how to use them with the dispenser
- other patients to wait
- the dispenser to work
- storage of drugs
- pre-packing the drugs which you use the most.

The following diagram shows a dispensary layout, from above.




# Dispensing drugs

## Reading prescriptions

Make sure you understand the instructions written on the prescription. If you cannot read it or do not understand it, check with the person who wrote it out. Then prepare the prescription for the patient.

## Preparing drugs

Dispensaries may be very busy during a clinic when many patients will come to collect drugs. The dispenser or pharmacist must make sure that she or he gives the correct drug to the patient, and that the patient knows how to use it. The following can help.

## Pre-packing tablets

Many patients need similar quantities of the same drug, e.g. folic acid, chloroquine, aspirin, etc. Pre-pack these drugs before the clinic so that you do not waste time counting tablets when the clinic is busy. To do this you need:

- a tablet counter
- paper or polythene bags
- a heat sealer or stapler
- labels.

Decide how many packets to prepare each day. To do this, check the dispensing records for each drug and see what the average is for a day. It is better to pre-pack too few than too many. If you have too many, it may be difficult to arrange to use the oldest first. Also you can only keep drugs in these packages for a limited time, usually no more than a few days.

## Tablet counting

One of the easiest methods of counting tablets – for individual prescriptions or for prepacking – is to use a simple counting tray. This is usually a metal or plastic tray with three sides and one open end. But any clean, flat, washable surface will do. *Always* use a knife or other washable implement to count tablets. *Never* use your fingers to count loose tablets. You could contaminate one set of tablets with powder from touching another set, and you yourself could become allergic to or be harmed by handling some tablets.

Examples of simple tablet counters are shown below and on the next two pages. These may be most useful if you have to prepare large numbers of tablets for patients.

All of these tablet counters are much easier and quicker than counting by hand.

### Large hole-board counter

This kind of counter has different boards with holes to suit various tablet sizes. Each board has 100 holes arranged in rows.

1 Choose a suitable board and put it in the counter, on top of a removable plate which stops the tablets falling through.

2 Shake the tablets onto the board, then sweep them across to fill all the holes. Any excess tablets fall down a chute into a box.

3 Pull out the removable plate row by row. This releases the required number of tablets, which drop into a bag.

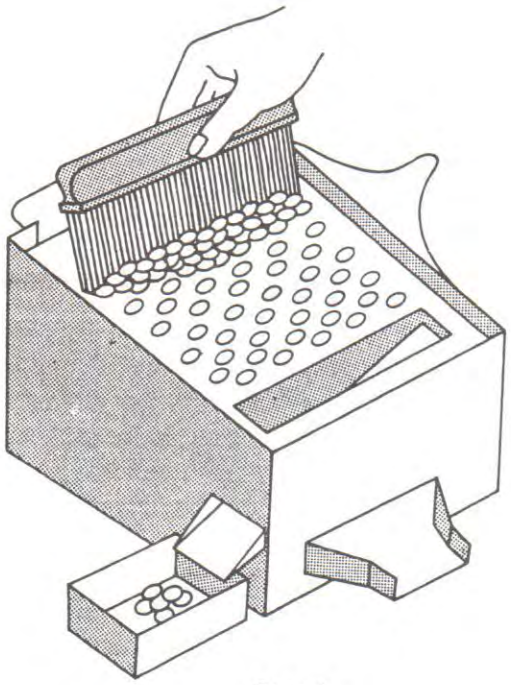
**Advantages**

- simple to use
- you can vary it for different sizes
- you can vary it easily for different quantities
- reduces the risk of tablets getting dirty
- easy to fill bags.

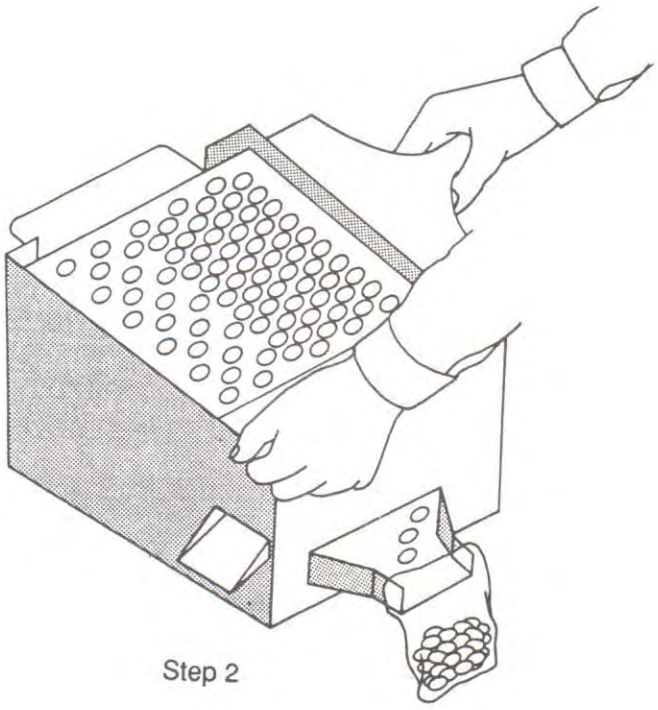
**Disadvantages**

- difficult to make
- more expensive to buy
- it must be thoroughly cleaned between use for different kinds of tablet, to avoid contamination.

With a counter like this you can easily pre-pack tablets in quantities from 5–100.



Step 1



Step 2

**Small hole-board counter**

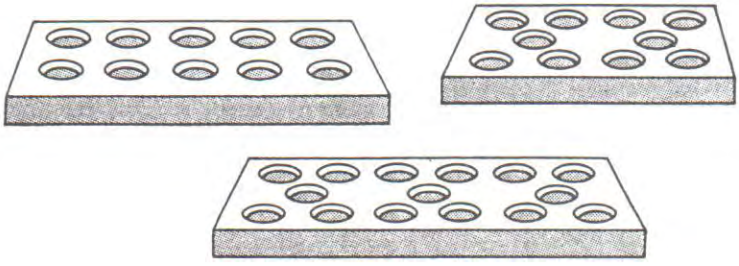
Another alternative is to drill blocks of wood with a number of holes of suitable size. This is usually easier for smaller numbers of tablets, less than 20.

**Advantages**

- very cheap
- very easy to make
- easy to use.

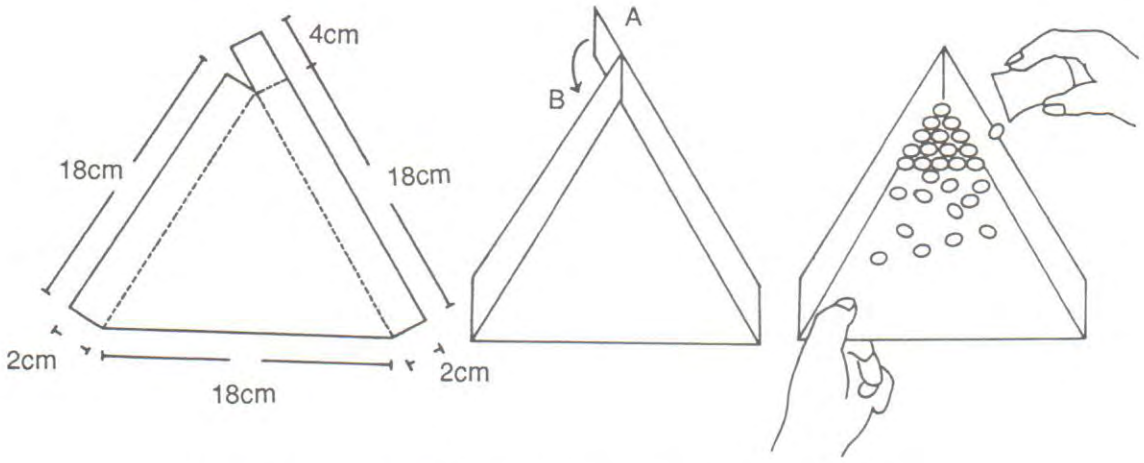
**Disadvantages**

- requires a different block for each size and quantity
- the tablets are not contained
- the tablets are likely to get dirty
- it is possible to spread contamination from one type of tablet to another
- it is difficult to fill bags.



### Tablet counting triangle (for round tablets)

To make one of these, take a piece of stiff, shiny card and cut out a triangle like the pattern below. Fold along the dotted lines and fix flap A to flap B.




Use the following table to work out the number of tablets.

| Rows | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of tablets | 1 | 3 | 6 | 10 | 15 | 21 | 28 | 36 | 45 | 55 | 66 | 78 | 91 | 105 | 120 | 136 | 153 | 171 | 190 | 210 |

To use the counter, fill the number of rows nearest to the total required, then add or take away the balance. For example, if you need 20 tablets, fill to row 6 and subtract 1.

**Advantages**

- very easy to make
- very cheap
- fits any size of round tablet.

**Disadvantages**

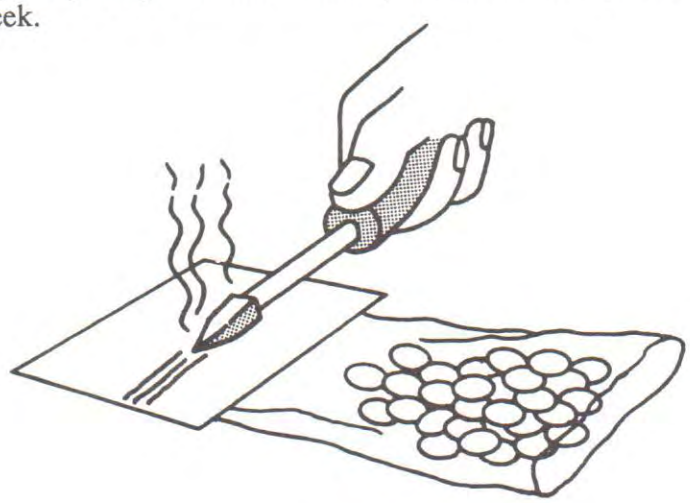
- more complicated to use
- doesn't last long
- the tablets are not contained
- bag filling is a separate operation.

You could also make a triangle like this from metal, which would last longer and could be washed.

## Sealing packets

Fill polythene bags with the right number of tablets and seal. For this use a heat sealer. If you do not have one, you can use a soldering iron with a piece of silver foil, as shown in the diagram on page 58. If you do not use silver foil, the polythene melts and does not seal. Another alternative is to use a stapler, but this does not make an airtight seal. If you cannot get polythene use paper packets. Paper is easier to reseal, but does not keep out moisture.

Remember neither paper nor polythene keep out air or moisture completely. So you should not keep tablets in these packets for more than a week.



**Pre-filling solutions**

When you have solutions in bulk you can pre-fill to save time. When you pre-fill, make sure the bottles are labelled. This is particularly important if you have solutions of different strengths.

If you have difficulty in getting bottles, try to build up a small stock so that when patients bring their own bottles, you can exchange them for ones which you have cleaned. Remember, do *not* fill a bottle which a patient brings you until you have cleaned it properly. Never mix more than one drug in the same bottle.

**Labelling**

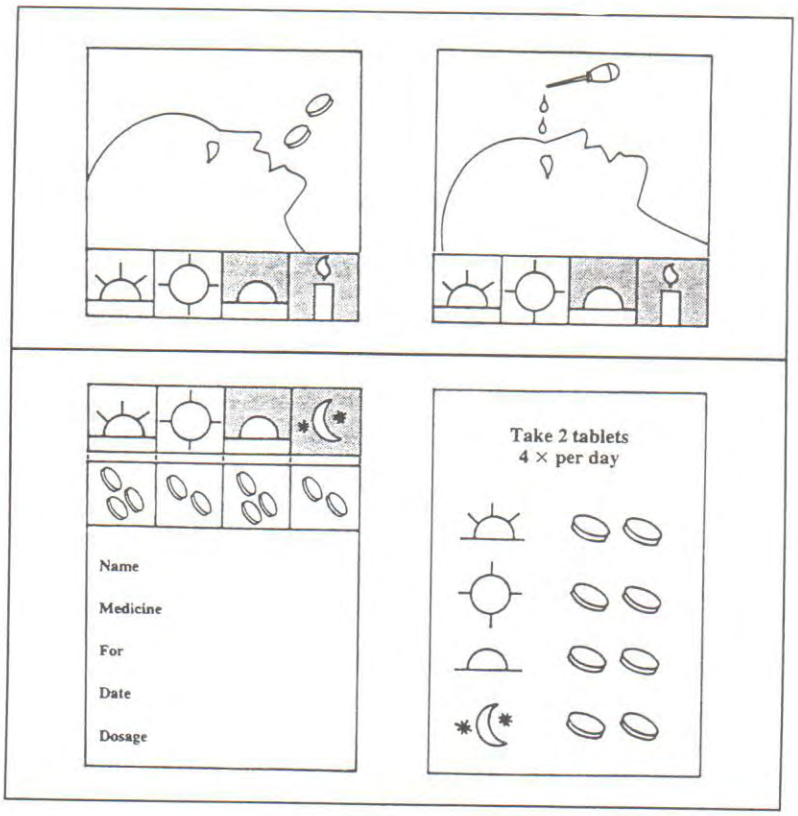
Each bottle or package given to a patient must include a label which shows:

- the name of the drug
- the name of the patient
- how many times a day a patient should take or use a drug
- how much a patient should take each time
- how a patient should take or use it.

Stick the label onto the container and put *clear* sticky tape over it. The sticky tape stops the label falling off and helps protect the writing from getting dirty or wet. If you use clear packets for packing, you can put labels inside the packet.

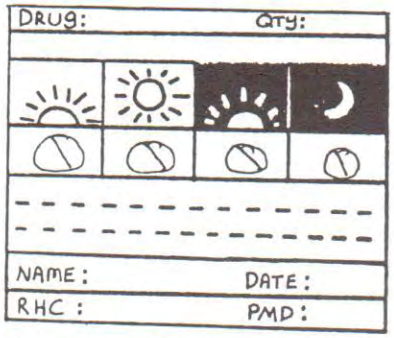
The label should always have the name of the drug and the strength. For people who cannot read it, is a good idea to use pictures to show the information they need to know. Some examples are shown on the next page.

You can make your own labels and test them to see which one people understand most easily.

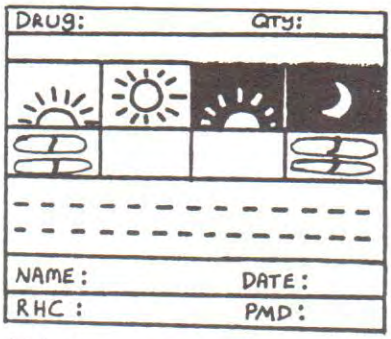



*Reproduced courtesy of Jeremy Bratt and the World Health Organization.*

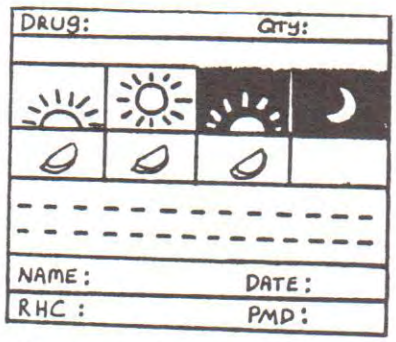
These show how you can fill in the dose of a drug on a pictorial label



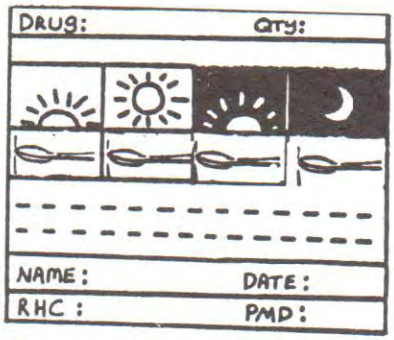

This means one tablet four times daily




This means two capsules twice daily




This means half a tablet three times daily




This means one teaspoon four times daily

*Source: 'Dispensing Drugs', ZEDAP Training Unit, Zimbabwe Ministry of Health.*

## Dispensing

Before you dispense drugs, first ask the patient their name (do not ask in such a way that they can answer 'yes'!).

When you are dispensing drugs, make sure that the patient understands the dose and how often they have to take it – ask them to explain this back to you. If necessary, keep a list of people working in your centre who can help with different languages and dialects.

Arrange the dispensary layout so that only one person can come to the counter at a time. This makes it easier for you to explain to the patient how to take the drug and to make sure they understand. It also gives the patient more privacy.

In the dispensary keep all drugs away from the counter so that patients cannot reach them. A good arrangement for those drugs you have pre-packed is to put them in pigeon-holes in the counter like this:

Make sure the patient can see the working area for the dispenser or pharmacist but not reach it.

Arrange for other departments in the health centre to collect their drugs at a different time from the main rush of out-patients. Then you can prepare these drugs at a quieter time, and have them ready for collection.

It is a good idea to issue only diluted disinfectants from the stores, because domestic staff may put too much disinfectant in their cleaning water. This not only wastes disinfectant, but can also stop it from working properly.

# Appendix I: Storage of drugs

## Storage recommendations and stability characteristics of selected drugs from the WHO model list of essential drugs

*Note: Always observe the storage temperatures and expiry dates given by manufacturers. The information in this table is for general guidance only.*

| Essential drugs | Storage temperature | Protect from | Indicators of having perished | Comments |
|---|---|---|---|---|
| Acetylsalicylic acid (aspirin) | 15–30°C | Light and moisture | Acetic acid odour | |
| Aluminium hydroxide tablets | 15–30°C | Moisture | | |
| Benzoic acid and salicylic acid ointment | 15–30°C | | | |
| Benzyl benzoate lotion | Below 30°C | Light and air | | Avoid exposure to excessive heat |
| Benzylpenicillin | 15–30°C | Air and moisture | | |
| Chloroquine hydrochloride tablets | 15–30°C | Light and moisture | | |
| Chlorpromazine hydrochloride injection | 15–30°C | Light and air | Brown or violet colour | Tight, light-resistant container |
| Chlorhexidine | Up to 25°C | Light | | For external use |
| Dapsone tablets | 15–30°C | Light and moisture | Discoloration by light *without* decomposition | |
| Diazepam injection | 15–30°C | Light | | Protect from freezing |
| Epinephrine (adrenaline) injection | 15–30°C | Light | Red colour | Protect from freezing |
| Ephedrine sulphate or hydrochloride tablets | 15–30°C | Light and moisture | | |
| Ergometrine injection | 2–8°C | Light | Discoloration | Protect from freezing |
| Ferrous sulphate and folic acid tablets | 15–30°C | Moisture | Discoloration, change in consistency | |
| Isoniazid tablets | 15–30°C | Light and moisture | | |
| Iodine solution | 15–30°C | Air | Brownish yellow | Protect from freezing |
| Lidocaine hydrochloride injection | 15–30°C | | | Protect from freezing |
| Metronidazole tablets | 15–30°C | Light and moisture | | |
| ORS packets | | Moisture | Dark brown, will not dissolve | |
| Paracetamol (acetaminophen) elixir | 15–30°C | Light and air | | |
| Phenobarbital tablets | 15–30°C | Moisture | | |
| Piperazine elixir | 15–30°C | Light and moisture | | Protect from freezing |
| Phenoxymethyl penicillin tablets | 15–30°C | Moisture | | |
| Retinol (vitamin A) capsules | 15–30°C | Light and moisture | | |
| Senna tablets | | Light and moisture | | |
| Sulfamethoxazole trimethoprim tablets | 15–30°C | Light and moisture | | |
| Tetracycline tablets | 15–30°C | Light and moisture | Brown when broken | Expired tablets may be toxic |
| Thiabendazole tablets | 15–30°C | Moisture | | |
| Water for injections | | | Cloudiness | |

*Source: 'US Pharmacopeia Dispensing Information', 14th Edition, Volume 1: 'Drug Information for the Health Care Professional'.*

# Appendix II: Have your DPT, DT or TT vaccines frozen?

You must never freeze DPT, DT or TT vaccines. If these vaccines freeze, they lose their strength. When the temperature of the vaccines rises again they are useless. It is easy to test for this (see table below).

## The shake test

The vaccine is in a small glass bottle. If you think the vaccine has ever been frozen, carry out the 'shake test'. The shake test is used to determine if the vaccine has been frozen.

During the process of freezing, vaccines tend to flocculate (i.e. virus particles stick together to form larger clumps). When a vial of vaccine which has been frozen and then thawed is shaken and then allowed to sediment, it will sediment more quickly than the same vaccine from the same manufacturer which has not been frozen. The figure below gives a comparison between the sedimentation rates of a frozen and a never frozen DPT vaccine.

The shake test is best conducted using a vial of vaccine which you have frozen solid yourself and do not intend to use. The vial can be used as a frozen 'control' against which to compare vaccines in doubt. Whenever the 'control' vial sediments significantly faster than the test vial, then the test vial is acceptable. If the sedimentation rates are the same, however, then the test vial should not be used. Remember, the shake test can only be conducted on 'test' and 'control' vials from the same manufacturer.

**Shake test for checking DPT, DT and TT vaccines**

| Time | Vaccine never frozen | 'Control' vaccine (frozen and thawed) |
|---|---|---|
| Immediately after shaking | Smooth and cloudy | Not smooth – you can see granular particles |
| 10 to 30 minutes after shaking, depending on the manufacturer | Starting to clear | No sediment |
| After one hour | Almost clear | Thick sediment |
| | ***Use this vaccine*** | ***Do not use this vaccine*** |

## Freezewatch Indicator

You can use a Freezewatch Indicator, supplied with vaccines, to tell if your DPT, TT and TT vaccines have ever been frozen.

1. Put the Freezewatch Indicator in place; after removing the tape on the main storage cabinet of front-opening refrigerators or on to the basket (not the wall) of a top-opening refrigerator. The white background paper will turn in colour from white to red when exposed to temperatures lower than –4°C for longer than one hour. This is dangerous for these vaccines which will freeze and be ruined at temperatures between –3°C and –6°C.
2. Check the Freezewatch Indicator: if the white background paper becomes red, perform the shake test described on page 62. Try to compare the vials with others from the same manufacturer which are thought never to have frozen. Note: the shake test should also be performed any time you suspect that the DPT, DT or TT vaccines may have frozen – even if the Freezewatch Indicator has not turned red.
3. If your vaccine looks like it has been frozen, do not use it. It has lost its strength and you must destroy it. Test all the vials to see whether some vials possibly did not freeze and can still be used. (These vials were possibly supplied after the freezing incident.)
4. Turn the temperature control dial to a warmer position. Try to determine what caused the vaccine to freeze.
5. If vaccines have been frozen and you cannot use them, order more at once, and also order a new Freezewatch Indicator. The old one can no longer be used.

*Sources: 'Manage the Cold Chain', WHO; 'How to Look After a Refrigerator', AHRTAG.*

# Annex III: Further reading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WHO, 1991. *Guidelines on the storage of essential drugs in eastern and southern Africa: a manual for storekeepers*. WHO (address above). WHO/HRH/91.2.

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WHO, 1989. *Immunization in practice: a guide for health workers who give vaccines.* 361pp. Oxford University Press, Walton Street, Oxford OX2 6DP, UK.

WHO. *Look after your cold chain equipment.* Poster in English, French and Portuguese using photographs to show how health workers can get the best performance from a vaccine. WHO (address above). CCPS/4.

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WHO/UNICEF, 1993. *Product information sheets*. 205pp. A list of all cold chain equipment recommended by WHO and UNICEF. Includes details on how to choose equipment. Updated every two years by EPI/WHO. Available in English or French. WHO (address above). WHO/UNICEF/EPI.TS/93.1.

## Also published by AHRTAG

*How to Choose and Make a Cold Box*
Describes how to choose or make the most appropriate cold boxes for transporting vaccine locally.
Price: £5.00 plus postage and packing

*How to Look After a Refrigerator*
Gives step-by-step instructions for the care of kerosene, gas, electric and solar refrigerators, and information on cold boxes and other vaccine carriers.
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Payment with orders (international money order, £ cheque drawn on a UK bank, Eurocheque in £ or UNESCO tokens) payable to TALC. Postage and packing charges: UK/surface mail add 30% to cost of book(s), airmail add 60%, minimum postage and packing charge £2.50.

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AHRTAG
Appropriate Health Resources
& Technologies Action Group

Farringdon Point
29–35 Farringdon Road
London EC1M 3JB, UK

Telelephone +44 171 242 0606
Fax +44 171 242 0041
E mail ahrtag@gn.apc.org
ahrtag@geo2.geonet.de

Registered charity no. 274260

**ISBN (AHRTAG) 0 907320 25 2**

**£5.00**