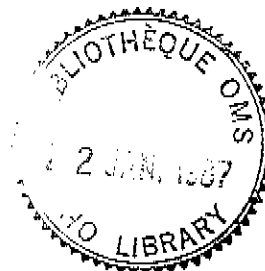




Expanded Programme on Immunization

VEHICLE REQUIREMENTS FOR THE EPI



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## INTRODUCTION

Vehicles are essential in the Expanded Programme on Immunization, both for the distribution of vaccines and supplies and for the transport of personnel. In view of the long delay in the delivery of new vehicles, the earliest possible advance notice of requirements should be given to the supplying organization.

The following notes are intended to be used as a guide when drawing up vehicle requirements for the EPI:

### 1. POINTS TO CONSIDER BEFORE SELECTING A VEHICLE

#### 1.1 What is the vehicle to be used for?

Consider the main purpose for which the vehicle is to be used: will it be used principally for transporting vaccines and supplies, or for people (medical teams, health workers etc.) or for a combination of both?

On the basis of this, determine the following requirements:

- carrying capacity in weight (kg) or volume (m<sup>3</sup>);
- the seating capacity.

#### 1.2 Where will the vehicle be used?

Examine the areas in which the vehicle must operate and determine:

- According to terrain/road conditions, if a normal 2-wheel drive or 4-wheel drive vehicle is necessary and if standard or special tyres (such as heavy duty, off-road and sand type) should be specified.
- According to availability of fuel, if engine should be gasoline or diesel operated.

#### 1.3 Who will maintain the vehicle?

Establish who will look after the vehicle: who will repair it and keep it running?

- Find out from the responsible authority (generally the ministry of health) if there is a standardization policy to be followed for a particular make/model of vehicle. If so, national workshops would be better able to service this make or model, and spare parts will probably be more readily available.
- In the absence of such a policy, suggest manufacturers/models which have local servicing facilities and for which spare parts are carried.

#### 1.4 Running Costs

The running costs of any vehicle can exceed its initial cost after 12 to 18 months of operation. The running costs of a vehicle should be calculated before the type and model of vehicle are decided. These running costs must include spare parts, fuel and oil costs. Also, during the life of a vehicle, the spare part costs alone can exceed the purchase cost. Consideration should be given to importing sufficient spare parts for a long period - perhaps several years - so that the ministry of health does not receive a vehicle that it cannot afford to run.

#### 2. CHOICE OF VEHICLE

Decide upon the type of vehicle. At least two thirds of all trips for the EPI are made on foot, by public transport, by bicycle or on motor cycle. Bicycles and motorcycles are therefore most important vehicles for a successful EPI. The main vehicle types fall into the following four categories:

##### 2.1 Bicycles

When selecting bicycles consider if they should be men's or women's type and whether they can be purchased locally. Local purchase will greatly reduce the spare parts supply problem. If the bicycles are to be imported, ensure that they are strong enough for use on un-surfaced roads and that the frequently needed spare parts (tyres and tubes, brake blocks, puncture repair kits, pumps and brake cables) are available locally. Before ordering imported bicycles check to see what tyre sizes are available locally and include this information with the specification. Luggage racks should always be fitted and a padlock and chain.

##### 2.2 Motor cycles and trail bikes

This form of transport is most suitable for supervisory visits to health stations, delivery of light goods, outreach immunization trips, etc. Motor cycles can, however, be very dangerous and great emphasis should be given to training the riders properly.

Motor cycles typically divide into two types:

- Those that will be used on surfaced roads - these can be 80-100 CC capacity fitted with road tyres.
- Those that will be used off-road - they should be the "trail bike" type design, with a capacity of at least 150 CC, off-road tyres and a high ground clearance.

Consider if the motor cycles should have one or two seats. In some countries, a second seat will double the cost of accident insurance. All bikes should be fitted with luggage racks. (This is usually an "extra" and must be specified when ordering).

The manufacturer of the motor cycles should be determined by the type of bikes already available locally. Before selecting a manufacturer, carefully investigate the availability of frequently used spare parts, such as tyres and tubes, sparking plugs, contact breakers, cables for the clutch, carburetor and brakes, drive chain and light bulbs.

Crash helmets must also be supplied and, again, some locking system for the machine, or a padlock and chain will be required.

### 2.3 Standard multi-purpose vehicles

Light utility vehicles with 2- or 4-wheel drive, such as station wagons, hard-tops and pick-ups, are available from several of the principal vehicle makers, e.g. Toyota, Land Rover, Nissan, Suzuki, Peugeot, etc. In standard form, station wagons and hard-tops can transport cold boxes, equipment and personnel. Pick-ups may be fitted with either a single or double cabin, depending on passenger carrying requirements, and may have the separate rear compartment fitted with a canvas hood to protect cold boxes and supplies from sun and rain. For prices and additional information see SUPDIR 93 (1).

### 2.4 Refrigerated vehicles

Refrigerated vehicles for the bulk transport of vaccines are available, but are usually justified only for very large programmes. If the country has fewer than 75 million people, it is probably more secure to send vaccine by cold boxes carried in a normal vehicle. Even some countries with populations of more than 75 million have found that cold boxes offer a simpler and more trouble-free system, and avoid many of the operational difficulties which are encountered with the use of refrigerated vehicles.

Refrigerated vehicles have a large carrying capacity and, consequently, the EPI becomes dependent on these vehicles for its vaccine supply. In the event of a breakdown or vehicle accident there must be an alternative method for supplying the vaccine.

A refrigerated vehicle usually has a truck driving cabin and chassis, fitted with a separate insulated box-type body; it may also have its own cooling unit. Typical vehicles of varying capacity are included in the EPI Product Information Sheets (2). The make of vehicle should be determined according to any standardization policy or local servicing capability. The ambient temperature of the region of use and the performance temperature at which the interior is to be maintained must be specified to ensure that an appropriate cooling unit is supplied.

Some cooling units have the ability to operate from mains electricity supply when the vehicle is stationary for long periods. In such cases, the mains voltage, number of cycles and the phase pole connections must be specified. There are three options for cooling units for refrigerated vehicles:

(a) A cooling unit fitted to the engine of the vehicle: this type has the disadvantage that there is no cooling for the vaccine when the vehicle engine is not running. In addition, the cooling unit can take considerable power from the vehicle engine, making the truck difficult to drive over rough or mountainous terrain.

(b) A separate cooling unit fitted to the truck body with its own separate motor, either gasoline or diesel: this type of vehicle permits a greater quantity of vaccines to be transported. Care should be taken with this second option to ensure that the fuel for the cooling unit is the same as that for the truck engine. Ensure also that the quality of the local fuel is of a sufficiently high standard for the type of motor being imported. Specialist engineers are needed to service these vehicles. Ensure that there are maintenance facilities for both the vehicle and for the cooling unit used. Indicative prices are shown in the EPI Product Information Sheets (2) but vary greatly and are subject to special quotation.

(c) A refrigerator mounted in the back of a standard vehicle: this option has little or no advantage over a normal cold box placed in the same vehicle. Unless the vehicle is fitted with a split charge facility and two batteries the refrigerator will run the battery flat in about eight hours. Furthermore, a vehicle with a refrigerator mounted inside becomes a special EPI vehicle which then cannot be used for other primary health care activities.

### 3. DELIVERY TIMES AND SHIPMENT

In view of the long delay in delivery of new vehicles, the earliest possible advance notice of requirements should be given to the supplier. For standard vehicles the factory production time is 2-3 months, with an expected arrival date (EAD) at the port of arrival of a minimum of 4 months after the manufacturer receives the order. For refrigerated vehicles an EAD of at least 6 months is necessary since these are highly specialised, individually manufactured products. Firm delivery times should be requested from the supplier when obtaining the initial quotation.

For all types of vehicle, an extra month should be added to the above EADs if special equipment or bidding procedures are needed.

- As vehicles take up considerable space in shipment, difficulty may be experienced in obtaining shipping space for more than 20-30 vehicles on one vessel. Therefore split shipments (with ensuing delays) may be necessary, and this factor should be taken into consideration whenever large quantities of vehicles are required.

- Factory delivered vehicles include all mandatory requirements for the country of use. Laminated windscreens, seat belts, fire extinguishers, and special programme fittings should be requested before the vehicle is delivered.

● Although deliveries direct from suppliers may take less time than deliveries from the factory, they should only be considered as a last resort for the following reasons:

- Vehicles supplied by suppliers are generally built to an inferior specification, and may not be sufficiently reinforced for heavy duty use. This may give rise to problems in operation.
- Engine and running gear may not be fully compatible with those normally imported into the country concerned. The manufacturer's warranty will generally not apply.
- Prices from suppliers are 20-25% higher than the prices for direct factory purchase.
- only limited quantities of standard vehicles are available from suppliers.
- the time taken in bidding and issuing orders to several stockists, often in different countries, and then coordinating such shipments adds to the logistics problem.

#### 4. SPARE PARTS

Spare parts should be ordered to cover vehicles on a fleet basis, rather than as one set per vehicle. This is important whenever maintenance is to be done centrally, or at the regional or district level. Since the cost will be spread over many vehicles, larger items, such as engines and gear boxes, can thus be included in the spare parts list. Batteries and tyres, if not available locally, should also be included.

It should be noted that spare parts cannot be shipped with the vehicles and will arrive usually at least one month after the vehicles themselves.

#### 5. VEHICLE SHARING

It is usually unreasonable and undesirable to have vehicles that can only be used for EPI activities. When vehicles are shared between programmes it is important to specify which programmes have access and for what activities. Some programmes write a job description on the door of the vehicle.

#### 6. TRAINING

##### 6.1 For drivers

The safety of drivers and passengers, as well as the life of the vehicle, are effected enormously by the way that the vehicle is used. Driver training modules are available from the International Labour Organization (3) and the ministry of health should consider implementing some form of certification for drivers. This certificate should include not only driving ability but also the ability to perform essential maintenance tasks, such as checking tyre pressures, level of oil, fuel and water.

Many programmes also train drivers in the principles of vaccine handling and care, to ensure that each driver have an awareness of his own important place in the EPI team.

#### 6.2 For staff at maintenance workshop

Whether the vehicles are to be maintained by private workshops or by ministry of health workshops, the mechanics must be adequately trained. Training modules are available from the International Labour Organization for most repair work on four wheel vehicles. (3)

#### 7. MAINTENANCE WORKSHOP

Many vehicle maintenance workshops are unable to operate effectively due to the lack of an adequate operating budget. This issue can probably only be addressed at rather high levels in the ministry of health but it is fundamental for the long term success of any transport policy. The budget must cover initial as well as recurrent costs.

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#### REFERENCE LIST

1. SUPDIR 93. Available from UNICEF offices.
2. EPI Product Information Sheets. Available from UNICEF offices. Document reference WHO/UNICEF/EPI.TS/86.1.
3. Modules of Employable Skills (MES), ILO Publications, International Labour Office, CH 1211 Geneva 2, Switzerland.

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