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SAFETY OF INJECTIONS IN IMMUNIZATION PROGRAMMES

WHO Recommended Policy





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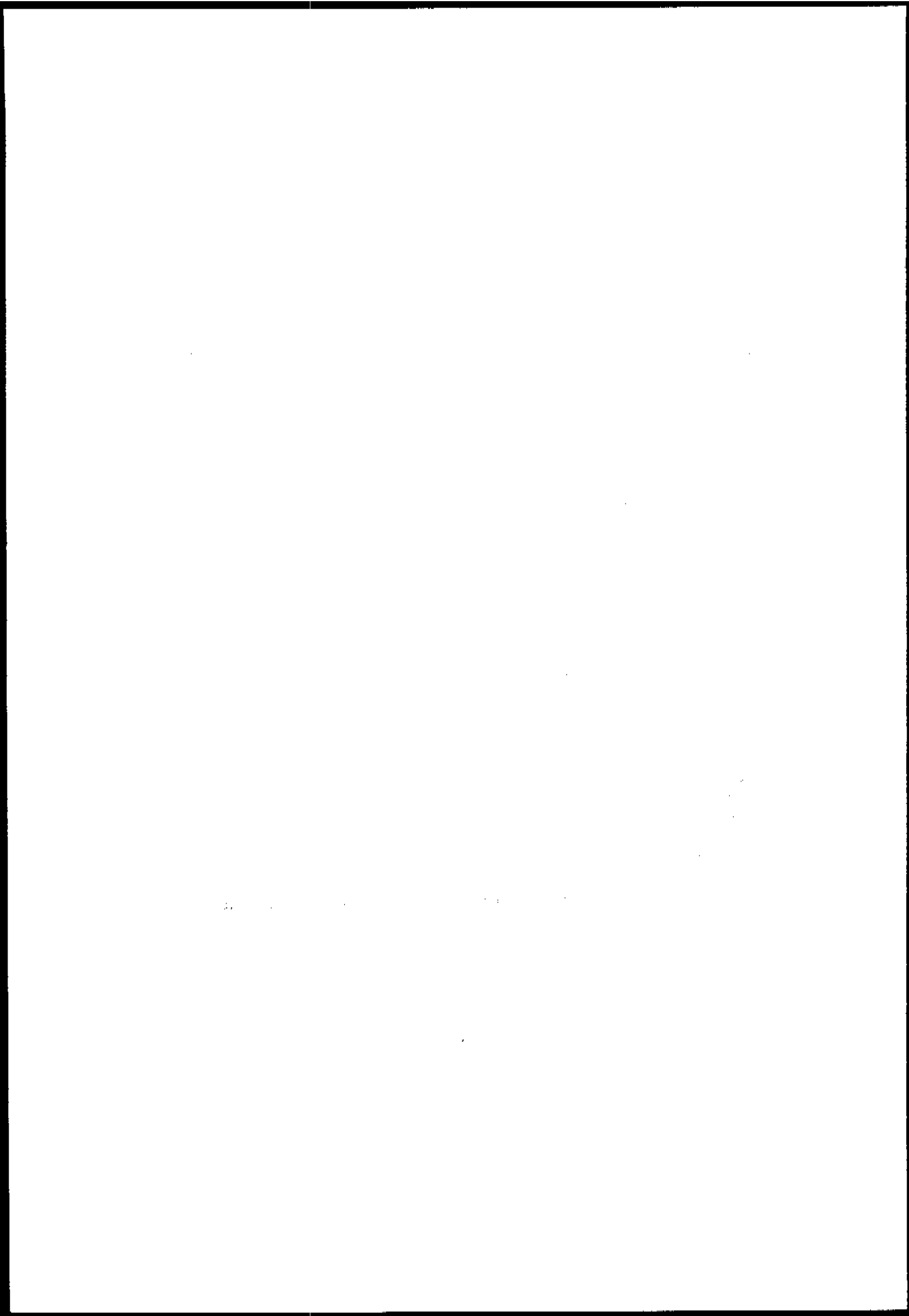
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SAFETY OF INJECTIONS IN IMMUNIZATION SERVICES

WHO RECOMMENDED POLICY

An injection should only be given if it is necessary -- and each injection that is given must be safe.

- An injection for immunization is necessary.
- An immunization injection is safe when the vaccine is injected with the appropriate equipment and according to the recommended procedures for injection, sterilization and disposal.

The proper techniques for immunization injections have been specified in a previous document (EPI/PHW/84.3 Rev. 1). The scope of this document is, therefore, limited to the selection of injection equipment and the procedures which are critical¹ for the safe use of the equipment.

¹ "Critical" in this case refers to the most important of many sterile procedures which are already recommended in WHO/EPI training documents.

1. SELECTION OF INJECTION EQUIPMENT

1.1 Types of equipment

The following equipment can be used to safely administer injectable vaccines:

- Reusable syringes and needles
- Disposable syringes and needles
 - Standard single-use type syringes and needles
 - Auto-destruct type syringes and needles
- Needle-less jet injectors

The various types of equipment can be used singly or in combination, according to the requirements of different immunization strategies. Each type of equipment is safe only if users follow the critical sterile procedures which are specified for its use. (See sections 2-4 below.)

1.2 Reusable syringes

Reusable syringes should be used in small routine immunization sessions² where compliance with sterilization procedures can be assured, as verified by supervisory visits. Reusable syringes are usually not, however, practical nor economic for large routine immunization sessions³ and should not be used in National Immunization Days (NIDs).

1.3 Disposable syringes

The "auto-destruct" syringe⁴ is the preferred type of disposable equipment for administering injectable vaccines. Standard disposable equipment can continue to be used only in settings where it is guaranteed that the syringes and needles are destroyed after a single use. Disposable equipment can be used in both routine immunization sessions and large scale immunization activities, such as National Immunization Days (NIDs).

1.4 Jet injectors

High volume jet injectors may be used when injectable vaccines are given through large scale immunization activities, such as National Immunization Days (NIDs).

1.5 Disposal containers

Sufficient puncture-proof containers⁵ for disposing of contaminated syringes, needles and other injection materials should be made available at all immunization sessions.

² Sessions where less than 120 injections are administered.

³ Sessions where over 120 injections are administered.

⁴ Designed according to WHO/EPI Standard Equipment Specification E8/DS.1.

⁵ Designed according to WHO/EPI Standard Equipment Specification E10/IC.1.

2. CRITICAL STERILIZATION AND DISPOSAL PROCEDURES

2.1 Reusable syringes and needles

A sterilized syringe and a sterilized needle should be used for each injection. The critical procedures for handling, cleaning, sterilizing and disposing of reusable syringes and needles are outlined below:

2.1.1 Immediately after injection, flush water through the syringe and needle. Take the syringe apart and drop it and the needle into a bowl of water. After the immunization session, wash all the disassembled syringes in clean water before loading them for sterilization. Use forceps, not fingers, to pick the syringe and needle components from the water and place them in the sterilizer.

2.1.2 Dispose of syringes which leak, become too stiff to use or have faded graduations. The recommended method of disposal is by burning (destructive incineration). Where this is not possible, sterilize the contaminated equipment and dispose of it by burying it deeply in the ground (at least 0.5m below the surface).

2.1.3 Do not re-use needles which have become blocked, blunted or hooked. Do not attempt to re-sharpen needles. Destroy blunted, blocked or hooked needles by incineration. If this is not possible, sterilize and bury them deeply in the ground (at least 0.5m below the surface).

2.1.4 Include approved sterilization indicators (Time, Steam and Temperature : *TST indicators*) in each sterilization load. Inspect the indicator at the time of use and attach it to the immunization report.

2.1.5 Steam sterilize reusable needles, syringes and forceps at 121°C-126°C for 20 minutes, according to the instructions of the sterilizer manufacturer. Steam sterilization kills all harmful viruses, bacteria, and spores⁶, including those that cause abscesses, tetanus, hepatitis B, and HIV.

2.2 Disposable syringes and needles

A sterile packed syringe and a sterile packed needle should be used for each injection and effectively destroyed according to the following critical procedures:

2.2.1 Immediately after a single use, place each syringe and needle in a puncture-proof container⁷. **Do not attempt to recap the needle.** Dispose of the contaminated equipment by burning (destructive incineration). Where burning is not possible, sterilize the contaminated equipment and dispose of it by burying it deeply in the ground (at least 0.5m below the surface).

2.2.2 Do not use disposable syringes and needles from damaged or punctured sterile packs, or which have passed the manufacturer's expiry date. Dispose of them by burning (destructive incineration). Where burning is not possible, sterilize the contaminated equipment and disposed of it by burying it deeply in the ground (at least 0.5m below the surface).

⁶ Boiling and other methods of high level disinfection will not destroy certain spores.

⁷ Constructed according to WHO/EPI Standard Equipment Specification E10/IC.1.

2.3 Jet injectors

The following critical procedures should be followed:

2.3.1 Steam sterilize reusable jet injector heads at 121°C-126°C for 20 minutes before each immunization session, according to the manufacturer's instructions.

2.3.2 Between each injection, clean injector heads with a swab that is kept damp with acetone or alcohol. Change the swab frequently. If the head becomes contaminated with blood or dirt, remove it from the injector and replace it with a sterilized head.

2.3.3 Clean the fluid path by flushing the jet injector with distilled water each time the vaccine type is changed and at the end of each session.

2.3.4 Perform periodic maintenance of jet injectors according to the manufacturer's recommendations to prevent deterioration in performance and avoid breakdowns.

3. SUPERVISION AND EVALUATION

Systematic supervision and periodic evaluation of injection practices are vital to ensure safety.

3.1 Supervisory visits

At least twice each year, make supervisory visits to each health centre, using a checklist which includes a review of injection safety to improve performance (See Annex 1: Critical questions for supervisory checklist).

3.2 Assessment of injection practices

Include an assessment of safe injection practices, injection equipment and the equipment supply system in every EPI programme review and other evaluation activities.

3.3 Routine monitoring

Routinely monitor and investigate all injection-related adverse events to improve injection performance and assist supervisory procedures.

4. BUDGETING AND SUPPLY

An uninterrupted supply of sufficient injection equipment is critical to the safety of immunizations. The measures which should be taken to assure the availability of adequate supplies include the following:

4.1 Disposable injection equipment

At central and intermediate stores, keep a reserve stock of equipment—at least 10% of the quantity used in each supply period. At peripheral stores keep a reserve stock that is sufficient for at least one month of immunization activities.

4.2 Reusable injection equipment

Keep a minimum level of syringes and needles in stock. (A minimum level is equal to the largest number of injections given at a single session, plus an additional 10% reserve.)

4.3 Jet injectors

Make available a minimum of three spare injector heads for each immunization session. In the event of very large numbers (greater than 300 injections), additional heads will be required.

4.4 Disposal containers

Provide safe, puncture proof containers⁸ in sufficient quantities to all health units for the collection and incineration of contaminated syringes. Provide sufficient fuel for sterilization to all health units.

4.4 Distribution system

For all injection equipment, establish a distribution system which is the same as that for vaccines, with the following characteristics:

- a timetable of regular supply dates
- an estimate of routine needs based on rates of use,
- planning of needs for special immunization activities, and
- a record of current stock levels.

4.5 Advance budget

One year in advance, establish an adequate budget for sufficient injection, sterilization and disposal equipment to cover routine immunization, special immunization activities and, if necessary, the restoration of reserve stocks.

⁸ Constructed according to WHO/EPI Standard Equipment Specification E10/IC.1.

ANNEX 1

Critical questions for supervisory checklist to determine injection safety

Check the following points and circle "YES" or "NO".

-
- | | | | |
|---|---|-----|----|
| 1. | Have abscesses occurred at the site of immunization injections? | YES | NO |
| 2. | Is there evidence of re-use of syringes and needles without sterilization? | YES | NO |
| Is the answer to any of the above questions (1 or 2) is "YES", injections at this centre are unsafe. | | | |
| 3. | Is the stock of syringes, needles and fuel for sterilization sufficient for at least one week of immunization activities? | YES | NO |
| 4. | Is there evidence that contaminated injection materials are destroyed either by burning or by sterilization and deep burial (0.5m)? | YES | NO |
| 5. | Is there a steam sterilizer and heater available and in good working order? | YES | NO |
| If the answer to any of the above questions (3 or 4 or 5) is "NO", there is a risk of unsafe injections. | | | |
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The EPI **Logistics for Health** documentation comprises two categories:

- Information Series
- Training Series

The **Information Series** focuses on the dissemination of updated information, guidelines, policies and procedures on the development and improvement of cold chain systems and technologies. Topics include the transport, storage, distribution and proper administration of vaccines, safe handling of injection equipment, field studies and reports.

The **Training Series** provides material for basic *and* specialised training in equipment maintenance and logistics support procedures. It aims to give health workers the skills necessary to maintain the level of support required to ensure sustained immunization coverage and service delivery.

TECHNET, a global network of logistics specialists for health, collaborates with WHO/EPI on the content and publication of the Logistics for Health documents.

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