

Inventory Basics for Our District Health System

¹Ivan Gyozo Sonlai

²Dhruba Bahadur Thapa

Inventory-taking, while an essential management function in hospitals and health posts, is often neglected. Knowledge of some inventory basis and guidelines for implementation, as expressed in this article, should help make staff less hesitant to act.

The example of a practical inventory complements the theoretical base.

Keywords: District health management; inventory; management.

INTRODUCTION

'Inventory' is the quantity or value of a facility's assets. The assets may be human, financial or material, and in this document the emphasis is on the latter.

'Inventory-taking', 'doing inventory', 'inventorying' or 'making an inventory' are similar terms denoting the act of monitoring and recording the assets in any accepted, systematic method.

Perhaps the most difficult decision for anyone in authority is to, in fact, take an inventory. The occasion will in most instances disrupt regular activities, perhaps require overtime work and be painstakingly tedious. Let us, however, look at what advantages inventories may bring our organizations.

1. We will have an accurate indication of not only the quantity but as well the quality of

assets;

2. Precise asset control will facilitate planning;
3. Since often (though not always) equipment and supplies need to be removed from shelves, drawers and containers for counting, there is a unique opportunity to clean and sanitize or even reorganize the whole storage area;
4. If thoroughly carried out, 'lost' and 'non-existent' equipment may surface;
5. There is a certain degree of intangible pride in being up-to-date and knowledgeable about all resources under one's responsibility.

Too often in our health facilities the are goods either purchased or donated, then dumped into a box or forgotten in a dusty room.

¹ Management Advisor
Institute of Medicine, Health Development Project, Kathmandu, Nepal

² Programme Manager
Institute of Medicine, Health Development Project, Kathmandu, Nepal

only to be requested and procured once again. The prevalence of donations with no value attached seems to promote lack of respect and care for instruments and mechanical supplies, and the multiplicity of donors further confuses the system.

Part I of this article attempts to introduce the important components of a total inventory system including: management considerations; types of inventories; location and timing; selection of an appropriate inventory team; team tasks; and inventory kit check-list. The author's interest is to assist facility-in-charges and other administrative staff to better understand the function and complexity of inventories in a simple way, and thus to broaden managerial capacity at the same time. Part II describes the results of an actual, routine inventory in Surkhet District and provides recommendations which might be applicable for other districts as well.

MANAGEMENT DECISIONS

The manager of a facility must be able to decide about the following:

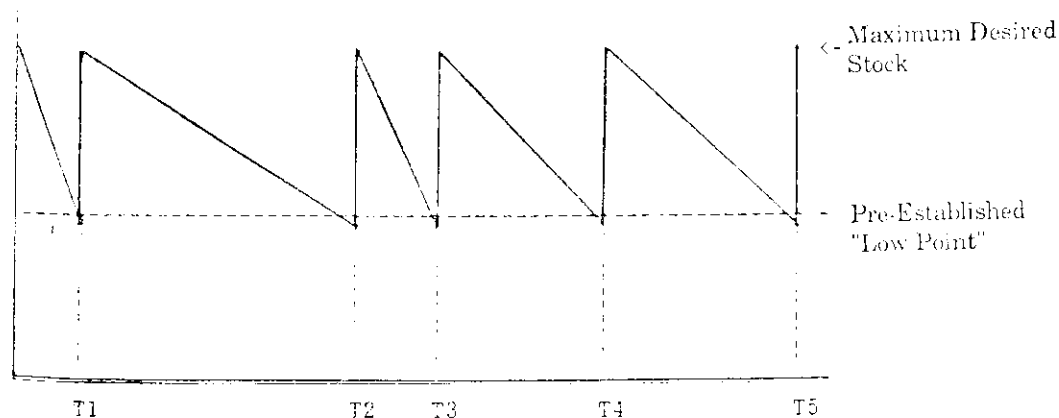
- a. **Inventory to keep** based on:
 1. Seasonal and annual demand
 2. Storage space
- b. **Factors affecting requisition and**
 1. Pre-established 'low-point'

carrying of items, based on:

1. Seasonal demand (e.g. more fracture-related materials during Dashain)
2. Turnover of perishables (e.g. dated medicines and drugs)
3. Maximum needed at any one time (knowledge of in/out patient averages)
4. Damage and spoilage and difficulty in replacing such items.
5. Stock to keep of spare instruments in frequent use (e.g. scissors, tissue holders, various forceps etc.)
6. Turnover of disposables (e.g. suture materials)
7. Turnover of semi expendables (e.g. suture needles, scalpel blades)
8. Price of items
9. Elapsed time between the giving and receiving of order
10. Any special purchasing tariff for each order
11. Storage costs (e.g. extra protection for dangerous chemicals)

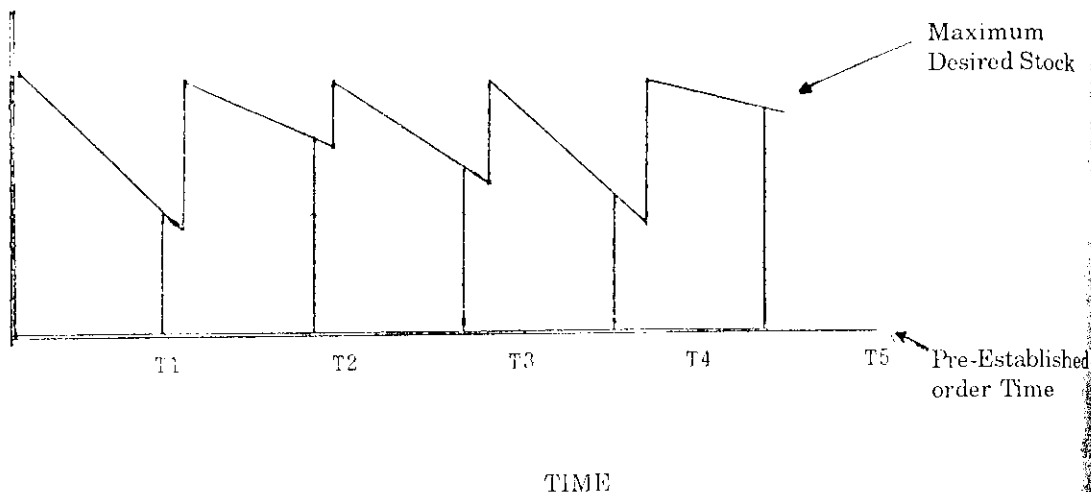
c. Ordering methods

There are two ways of ordering for your inventory: (1) when your stock gets to a pre-established 'low-point' (2) or at *pre-determined times*. Let us express these graphically.



In this method, the frequency of order is regulated by that 'low-point' or quantity of stock, so some call this OFQ (Ordering by Fixed Quantity).

2. Pre-determined times



In this system orders are always given at the same intervals (e.g. the 15th of each month) regardless of how much is needed. Therefore this is often labelled as OFP (Ordering by Fixed Period).

d. Substitutions to request if regular supplies are unavailable, based on:

1. Knowledge of the use of specific equipment or supplies.
2. Knowledge of various sources of information, such as catalogues, manufacturers or distributors; or, even knowledgeable individuals.
3. Whether different or new items might require orientation by an outside expert.

e. Redistribution from areas or facilities of surplus to those of shortage, based on:

1. Knowledge of current inventory
2. Regular communication with 'peer'

facilities and superiors

3. Existence of relevant policy

4. Desire to cooperate and share common vision of health development.

f. Input and output variables and determinants, based on:

1. **Economy**, that is, the possibility using a smaller input of resources, supplies, materials, equipment, achieve the same output performance, skills, etc.). For example, would two tooth extractors instead of eighteen still allow you or your staff to do the job? It is understood, of course, that the occasional unrequited donations will increase your inventory.

2. **Efficiency**, that is, the possibility of using the existing input of resources to achieve a *higher output*. For example, could the present equipment and staff actually be adequate for caesarian sections or setting fractures? Could timely preventive maintenance and thoughtful repairs allow the weigh-scale to be used for mother and child clinics or the EMO to be utilized in operations?
3. **Effectiveness**, that is, the possibility that even with economy and efficiency the work or performance of staff is not producing the intended result.
4. Value of items: the higher the value the more closely and frequently inventory should be done.
5. Consumability of items: expendables should be checked often to control wastage and overstocking.
6. Durability of items: equipment likely to require preventive maintenance (anaesthetic machines, sphygmomanometers, sterilizer etc.) needs inspection more often than furniture.
7. Size of items: smaller items (stainless steel forceps, blade handles etc.) must be monitored more closely to control pilferage.
8. Availability of manpower.

TYPES OF INVENTORY - TAKING

a. Routine

Such checks are done on a scheduled basis and usually intended for the annual inventory. As such, these audits are comprehensive and time-consuming, and so staff must be alerted and prepared well in advance.

b. Discrepant

Any time some problems are suspected or there is a staff turnover/handover, a discrepant inventory can focus on just the equipment at issue or the unit in which staff changes are occurring.

c. Discretionary

Spot checks based on the supervisor's decision may be done at any time for a variety of reasons, such as: incomplete previous inspections, staff problems, administrative prerogative, etc.

OPTIMUM LOCATION AND TIMING OF INVENTORIES OR CHECKS

depend on

1. Cost of inspection.
2. Cost of passing a defective product through the system.
3. Cost and consequences, in financial and personal terms, of losing or damaging

essential equipment and supplies.

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SELECTING THE INVENTORY TEAM

a. Abilities of Inventory Personnel

1. Comprehend, read, write, calculate (counting; assessing values)
2. Give comprehensive instructions and requests
3. Complete and summarise information
4. Assess equipment and supply needs
5. Report on condition of equipment and facilities.

b. Knowledge of Inventory Personnel

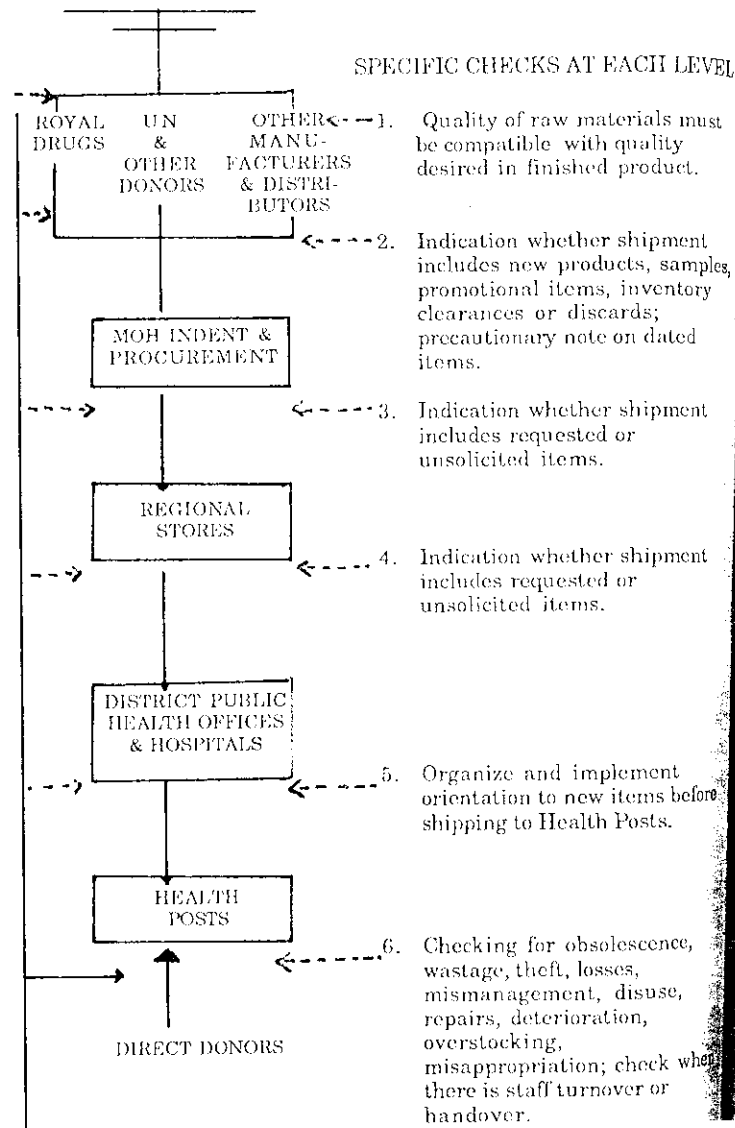
1. Inventory taking system
2. Recognition of equipment and supplies needed in a unit or facility
3. Various uses of equipment and supplies needed in a unit or facility
4. Familiarity with alternative models, or brands.

INVENTORY OR CURSORY CHECK POINTS IN OUR HEALTH SYSTEM

GENERAL CHECKS AT ALL LEVELS

1. Check for quality, quantity and condition of containers.
2. Environmental conditions for drugs (heat, light, air, water, moisture).
3. Dating of shipment and/or manufacture.
4. Security for narcotics.
5. Damage to large items such as furniture.
6. Timeliness of shipments.

SPECIFIC CHECKS AT EACH LEVEL



c. **Attitudes of Inventory Personnel**

1. Patience to work methodically
2. Integrity in reporting discrepancies and not shortcutting the process
3. Precision in recording
4. Initiative to seek explanations
5. Diplomacy

have other work to do in case staff with keys are away !

4. In all cases, access must be assured to all rooms, cabinets and drawers.
5. Letter of authority must be prepared for each team member taking inventory, even if the event has been scheduled. The letter must be from the District Public Health Officer and/or the Regional Director for facilities at district level or below. Included in the letter must be the following:

TASKS FOR THE INVENTORY TEAM

a. **Deciding dates**

1. Access to all supplies, equipment and rooms is essential; so dates should not be too close to or during holidays when staff with keys might be away, unless a mutual agreement has been reached.

- 5.1 date (s) of inventory taking
- 5.2 name of inventory staff
- 5.3 purpose of event
- 5.4 request for full cooperation

b. **Setting times**

1. Allow 3 to 5 hours for a health post, 2 to 3 days for a district hospital and 3 to 6 days for a regional store.
2. 'Allowing' means it could take less time depending on
 - 2.1 how busy a facility is
 - 2.2 whether or not a facility can be totally shut down for the inventory.
 - 2.3 how tidily items are stored.
 - 2.4 how accessible items are.
 - 2.5 the cooperativeness and knowledge of staff.
 - 2.6 the number of storage areas.

d. **Orienting inventory team**

1. Setting and agreeing on terms and conditions
 - 1.1 Determine travel routes and probable travel time
 - 1.2 Fix appropriate allowances
2. Defining all terms on inventory forms (refer to Appendix 1)
 - 2.1 **Unit** - a specific department within the hospital; leave it blank for health post.
 - 2.2 **Location** - the room where the 'unit' is; e.g. 'adjacent building', 'S.W. corner of main building', 'left of main entrance' etc. of the hospital. For Health Posts 'Location' means the community name.
 - 2.2 **Called by** - the one person who sees, counts and calls out the number of items; the 'team in - charge'.
 - 2.3 **Called by** - the one person who sees, counts and calls out the number of items; the 'team in - charge'.
 - 2.4 **Entered by** - the one person who sees, counts and calls out the number of items; the 'team in - charge'.
 - 2.5 **Date** - actual date of the inventory

c. **Arranging and informing**

1. Routine inventories require 1 to 2 weeks notice or reminder.
2. Discrepant inventories are scheduled for the departing staff's last day of work.
3. Discretionary inventories require no notice at all; but if you walk 2 to 3 days to a health post, for example,

starting date.

- 2.6 **Item** - each size or type of a particular item is listed separately.
- 2.7 **Description** - common name of the item.
- 2.8 **HMG List** - the quantity recommended by the government.
- 2.9 **Actual** - the number of items seen by the caller.
- 2.10 **Usable** - the item is perfectly usable, with no apparent dents, nicks, bends or repairs.
- 2.11 **Usable but damaged** - the item still perfectly (demonstrably) usable but has obvious dents, nicks, bends or repairs.
- 2.12 **Unusable** - the item is not usable for a variety of possible reasons, such as unrepaired damage, rust etc.
- 2.13 **Remarks** - brief comment such as: 'item never received', 'item noted missing by 'such and such staff' on date', 'very dirty', 'rusty', 'never unpacked from original container, 'unsafe because of ', etc.

3. Instructions

- 3.1 Introduce yourselves, your own agency and clarify that the has requested the undertaking of the inventory. If there be any doubts, show your letter of authority from the DPHO and RD.
- 3.2 Identical items (e.g. 4 metal tongue depressors) must be presented for counting at the same time, in the same place, otherwise the potential for later confusion is increased. Do not forget to ask about items which of necessity are in use!
- 3.3 The team in charge must count only what is seen.
- 3.4 The team-in-charge looks, counts and calls out the quantity of items.
- 3.5 The assistant marks that number, in ink, in the 'Actual' column.

3.6 The team-in-charge counts a second time, indicating the quantity that should go in each of the 'Condition' columns; the totals of the 'Condition' columns must equal the total in the 'Actual' column.

3.7 The assistant marks the number, in ink, in each of the 'Condition' columns.

3.8 The team-in-charge and assistant can together agree on what comments to make (if any) in the 'Remarks' column, and note such in ink.

3.9 Any item not in the typed list must be added in a blank line; any item varying in description from the typed list (e.g. different size, different model) must be added in a *blank* line.

3.10 Every completed page must be signed, in ink, and stamped as acknowledgement by the facility-in-charge.

3.11 Make general observations and comments on facility and staff.

4. Concluding

- 4.1 Report back to supervisor immediately upon return
- 4.2 Attend debriefing

CHECK LIST OF INVENTORY TEAM 'KIT'

- a. Map of area visiting (if applicable). (1)
- b. Map of facility (if applicable) (1)
- c. Complete list of facility-specific items of prepared format (1)
- d. Plastic bag to protect the above from water (1)
- e. Blank inventory forms (3)
- f. Pens, black (2)
- g. Cloth measuring tape (1)
- h. Catalogue or accurate size drawing of many items as possible to facilitate identification (1)*
- i. Letter of authority, signed (1/person)

* Excellent references to assist with identifying items are:

1. A First Handbook of Medical Instruments, by A. Bhowmick and G. Chatterjea, G. I. Publications Pvt. Ltd., New Delhi, 1991 (3rd ed.)
2. Japan Medical Instrument Catalog, by J. M. I., Hongo P. O. Box 19, Tokyo, 1991 (8th ed.)

from the Surkhet CMA Campus and one from the Surkhet DPHO) and each team covering two to three Health Posts. Prior being dispatched, the teams underwent a brief but intensive training session. Overall aspects of inventory taking were discussed to help teams come to a common perspective regarding the instructions mentioned in the previous pages, so that a standard approach would be maintained.

PART II - AN EXAMPLE

Keeping this theoretical background in mind, the Health Development Project (HDP) Management Committee, Surkhet, had planned an inventory of equipment in all eleven Health Posts as well as the District Hospital. This Committee is responsible to carry out district level project activities in order to strengthen the local health care delivery system. Five teams were formed to carry out this activity, with each team having at least two members (one

Besides a discussion on a conceptual frame work and the written guidelines mentioned earlier, we provided each team with a standard government equipment list showing 42 items and their recommended quantity. Additional space was provided to enter the actual number as well as pertinent brief remarks (Table 1).

At the end of each list, space was available to enter items other than those on the recommended list.

S.N.	Description of Equipment	HMG Quantity	Mismatch of Quantity			
			Equal	More	Less	Not at all
1.	Sterilizer Instrument 222 x - 82 x 41 mm/m/s	2	6	1	3	1
2	Basin kidney 475 ml s/s (1620)	3	0	9	2	0
3	Tray instrument/Dressing Ecover, size 310 x 195 x 63 mm	2	2	9	-	0
4	Bowl Sponge 1200 ml/s/s	2	2	6	2	1
5	Tongue depressor metal / 165 mm	1	0	9	2	-
6	Speculum Ear Gruber set of 4	1 set	2	4	-	5
7	Stethoscope Biaural Complete	2	2	9	-	-
8	Forceps Dressing Spring Type 115 mm/s/s	3	1	8	-	2
9	Forceps Obstetric W/Traction 120 mm/s/s	2	0	1	-	10
10.	Forceps Haemostatic curved ochsner Baby 40 mm/s/s	4	2	8	-	1
11.	Forceps Haemostatic Straight ochsner Baby 140 mm/s/s	4	3	5	1	2
12.	Forceps Haemostatic curved Mosquito halstead 125 mm	4	0	7	3	1
13.	Forceps Haemostatic straight Mosquito halstead 125 mm	4	2	4	1	4
14.	Forceps Sinus Straight Straight/ Lister 125 mm/s/s	2	2	3	1	5
15.	Forceps Sponge holding Straight 225 mm	2	2	8	1	-
16.	Forceps Sterilizer Cheatle 265 mm	1	1	9	-	1
17.	Forceps Tissue spring Type 1 x 2 teeth	2	5	5	-	1

18.	Forceps needle holder straight Baby / 125mm/s/s	2	2	6	2	1
19.	Hook Roriger Baby Baby Blunt point Tyroll 120mm/s/s	2	2	5	1	3
20.	Knife handle surgical natal No. 3	2	-	11	-	-
21.	Knife handle surgical natal No. 4	2	4	2	4	1
22.	Knife Blade Surgical # 1 x 5	4 pkt	3	2	2	4
23.	Probe general operating flexible Eye 115 ml	1 pc	1	2	-	8
24.	Scissors Bandage Amelar Lister 182 mm/s/s	1 pc	2	8	-	1
25.	Scissors surgical straight Baby 125 mm/s/s	2	2	6	1	2
26.	Scissors surgical curved 140 mm/s/s	2	5	3	1	2
27.	Trocar Drainage Ochsner Cannula & obturator	1	1	5	-	5
28.	Forceps Teeth extracting SSW # 62	1	2	9	-	-
29.	Mirror laryngeal with stem & handle size 00 - 8 mm	1	9	-	-	2
30.	Diagnostic set	1	4	7	-	-
31.	Sphygmomanometer	1	3	8	-	-
32.	Forceps Artery str 15 cm	2	1	6	1	3
33.	Forceps Artery end 15 cm	2	1	2	2	6
34.	Forceps Ear Hart Mask 5"	1	2	-	-	8
35.	Forceps foreign body remover	1	3	2	-	6
36.	Speculum nasal	1	5	1	-	5
37.	Tray Dia s/s 6" x 4"	1	2	-	-	9
38.	Glass s/s	2	4	2	2	3
39.	Jar dressing with cover s/s	1	3	5	-	3
40.	Jug with cover s/s	1	10	-	-	1
42.	Stove pressure 1 burner	1	3	8	-	-

Table 1: Distribution of IHPs in terms of availability of equipment comparing with HMG list.

MAJOR FINDINGS

1. In several occasions, Health Post workers, including the Health Post Incharge, could not confidently recognise the equipment present at hand, so naturally staff do not understand the use of a number of items.
2. In a majority of Health Posts, there were damaged items lying idle due to the absence of potentially minor repairs.
3. Almost every Health Post has some items which cannot be repaired; however, these items are at present occupying space unnecessarily and adding an administrative burden to the inventory during every staff change-over.
4. There was no uniformity of the equipment available in these facilities neither in terms of the type, model nor

quantity of specific items. As our inventory-taking was based on a standard list of 42 items of specific quantity, our finding has shown that not a single Health Post could produce all these items. The variation of items ranged from 25 to 37 items, which was found in Katkuwa and Latikoili, and Salkot Health Posts respectively.

The finding has revealed that there were only 13 items present in all eleven Health Posts, but not all items were found in exactly in the same quantity as prescribed.

Not a single item was found in equal numbers in all the Health Posts, and twenty five items were not found in a standard quantity in a single Health Post. On the other hand, some of the items were

found in excess of the standard quantity; some are surplus in an unbelievable quantity. An example is teeth extracting forceps, for which the standard quantity is one. Our finding has shown that only two out of 11 Health Posts have one pair of forceps each and rest (9) have an excess, and out of these 9, three Health Posts have 22 forceps each and one has 18.

5. Besides these 42 items, all eleven Health Posts and the District Hospital have other additional items which are not comparable among themselves. The number of these specific additional items varies from 13 to 38 (but we have not compared the quantities of these items among the facilities). It was also interesting to note that in some Health Posts several items were intact in their original packages, and staff were not aware when or for what purpose they arrived.

RECOMMENDATIONS

1. The MOH Indent and Procurement Section should have clear, applied policies to guide district health posts and hospitals in ordering, shipping, receiving, stocking, inventorying, maintaining and disposing of equipment.
2. The MOH should update the existing standard list of equipment. Important revisions should include the following:

2.1 Deletion of old-style or outdated equipment if such equipment is in fact, easy to replace or is necessary to replace because of changes in paramedical techniques.

2.2 Some notation as to the different

possible names of an item, depending on its origin of manufacture. (i.e. the same item might have a German name in one shipment and a Japanese in another, thus potentially confusing staff).

2.3 Regularly publishing the current equipment data-base for all health institutions.

3. The MOH should have some provisions for systematically increasing the quantity of particular items in health posts that are busier than average.
4. The MOH should ensure familiarity with all equipment by staff, through a combination of:

4.1 Detailed description of the use of new items, to be included with shipments

4.2 Orientation sessions in districts to which new items are sent.

4.3 Supplying limited samples of new items to CMA and Nursing Campuses so that future health workers get introduced to current equipment.

5. The MOH should institute a comprehensive equipment repair training programme in each of the five Regional Training Centres for Health Post-In-Charges and/or for selected lower level staff.
6. The MOH should facilitate intra-district sharing of equipment, especially in situations of surplus items in some facilities and deficit in others.
7. The MOH should, as part of its regular development of supervisory functions, carry out discretionary inventories.

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स्वास्थ्य सेवा सम्बन्धी भण्डार कार्य सन्धारन पुस्तिका,
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