Inventory Management of Medical Items

The process for the proper management of health items should follow the general guidelines for all inventory management, including overall demand forecasting and inventory control mechanisms. There are – however – additional concepts that are special to managing health items.

First Expired/First Out (FEFO)

FEFO as a general rule is important for health products because it emphasises expiration dates of products, irrespective of when those items may have entered general storage. In FEFO, products are rotated out of storage based on how close they are to expiration. In health supply chains, there may be multiple products of the exact same type that happen to have different production/expiration dates; FEFO helps reduce product loss by ensuring that wherever possible, the shortest shelf-life items are used first.

In order for FEFO to be effective:

- Expiration dates should be clearly identifiable on products held on shelves and racks. If the expiration date cannot be easily seen on the carton or packaging, then the expiration date may be noted on stickers or pieces of paper on the outside of the cartons/pallets.
- Expiration dates should be recorded on all stock cards and warehouse ledgers/inventory systems.
- Similar items with different expiration dates should be separated by expiration dates. Where possible the items with the closest expiration dates should be moved to the front of racks or shelves, something that might be more useful in smaller storage facilities with loose items on shelving.
- Physical inventories should be conducted routinely, with an emphasis on identifying short shelf-life items that may have been ignored or intermixed with other stock items.
- Persons managing inventory should be told to issue short shelf-life items first wherever possible.
- Items approaching three to six months prior to expiration dates should be flagged. Any items with less than three months of shelf life should be communicated to project managers immediately so action can be taken as needed.

Product Inspection

The physical characteristics of health items may change over time and may be clear signs of degradation of product quality. In addition to looking for physical damage to packaging or tracking expiration dates, there are things that logistics managers of health products might look out for to determine if a product has quality problems:

Product Type	Signs of Quality Problems
All products	• Broken or ripped packaging (vials, bottles, boxes, etc.) • Missing, incomplete, or unreadable label(s)

Product Type	Signs of Quality Problems
Liquids	• Discolouration • Cloudiness • Sediment • Broken seal on bottle • Cracks in ampoule, bottle, or vial • Dampness or moisture in the packaging
Light-sensitive products (such as x-ray film)	• Torn or ripped packaging
Latex products	• Dry • Brittle • Cracked
Lubricated latex products	• Sticky packaging • Discoloured product or lubricant • Stained packaging • Leakage of the lubricant (moist or damp packaging)
Pills (tablets)	• Discolouration • Crumbled pills • Missing pills (from blister pack) • Stickiness (especially coated tablets) • Unusual smell
Injectables	• Liquid does not return to suspension after shaking
Sterile products (including IUDs)	• Torn or ripped packaging • Missing parts • Broken or bent parts • Moisture inside the packaging • Stained packaging
Capsules	• Discolouration • Stickiness • Crushed capsules
Tubes	• Sticky tube(s) • Leaking contents • Perforations or holes in the tube

Product Type	Signs of Quality Problems
Foil packs	• Perforation(s) in packaging
Chemical reagents	• Discolouration

Taken from: *JSI - Guidelines for the Storage of Essential Medicines and other Health Commodities*

Signs of product defects can be caused by a variety of things and may be sign of a wider problem.

If any product displaying any form of above-mentioned defects is identified, logistics personnel should:

- Separate identified issues from general stock and stop any distribution or use of the items.
- Contact the product distributor and/or manufacturer and/or the organisations quality assurance specialists to see if there is a known cause or if the product may still be usable.
- Contact other storage sites or health facilities with similar products to see if the problem is occurring elsewhere.

Only after a proper course of action is identified should products be either disposed of or returned to general rotation. In the event that the product is damaged, and disposed of, mitigation measures should be implemented to prevent future damages to other items if within the control of the organisation/warehouse.

Recall Management

Throughout the course of any health-related supply chain, health practitioners may be faced with managing product recalls. A product recall occurs when a manufacturer or a local health authority indicates that one or more health items is considered unfit for human consumption and must not be distributed or used in routine activities. There are multiple reasons why a product may be recalled, including faulty production, product tampering, changes to local regulations, or some other defect that may impact the product's fitness for human consumption. Manufacturer's typically reference item batch or lot numbers when identifying recalled items, however entire product lines or even products from specific periods of production may be recalled. The important part is that the manufacturer or local health authority will provide specific criteria for what items should be recalled, and humanitarian actors should endeavour to comply wherever possible.

Recalled items are occasionally returned to the manufacturer, however in many contexts the owners of the health items will need to actively quarantine all recalled items and manage the destruction/disposal process directly. In most humanitarian contexts, pharmaceuticals and medical devices are frequently imported from outside the country of operation, and the process of collecting and re-exporting recalled items may be prohibitive or even impossible. Any time a recall occurs, logistics planners must assess what is feasible.

The general steps for recall management include:

- A product manufacturer or local health authority identifies a specific product, or products based on key criteria that should be recalled.
- (If possible) humanitarian organisations should reference all procurement and inventory tracking systems to understand if the recalled items are currently in their supply chains. Note: due to the complex or ad-hoc nature of humanitarian supply chains, this information may not be available. If no records are available, humanitarian organisations should act as if they have recalled items in their possession.
- Humanitarian organisations should immediately contact all warehouses, storerooms, health facilities, or other locations where recalled products might have been sent. All locations should be informed to do a full inventory to identify any and all recalled items. Identified recalled items should be segregated from the primary inventory items and placed in a secured quarantine area.
- (If required) humanitarian organisations should contact local communities, ministry of health offices and partner organisations that might have received recalled goods as part of regular programmatic activities and inform each party of which items have been recalled, and what steps they should take to safely secure recalled items. Depending on the context, the humanitarian organisation may be required to retrieve all recalled items directly from each outside party in order to avoid any mismanagement or accidental distribution.
- (If required) The humanitarian organisation in question may have to organise the pick-up and relocation of all expired items to the capital city or primary distribution facility to enable proper return or disposal of the recalled goods. In many humanitarian contexts, there may be no local infrastructure to support disposal at the local level.
- In every context, there may be different steps required for the proper disposal of recalled items.
    - Manufacturers may offer or may be obliged to pick up recalled items directly from organisations managing the items themselves.
    - Local or national health authorities may have dedicated facilities or means to pick up or receive specific recalled items.
    - Local or national regulations may require that recalled health items be disposed of by the product owner in specific way, or that some items be re-exported. In the event items are re-exported, special permits will likely be required.

Even if there is no specific regulation in place, humanitarian organisations should seek to properly dispose of recalled items using the most ethical and environmentally friendly methods available. Proper disposal methods can be found in the section on managing medical waste.