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Operational Assessment of Warehouses

**District Khyber, D.I.
Khan & Swat**

2022

**Health Department
Khyber Pakhtunkhwa**

USAID GLOBAL HEALTH SUPPLY CHAIN PROGRAM

Procurement and Supply Management

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This publication was prepared by the USAID funded, Global Health Supply Chain Program – Procurement and Supply Management (GHSC-PSM) project, managed by Chemonics International Inc. The authors' views expressed in this publication do not necessarily reflect the views of the U.S. Agency for International Development or the United States Government.

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Acronyms

BMU's : Basic Medical Units-----	3, 4, 13
D.G Health : Director General - Health-----	3, 4, 5
D.I Khan : Dera Ismail Khan -----	4
EPI : Expanded Programme on Immunization-----	4, 10
FRs : Frontier Regions -----	4, 6
KP : Khyber Pakhtukhwa -----	4
MDF board : Medium Density Fibreboard -----	4, 7
PPEs : Personal Protection Equipment -----	4, 14
USAID GHSC-PSM : U.S. Agency for International Development – Global Health Supply Chain – Procurement & Supply Chain Management -----	4
WH: Warehouse-----	4, 17
WMIS : Warehouse Management Information System-----	4, 7

Introduction:

USAID Global Health Supply Chain Program-Procurement and Supply Management (GHSC-PSM) is providing technical assistance to Department of Health in the Field of Supply Chain Management including the improvement in current supply chain practices and implementation of Supply Chain MIS and Asset Management Information System.

In light of the above Health Department seeks USAID GHSC-PSM's technical support to conduct an assessment for the warehousing facilities in Khyber Pakhtunkhwa (KP) Province to ensure smooth delivery of health services. Health Department of KP needs to carry out situation analysis of the pre-fabricated warehouses situated at district Dera Ismail Khan (D.I Khan), Swat and Khyber. Utilizing the available infrastructures, the project may propose the changes required to operationalize the existing infrastructure of warehouses to store medicines and supplies for Health Department at the respective districts. The project may analyse the current maximum capacity, shortcomings and any repair needed for the operationalization of said warehouses.

Purpose:

Health Department of Khyber Pakhtunkhwa (KP) seeks U.S. Agency for International Development – Global Health Supply Chain – Procurement & Supply Chain Management's (USAID GHSC-PSM) technical support to conduct an assessment of district health office's stores/warehouses located at district Khyber, D.I Khan, and Swat and assess operational requirements including repair and maintenance, equipment and funds needed to operationalized these warehouses.

Objective:

- Utilization Analysis of Space / Infrastructure
- Propose operational optimization in existing structure / warehouse meeting supplies needs of health department at respective site
- Analyse current maximum capacity, short comings & repairs

Methodology:

A team of USAID GHSC-PSM/warehousing experts under the supervision of Director General Health (D.G Health) KP was assigned to assess the capacity as well as operational requirement of the warehouses. The team after briefing by D.G Health visited said warehouses, interviewed the key staff including, District Health Officers (DHOs), warehouse staff, reviewed of available record and conducted physical inspection of current situation of the facilities.

District Warehouse - Khyber

Current Throughput Situation of District Warehouse - Khyber

Overview;

Khyber warehouse is a Prefabricated Steel Structure Warehouse. The warehouse is under use of Khyber District but it required major rehabilitation to make it fully operational meeting the minimum standards of warehousing.



Warehouse is situated in District Hospital area covering healthcare supplies for 7 agencies, 6 Frontier Regions (FRs) and almost 20 healthcare units. Warehouse consist of healthcare supplies for following programs;

Figure 1. District Health Programs

Programs	No. of SKUs	No. of cartons
National Program	11	16,600
Eye Care Program	08	380
Mobile Hospital Program	21	2,000
General	100	89,913

Total Space Available;

Warehouse Size = width 40ft x Length 120 ft. x Height 20 ft = 96,000 cubic feet

Total numbers of racks rows installed: 19

Shelves per rack: 4

Total numbers of shelves: 76

Shelf size;

Volume per shelf = 9'x4'.10"x3'.10" (Length * width * height) = 870 cubic feet.

Total current useable space. Number of Shelves * Cubic Feet/Shelve= 76* 870 = 66,120 cubic feet

Total extendable space within the current structure: 11 rack rows * 4 Shelves/row = 44
* 870 cubic feet = 38,280 cubic feet

Total space after extension: **66,120+38,280= 104,400 cubic feet**

Operational Assessment;

- Pallet racks are installed in warehouse; however, the quality of racks seems very poor and found damaged/bend not able to bear the load of the medicines. They however, have tried to fix them by adding additional bars but still the racks are not strong enough to bear the load of medicines. Moreover, there was no information regarding pallet racking's specifications and load bearing capacity available to calculate the capacity of the racks



- No folk lifter was available, they use moving stairs to stack the medicacies and supplies which are not considered good stacking practice and risk of staff injuries
- No temperature and humidity control system were installed in warehouse. They use air conditioners to maintain the temperature. Total 6 air conditioner were installed, out of which only 2 were working and not been serviced from ages
- Temperature measurement devices were not available
- Lack of warehouse equipment for loading, off-loading, stacking etc
- Lack of Firefighting equipment including fire-extinguisher, fire buckets, fire ball, sprinklers etc.
- Absence of Staff safety gears including PPEs
- Unavailability of pallets to stack the medicines and supplies
- Poor lighting condition
- No place available for quarantine or store the expired medicines
- No area allocated for packing
- No area allocated for inspection of medicines, equipment and supplies

- No area was available to store the hazardous supplies
- Medium Density Fibreboard (MDF board) were placed in shelves to stack the medicines which absorb moisture and not recommended for medicines
- Supplies and equipment are stacked in inappropriate manners which is a high risk of fall down and may cause injuries to staff. An incident has already happened in Khyber warehouse, where the whole stack fell down and caused damage of valuable medicines. However, the staff remained safe in this incident
- Risk of fire, pilferage and leakage was present
- No Warehouse Management Information System (WMIS) was in use. Staff was using manual entries of stock INs and OUTs
- No electricity backup was available. Although a generator set having capacity of 25 KVA was available but it was not in working condition

Human Resource;

There were only three staff appointed to manage the warehouse activities, who neither had been provided any training nor warehouse management courses. Moreover, they don't have relevant background, experience and education. Considering the workload and importance of warehousing, it is recommended i) to provide DHO office warehousing staff with relevant background and experience and (ii) provide them warehouse management trainings and courses to update their knowledge and learn the warehouse management best practices. This will help them not only to improve their warehouse processes but also bring efficiency and accuracy in warehouse management function.

Proposed Way Forward to make warehouse fully operational

Short Term / Immediate Remedies

- Assessment of the racks load bearing capacity
- Fixing of racks or installation of new racks based on the load bearing capacity assessment. To optimize the racking capacity, 11 rows (4 racks per row) may be added immediately.
- Provision of warehouse equipment and safety gears
- Provision and installation of fire fighting equipment
- Repair and maintenance of Air Conditioner
- Provision and installation of humidifiers
- Repair and maintenance of Generator as a backup in case of load shedding
- Provision and implementation of Warehouse Management Information System (WMIS)
- Warehouse staff training on good warehousing practices and WMIS
- Provision of folk lifter for proper and safe stacking of warehouse supplies, equipment and medicines

Long Term Operational requirements

- As per the analysis the current available space even after optimising it at its maximum is not sufficient to meet the needs of district, hence it is recommended to address the

- space constraint and extend the current warehouse structure. A detail analysis as well as assessment would be required to measure the extension of the current structure
- Trained and dedicated staff should be hired and deployed to warehouse for smooth functioning of warehousing component

District Warehouse - Dera Ismael Khan

Current Throughput Situation of District Warehouse - Khyber

Overview;

D.I Khan warehouse is a Prefabricated Steel Structure Warehouse. The warehouse is under use of D.I Khan District but it required major rehabilitation to make it fully operational meeting the minimum standards of warehousing.



Warehouse is situated in District Health Office area covering healthcare supplies for whole district. Health supplies are stored at two places to meet the district requirement. One is a rented building while other is a Prefabricated Steel Structure. Prefabricated steel structure required major rehabilitation to make it fully operational meeting the minimum standards of warehousing.

Total Space Available

Warehouse Size = width 30ft x Length 70 ft. x Height 20 ft = 42,000 cubic feet

Total numbers of racks rows installed: 18

Shelves per rack: 3

Total numbers of shelves: 54

Shelve size;

Volume per shelve = 9'x4'.10"x3'.10" (Length * width * height) = 870 cubic feet.

Total current useable space. Number of Shelves * Cubic Feet/Shelve= 54* 870 = 46,980 cubic feet

Total extendable space within the current structure: 18 rack rows * 1 Shelves/row = 18 * 870 cubic feet = 15,660 cubic feet

Total space after extension: **46,980+15,660= 62,640 cubic feet**

Operational Assessment;

- Pallet racks are installed in warehouse; however, the quality of racks seems very poor not strong enough to bear the load of the medicines. Moreover, there was no information regarding pallets racking's specifications and load bearing capacity available to calculate the actual capacity of racks
- No separate space for office hence, they have placed the workstations within the warehouse building compromising further the available space of warehouse
- There is no electricity in the warehouse last from 08 months. The transformer from which they were getting the electric connection is now under the custody of Pak Army. There is another transformer installed by EPI program at entrance of premises but it doesn't have sufficient capacity to bear the load of warehouse
- Electric wires found open which is a high risk of electric short-circuit
- No folk lifter was available, they use moving stairs to stack the medicacies and supplies which are not considered good stacking practice and risk of staff fall and injuries
- No temperature and humidity control system are installed in warehouse. They use air conditions to maintain the temperature. Total 6 air conditioner are installed which are out of order and required repair and service
- No temperature measurement devices were available
- No warehouse equipment for loading, off-loading, stacking etc found available
- No firefighting equipment including fire-extinguisher, fire buckets, fire ball, sprinklers were available
- No staff safety gears including PPEs were available
- No pallets to stack the medicines and supplies were available

- Poor lighting condition
- No place available for quarantine or store the expired medicines
- No area allocated for packing
- No area allocated for inspection of medicines, equipment and supplies
- No area was available to store the hazardous supplies
- Supplies and equipment are stacked inappropriate manners which is a high risk of them falling down and may cause injury to staff
- Risk of fire, pilferage and leakage was present
- No WMIS system was in use. Staff was entering stock INs and OUTs manually
- No electricity backup was available.

Human Resource Assessment;

There were only two staff appointed to manage the warehouse activities, who neither had been provided any training nor warehouse management courses. Moreover, they don't have relevant background, experience and education. Considering the workload and importance of warehousing, it is recommended i) to provide DHO office warehousing staff with relevant background and experience and (ii) provide them warehouse management trainings and courses to update their knowledge and learn the warehouse management best practices. This will help them not only to improve their warehouse processes but also bring efficiency and accuracy in warehouse management function

Proposed Way Forward to make warehouse fully operational

Short Term / Immediate Remedies

- Provision of electric connection on immediate basis
- Provision and installation of transformer on immediate bases
- Provision of electric backup on immediate bases
- Assessment of the pallets load bearing capacity
- Updating of pallets racks or installation of new pallet racks based on the load bearing capacity assessment
- Provision of warehouse equipment and safety gears
- Provision and installation of fire fighting equipment
- Repair and maintenance of Air Conditioner
- Provision and installation of humidifiers
- Provision and implementation of Warehouse Management Information System (WMIS)
- Warehouse staff training on good warehousing practices and WMIS
- Provision of folk lifter for proper and safe stacking of warehouse supplies, equipment and medicines

Long Term Operational Requirement

- As per the analysis the current available space even after optimising it at its maximum is not sufficient to meet the needs of district, hence it is recommended to address the space constraint and extend the current warehouse structure. A detail analysis as well as assessment would be required to measure the extension of the current structure
- Trained and dedicated staff should be hired and deployed to warehouse for smooth functioning of warehousing component

District Warehouse – Swat

Current Throughput Situation of District Warehouse - Swat

Overview;

Swat warehouse is a Prefabricated Steel Structure Warehouse. The warehouse is currently dis-functional and under custody of EPI Program. However, it required major rehabilitation to make it fully operational meeting the minimum standards of warehousing.



A prefabricated Warehouse is situated in BMU Odegran. Currently, EPI program's obsolete items are stored in the warehouse. Moreover, EPI has installed one unit of cold chain management but it is not functional.



To store the district health supplies and medicines district health office has make shift arrangement. They have rented small house consisting 5 small rooms and 7 small shops which neither meet the basic warehousing needs nor fit for purpose.

District Health Office Swat covers 74 BMU's consisting of one DHQ, 06 THQ's and 69 BHU's from the district warehouse located in centre of the city Swat, Mingora.

Total Space Available

Warehouse Size = width 30ft x Length 70 ft. x Height 20 ft = 42,000 cubic feet

Total numbers of racks rows installed: 12

Shelves per rack: 4

Total numbers of shelves: 48

Shelve size;

Volume per shelve = 9'x4'.10"x3'.10" (Length * width * height) = 870 cubic feet.

Total current useable space. Number of Shelves * Cubic Feet/Shelve= 48* 870 = 41,760 cubic feet

Total extendable space within the current structure: 02 rack rows * 04 Shelves/row = 8 * 870 cubic feet = 6,960 cubic feet

Total space after extension: **41,760+6,960= 48,720 cubic feet**

Operational Assessment;

- The warehouse is under use of EPI program and they have stored obsolete items and have installed one clod chain unit as well
- Pallet racks are installed in warehouse; however, the quality of racks seems very poor not able to bear the load of the medicines. Moreover, there was no information regarding pallets racking's specifications and load bearing capacity available to calculate the actual capacity of racks
- To manage the warehouse operation from Odegran, it required to construct offices for warehouse staff
- No folk lifter was available,
- No temperature and humidity control system were installed in warehouse. There were 6 air conditioners installed but were out of order
- No temperature measurement devices were available
- No warehouse equipment for loading, off-loading, stacking etc found available
- No firefighting equipment including fire-extinguisher, fire buckets, fire ball, sprinklers were available
- No staff safety gears including PPEs were available
- No pallets to stack the medicines and supplies were available
- Poor lighting condition
- No place available for quarantine or store the expired medicines
- No area allocated for packing
- No area allocated for inspection of medicines, equipment and supplies
- No loading and off-loading bays
- No area was available to store the hazardous supplies
- Supplies and equipment are stacked inappropriate manners which have risk of falling down and may injure the staff working in warehouse
- Risk of fire, pilferage and leakage was present
- No WMIS system were in use. Staff enter stock INs and OUTs manually
- No electricity backup was available

Human Resource Assessment;

There were only three staff appointed to manage the warehouse activities, who neither had been provided any training nor warehouse management courses. Two of them are full time while the 3rd one is on temporary basis. Considering the workload and bureaucratic management processes, it is recommended i) to provide DHO office an adequate number of warehouse staff and (ii) provide them warehouse management trainings and courses to update their knowledge and learn the warehouse management best practices. This will help them not only to improve their warehouse processes but also bring efficiency and accuracy in warehouse management function.

Proposed Way Forward to make warehouse fully operational

Short Term / Immediate Remedies

- Assessment of the pallet racks load bearing capacity
- Updating of pallets racks or installation of new pallet racks based on the load bearing capacity assessment
- Provision of warehouse equipment and safety gears
- Provision and installation of fire fighting equipment
- Repair and maintenance of Air Conditioner
- Provision and installation of humidifiers
- Provision and installation of generator as a backup in case of load shedding
- Provision and implementation of Warehouse Management Information System (WMIS)
- Warehouse staff training on good warehousing practices and WMIS
- Provision of folk lifter for proper and safe stacking warehouse supplies, equipment and medicines

Long Term Operational Requirement

- As per the analysis the current available space even after optimising it at its maximum is not sufficient to meet the needs of district, hence it is recommended to address the space constraint and extend the current warehouse structure. **A detail analysis as well as assessment of the warehouse has already been done and submitted to concern authorities for further processing**
- Trained and dedicated staff should be hired and deployed to warehouse for smooth functioning of warehousing component

List of items for immediate remedies with costing

Table 2. 1 Summary of budget

Summary of budget

Summary of budget		
Sr. No	Category	cost
1	Warehouse Equipment	49,252,500
2	Warehouse Supplies & Furniture	36,480,000
3	Repair & Maintinance	1,290,000
		87,022,500

Table 2. 2 Warehouse Equipment

Warehouse Equipment

Warehouse Equipment Detail						
Sr #	Name of Item	Specification	Qty	Unit	Unit Rate	Total Rate
1	lifting trolley (two for each warehouse)	Hydraulic (heavy duty)	6	Each	40,000	240,000
2	Moving trolley (two for each warehouse)	3.5' x 2.5' (heavy duty)	6	Each	30,000	180,000
3	Waste Bin (two for each warehouse)	organic, plastic, glass and metal (1600-liter plastic)	6	Each	5,000	30,000
3	Dehumidifier (two for each warehouse)	Steel or Plastic body with timing function, 1000L with washable air filter and external drain.	6	Each	50,000	300,000
4	Strapping and Banding Machine (One for each warehouse)	Heavy Duty Tabletop Banding Machine, Automatic, for cartons strapping	3	Each	125,000	375,000
5	Forklift (One for each warehouse)	Diesel fuel, load capacity 8000 –11000 LBS, Complete Specification attached	3	Each	5,500,000	16,500,000
6	Weight scale (One for each warehouse)	industrial heavy duty with 1500 to 2000 capacity	3	Each	75,000	225,000
7	Refrigerator (One for each warehouse)	600 litter, inverter technology	3	Each	80,000	240,000
8	Emergency Light (Five for each warehouse)	good quality (imported)	15	Each	5,000	75,000
9	Umbrella (Five for each warehouse)	Umbrella	15	Each	1,500	22,500
10	Varioline chiller (Two for each warehouse)	Double door, 880 L, for optimization of 2-8 Degrees Celsius Controlled-Temperature	6	Each	200,000	1,200,000
11	Deep Freezer (One for each warehouse)	important for optimization of -2-to-20-degree Celsius controlled temperature	3	Each	90,000	270,000
12	Digital Temperature Thermometer Hygrometer (Two for each warehouse)	Digital Temperature Thermometer Hygrometer	6	Unit	10,000	60,000
13	Smoke detector system	Smoke detector system	3	Set	250,000	750,000
14	Generator (one for D.I Khan and One for Swat)	100 KVA with imported Canopy, complete with	2	Set	1,500,000	3,000,000

		Foundation Pad and Installation,				
15	Personal Safety Gear (Five for each warehouse)	Helmets, face shields, eyewear, ear protection, respiratory protection, gloves, vests and kneepads.	15	kits	25,000	375,000
16	CCTV Camera (9 for each warehouse)	CCTV Camera	27	No	10,000	270,000
17	Firefighting (One package for each warehouse)	Fire extinguishers, wire bolls, fire buckets	3	Package	350,000	1,050,000
18	wooden/plastic pallets (100 for Each warehouse)	Standard Size	300	no	2,000	600,000
19	First Aid kit (3 for each warehouse)	bandages, adhesive tape, pads, ammonia inhalants, a cold pack, antiseptic wipes, eye wash, aspirin, burn spray, cotton applicators, gloves, scissors and tweezers and user instructions	9	kits	10,000	90,000
12	Vehicle/Car (1 for each WH)	Double cabin	3	No	7,500,000	22,500,000
13	Master truck/Shehzore for distribution (1 for each WH)	Master truck/Shehzore for distribution	3	No	300,000	900,000
	Total					49,252,500

Table 2. 3 Warehouse Supplies. & Furniture

Warehouse Supplies & Furniture;

Warehouse Supplies & Furniture					
Sr. no	Item Description	QTY	Unit	Unit rate	Total Rate
1	Office Furniture (3 set for each WH)	9	Set	50,000	450,000
2	Laptops (3 for each WH)	9	No	150,000	1,350,000
3	Printers (1 for each WH)	3	No	100,000	300,000
4	Photocopier Machine (1 for each WH)	3	No	450,000	1,350,000
5	Water Dispenser (1 for each WH)	3	No	20,000	60,000
6	Office Chairs (8 for each WH)	24	No	25,000	600,000
7	Visitor Chairs (4 for each WH)	12	No	15,000	180,000
8	Meeting Table (1 for each WH)	3	No	75,000	225,000
9	Meeting Chairs (6 for each WH)	18	No	15,000	270,000

10	Internet Devices (1 for each WH)	3	No	50,000	150,000
11	Internet Routers (2 for each WH)	6	No	7,500	45,000
12	Vehicle/Car (1 for each WH)	3	No	7,500,000	22,500,000
13	Master truck/Shehzore (1 for each WH)	3	No	3,000,000	9,000,000
	Total				36,480,000

Table 2. 4 Repair & Maintenance

Repair & Maintenance;

Repair & Maintenance					
Sr. no	Item Description	QTY	Unit	Unit rate	Total Rate
1	Air Conditioner	8	no	5,000	40,000
2	Generator	1	no	500,000	500,000
3	Electric wires	3	WH	150,000	450,000
4	Mics	3	WH	100,000	300,000
	Total				1,290,000

Note: Budget for pallet racks is not added in above tables as it required detail assessment of load bearing capacity of the racks by a pallet rack manufacturer.

Long Terms Plan;

These prefabricated steel structures warehouses are not designed to meet the warehousing needs of these districts. The available space is not sufficient to meet the district needs even if it is fully optimized. In any case, district warehousing need is much bigger than this.

In long-term plan, it is required either to extend the capacity of these warehouses by extending the current structure or design and construct purpose-built warehouses meeting the actual need of district's health supplies.

Budget for long term plan is not possible at this stage as it required detail assessment, review of total supplies load of the district, future expansion plans and allocation of land.

Recommendations;

- Short Term / Immediate Remedies should be addressed immediately to make the warehouse functional
- Implementation of WMIS on priority bases
- Training of warehouse staff to learn the warehouse best practices and use of WMIS
- Training of warehouse staff to use warehouse equipment including use of folk lifter
- Expansion of current structures to fully address the districts warehousing needs