Training Report

Cold Chain Management and Repair & Maintenance of Cold Chain Equipment

Lumbini Province Government

Ministry of Health

Province Health Logistic Management Center

Butwal, Rupandehi, Nepal

2082

Contents

Acknowledgement

We express our sincere appreciation to **UNICEF** for their pivotal role in providing the technical framework and expert oversight for this 7-day training program. Their contribution to aligning the curriculum with best practices and ensuring the quality of technical delivery was indispensable. It enhanced the skill set of our participants but has also strengthened the overall impact of our Cold Chain Management System initiatives through UNICEF's specialized guidance. This program was made possible through the technical facilitation and expert oversight provided by UNICEF.

We also like to extend our deepest gratitude to **Korea Nepal Institute of Technology** for their exemplary cooperation in facilitating the Training. The program hall and specialized practical laboratories was a cornerstone of the program's success, providing participants with an optimal environment for both theoretical and technical mastery. Their provision of high-grade facilities and logistical support throughout the week-long training ensured that all curriculum objectives were met with the highest standard of excellence. We are grateful for the hospitality of KNIT college.

We would like to express our appreciation to Mr. Amar Regmi for his contribution on report writing and team members of **Provincial Health Logistic Management Center** for their tireless dedication and successful completion of the training program.

Training Schedule

Training Period: 2082/10/07 to 2082/10/13 (7 Days)

Venue: Korean Nepal Institute of Technology (KNIT), Tamnagar, Rupandehi

Time	Activities	Delivery	Remarks
	DAY I		
10:00 - 11:00 AM	Opening Session • Welcome and Introduction of Participants • Objective of Training • Introduction Session • Pre-test Questionnaire		
11:00 – 11:45 AM	Objective, Major Achievements, Challenges and Strategy of National Immunization Program	Presentation	
11:45 – 12:00 PM	**Tea Break**		
12:00 – 1:30 PM	Cold Chain Management Process, Issue and Challenges in district and local levels • Supply chain and stock management of vaccines and diluents • Challenges during transportation of vaccines and diluents • Physical Count • Safe disposal of expired and damaged vaccines and diluents	Presentation and Discussion	
1:30 – 2:00 PM	**Lunch Break**		
2:00 – 3:30 PM	Definition of Cold Chain and Process, Logistic Cycle, Introduction of vaccine, Vaccine Sensitivity and types	Presentation and Discussion	

3:30 – 5:00 PM	• Icepack Conditioning • V.V.M Monitoring • Multi Vial Dose Policy • Bundling • Information on Shake Test	Presentation and Discussion	
DAY II			
10:00 – 10:15 AM	Review of Ist Day	Discussion	
10:15 – 11:45 AM	Fridge Tag Monitoring Process and Demonstration	Presentation and Discussion	
11:45 – 12:00 PM	**Tea Break**		
12:00 – 1:30 PM	Application of Safety techniques during maintenance of cold chain equipment	Presentation and Discussion	
1:30 – 2:00 PM	**Lunch Break**		
2:00 – 3:30 PM	Information sharing on Electrical components and techniques.	Presentation and Discussion	
3:30 – 5:00 PM	Presentation on Electrical components maintenance and practical session on use of electric tools and equipment	Presentation and Discussion	
DAY III			
10:00 – 10:15 AM	Review of Second Day	Discussion	
10:15 – 11:45 AM	Contingency plan for vaccine management & cold chain equipment maintenance and forms/format used in cold chain	Presentation and Discussion	
11:45 – 12:00 PM	**Tea Break**		
12:00 – 1:30 PM	Activities during operation of Cold Chain Equipment.	Presentation and Discussion	
1:30 – 2:00 PM	**Launch Break**		
2:00 – 3:30 PM	Practical session on Mechanical tools and equipment use	Presentation and Discussion	

3:30 – 5:00 PM	Use and importance of generator and voltage stabilizer	Presentation and Discussion	
DAY IV			
10:00 – 10:15 AM	Review of Third Day	Discussion	
10:15 – 11:45 AM	Information sharing on cold chain equipment (WHO PQS Information)	Presentation and Discussion	
11:45 – 12:00 PM	**Tea Break**		
12:00 – 1:30 PM	Information on Preventive Maintenance	Presentation and Discussion	
1:30 – 2:00 PM	**Lunch Break**		
2:00 – 3:30 PM	Introduction of Effective Vaccine Management	Presentation and Discussion	
3:30 – 5:00 PM	Information on Corrective Maintenance	Presentation and Discussion	
DAY V			
10:00 – 10:15 AM	Review of fourth Day	Discussion	
10:15 – 11:45 AM	Quantification of vaccines and storage capacity of cold chain equipments	Presentation and Discussion	
11:45 – 12:00 PM	**Tea Break**		
12:00 – 1:30 PM	Installation process and management of cold chain equipment Installation of HBC-80 Product Training Manual	Presentation and Discussion	
1:30 – 2:00 PM	**Lunch Break**		
2:00 – 3:30 PM	Installation of HBC-116 Product Training Manual	Presentation and Discussion	
3:30 – 5:00 PM	HTCD-90 Product Training Manual	Presentation and Discussion	
DAY VI			

10:00 – 10:15 AM	Review of fifth day	Discussion	
10:15 – 11:45 AM	Cold Chain and Vaccine Management strategy 2070 and future plans	Observation and discussion	
11:45 – 12:00 PM	**Tea Break**		
12:00 – 1:30 PM	Display of essential cold chain equipments for Maintenance and basic Maintenance activity for cold chain equipment	Presentation and Discussion	
1:30 – 2:00 PM	**Lunch Break**		
2:00 – 3:30 PM	Information on Mechanical components of refrigerator (Spare parts)	Presentation and Discussion	
3:30 -5:00 PM	Cold store site visit and Group work	Observation and Presentation	
DAY VII			
10:00 – 10:15 AM	Review of Sixth Day	Discussion	
10:15 – 11:15 AM	Refrigeration cycle simulator observations	Observation and Presentation	
11:15 – 11:30 AM	**Tea Break**		
11:30 – 1:30 PM	Practical session on Phase line identification, power socket installation, practice on Multimeter and clamp meter	Practice	
1:30 – 2:00 PM	**Lunch Break**		
2:00 – 3:30 PM	Practice on connection of Relay, OLP, capacitor, Capillary tube, compressor connection of Digital Thermostat in HBC 80 model ILR	Practice	
3:30 – 4:00 PM	Post Test	Facilitator	
4:00 – 5:00 PM	Administrative work and Closing	Facilitator	

Introduction

The Provincial Health Logistic Management Center (PHLMC) is responsible Cold Chain Management of Vaccines (Routine Vaccine, Covid Vaccine, Anti Rabies Vaccine, Anti Snake Venom) while receiving from central vaccine store, storage in recommended temperature at PHLMC and supply to district/Palika and as well as responsible for the procurement, storage, and distribution of health supplies, essential medicines, vaccines, medical equipment, diagnostic kits, Ayurvedic medicines to hospitals/ healthcare facilities at the local level. Also the role of PHLMC is repair and maintenance of cold chain equipment and biomedical equipment at province, district, and hospitals/healthcare facilities under the provincial government. The center establishes a network of medical stores at the federal, provincial, and district levels, as well as at the local level, and promotes evidence-based decision-making through the analysis of supply chain data and inventory management systems.

Provincial Health Logistic Management Center has conducted seven days cold chain repair and maintenance training for health workers working in district and local levels. Participants were from different Districts/Palika/HFs involved in vaccine and cold chain management.

Training Goal

- To enable healthcare workers and technicians involved in vaccine and cold chain management to acquire electrical knowledge, perform preventive maintenance of cold chain equipment (refrigerators, freezers, solar refrigerators, and walk-in coolers/freezers), identify the causes of equipment failure, and carry out necessary repairs.

Training Objective

- To provide information regarding the introduction, objectives, key achievements, challenges, and future plans of the National Immunization Program (NIP).

- To provide information on Cold Chain System related policies, strategies, and future plans.
- To enhance competency in vaccine and cold chain management.
- To provide detailed information regarding cold chain equipment and materials.
- To develop expertise in proper knowledge and Preventive Maintenance of cold chain equipment.
- To develop skills in basic repair (Corrective Maintenance) of cold chain equipment.

Training Approach

The training approach followed a blended learning approach. The session was initiated from theoretical foundation to practical session of equipment repair.

- Theoretical Foundations: Core concepts of the National Immunization Program and cold chain policies are delivered through interactive presentations and facilitated discussions to ensure a deep understanding of cold chain mechanism.
- Practical Observation: Participants gain real-world context through guided site visits to cold stores of Province Health Logistics Management Center, where they observed large-scale equipment, it's operations and monitoring protocols. The practical session was also followed by repair of cold chain equipment.
- Skill-Based Learning: The training was based on skill based learning techniques for preventive maintenance and simulated fault-finding for corrective repairs.

Learning Resources

The training resources were developed to ensure field readiness and long term retention, the training utilizes a comprehensive set of technical tools and materials:

1. Facilitators guide of National Health Training Center
2. Participant guide of National Health Training Center
3. Equipment, logistics and monitoring tools
4. KNIT Lab of Refrigeration & Air Conditioning
5. Cold Chain Equipment (ILR-HBC 80 model)

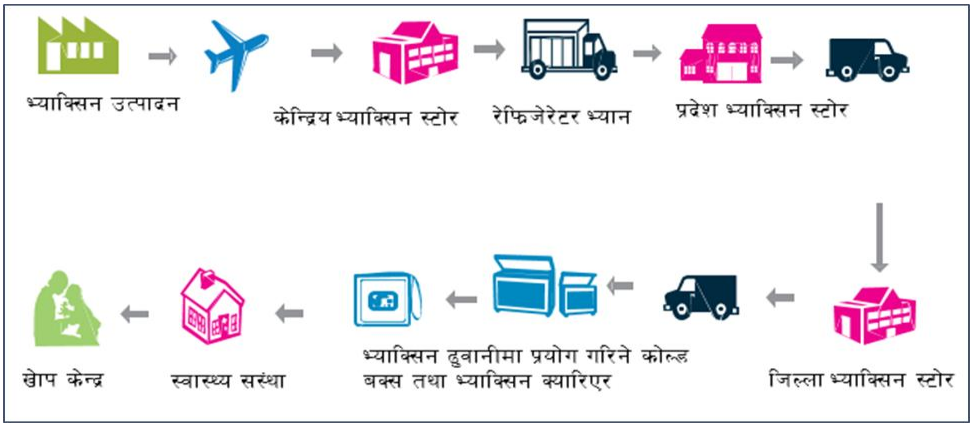
Training Activities

Day 1

The training program was inaugurated with guidance from the PHLMC Director, provided an in-depth review of the National Immunization Program's history, strategic goals, and procurement policies, emphasizing the critical need for efficient vaccine and supply chain management. Discussions focused on strengthening the system for demand, storage, and distribution to ensure that high-quality vaccines and safe injection materials reach every vaccination point. By addressing procurement costs and wastage rates, the session established a clear framework for the Cold Chain Strategy, which relies on robust physical infrastructure, strategic geographical placement, and sustainable financial accountability.

To bridge the gap between policy and practice, the session detailed the technical operation of active and passive cold chain equipment, including Walk-In-Coolers and solar-driven refrigerators, alongside modern monitoring tools like Remote Temperature Monitoring Devices (RTMD). Participants addressed systemic challenges such as infrastructure shortages, maintenance weaknesses, and high wastage rates while reviewing the Multi-Dose Vaccine Vial Policy, which allows the reuse of opened vials for up to 28 days in certified facilities. Ultimately, the training underscored how improving the vaccine supply chain and eLMIS reporting directly contributes to increased immunization coverage and the reduction of child mortality and disability.

Cold Chain Mechanism



Day 2

The second day focused on Effective Vaccine Management (EVM) to ensure that high-quality vaccines reach the target groups. The trainers explained that the current EVM score is 81% (from 2021), but the goal is to improve and maintain a score above 90%. Participants learned about Standard Operating Procedures (SOPs), how to monitor temperatures using Freeze Tags and RTMD devices, and how to properly organize vaccines based on their sensitivity to heat or cold. Practical sessions also covered how to fill out monthly monitoring charts and why vaccines should never be stored or transported in temporary foam boxes.

A major part of the day was dedicated to stock management and safety. Participants learned how to perform physical counts and safely dispose of expired items. It was highlighted that vaccines (like BCG) and their diluents (liquids) often have different expiry dates; if either one expires, both must be removed from the stock. The training also taught emergency plans to save vaccines during power or equipment failures.

Day 3

The third day focused on safety measures and the technical components of cold chain equipment. Participants were taught that before starting any repair, they must completely disconnect the power supply (main or solar) and unplug the equipment to prevent electric shocks. The importance of using Personal Protective Equipment (PPE) such as insulated gloves, safety shoes, eye protection, and helmets was emphasized to avoid injuries from sharp edges and electrical parts. Technicians were warned never to touch live wires, compressors, or terminals and to ensure that capacitors are fully discharged before handling.

The session also covered basic electrical concepts including conductors, insulators, voltage, and the importance of Earthing (Grounding) for safety. Participants were introduced to the essential mechanical parts of a refrigerator, such as the Thermostat, Compressor, Condenser, and Evaporator, explaining how they work together to control temperature. Finally, the group practiced troubleshooting using a maintenance checklist to identify common problems, their causes, and the correct solutions for electrical upkeep.

Day 4

On the fourth day, the training focused on the tools and techniques needed to keep cold chain equipment working properly through two main types of Preventive and Corrective Maintenance.

Preventive Maintenance is scheduled service done by experts to catch small issues before they become big, expensive problems. The benefits include lower repair costs, a longer life for the equipment, and improved safety for the technicians. Participants reviewed how to maintain key parts like compressors and condensers in walk-in coolers and freezers. By keeping machines running smoothly, health facilities can provide steady service and ultimately save lives.

Corrective Maintenance involves fixing equipment after a specific problem or breakdown has been identified. The goal is to restore the machine to its normal condition as quickly as possible. Technicians learned that they must identify the exact fault and gather the right spare parts before starting a repair. The day ended with practical lessons on troubleshooting, using a mix of lectures, group work, and hands-on practice (such as demonstrations and role-playing) to ensure everyone gained real-world skills.

Day 5

Day 5 focused on the installation and commissioning of Cold Chain Equipment (CCE). The trainers emphasized that correct installation is vital for safety, reliability, and optimum performance. Proper setup ensures that equipment is durable, works efficiently, meets international standards, and avoids early failure. On the other hand, the trainers highlighted that incorrect installation poses serious risks, including accidents, electrical fires, and early equipment breakdowns, all of which can cause emergencies and disrupt the immunization program.

To ensure quality, participants practiced using an installation checklist. The session also provided a detailed look at the refrigeration cycle, explaining how temperature monitoring, cooling, and circulation work together. Participants studied the specific roles of the four main components: the compressor, condenser, expansion device, and evaporator. Finally, the product training manuals

for the HBC-80, HTCD 90, and HBD 116 models were presented, giving technicians the specific knowledge needed to manage these common units in the field.

Day 6: Practical Application and Field Observation

The sixth day of the training utilized a blended learning approach, combining a site visit, participant presentations, and detailed lectures. The sessions focused on the administrative and technical aspects of equipment care, specifically the importance of regular maintenance registration, meticulous record-keeping, and the critical role of voltage stabilizers in protecting sensitive equipment from power fluctuations.

During the practical session, participants received hands-on training on the proper use of maintenance tools. This was followed by a field visit to a Cold Chain Store, where the group was divided into five teams. Each team was assigned a specific topic and provided with an observation checklist to guide their evaluation. This structured field visit encouraged shared learning and allowed participants to apply their theoretical knowledge to a real-world setting.

Day 7: Final Technical Practice and Closing Ceremony

The final day of training began with a review of the previous day's activities and the distribution of technical manuals for various cold chain units. The morning focused on deep technical practice, starting with refrigeration cycle simulator observations to visualize how refrigerant moves through a system. Participants then moved to a hands-on practical session, where they learned Electrical Basics, Diagnostic Tools, Component Wiring, Specific Repairs. Then they shifted to the final administrative tasks and the post-test evaluation to measure the knowledge gained during the week; results were shared immediately with the group. During the feedback session, a representative for the participants expressed their recommendations and shared their experiences. The training officially concluded with a closing address by Dr. Rajendra Giri, Director of PHLMC, in the presence of guests from PHLMC, PHTC, UNICEF and KNIT.

Conclusion and Recommendations

The seven-day technical training on Cold Chain Management and Repair Maintenance successfully provided participants with a blend of theoretical as well as practical with technical

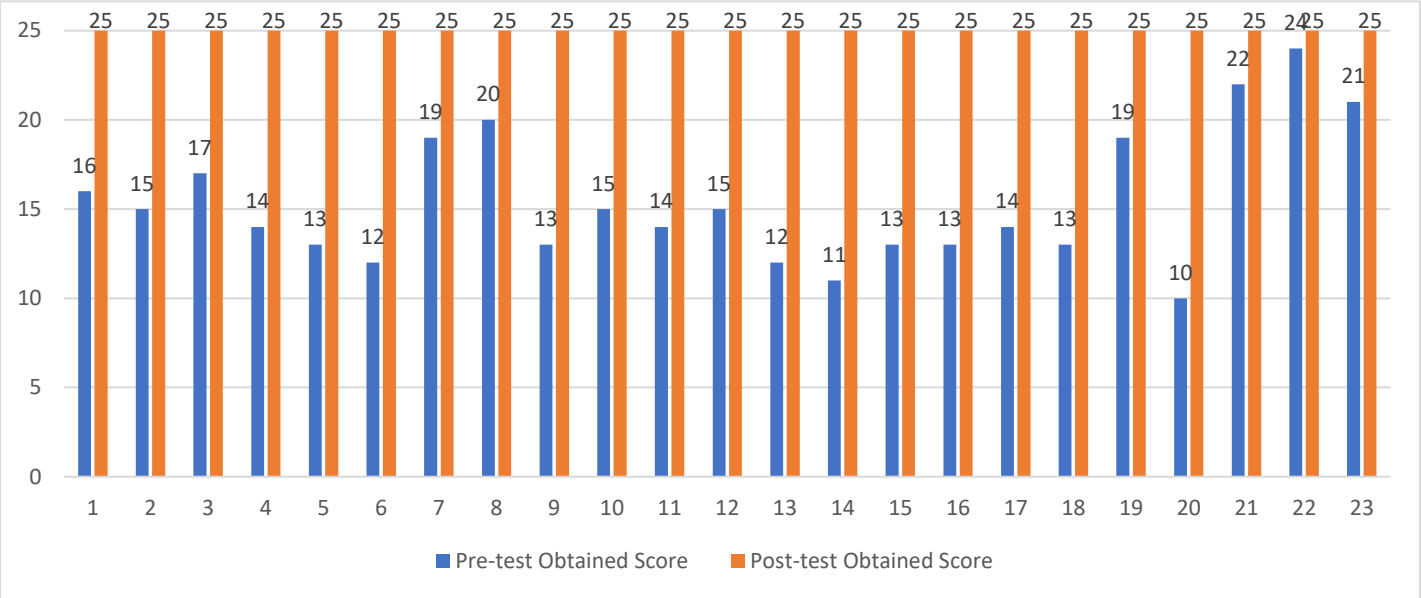
knowledge and hands-on expertise. By covering everything from the strategic goals of the National Immunization Program (NIP) to the complex mechanical repairs of HBC-80 models, the training bridged the gap between policy and field-level practice.

Participants demonstrated significant progress, moving from an initial understanding of the 2021 EVM score of 81% toward the skills necessary to achieve the national goal of 90% and above. The integration of Preventive and Corrective Maintenance protocols, along with the mastery of diagnostic tools and monitoring of cold chain equipment through Fridge tag and RTMDs, ensures that these technicians are now better equipped to safeguard vaccine effectiveness. Ultimately, this training has strengthened the provincial health system's capacity to reduce vaccine wastage, save costs, and protect child health across the province.

Recommendations

- All health facilities should strictly adopt the Preventive Maintenance Checklists introduced in the training.
- Each health facility updates cold chain inventory on regular basis for to ensure functionality of equipment and available capacity of the store.
- Technicians and cold chain assistants must ensure regular and accurate recording and reporting through PAMS V2 to maintain data integrity for vaccine stock and equipment status.
- Local and provincial authorities should prioritize the expansion of cold chain capacities and the procurement of WHO PQS Equipment.
- To maintain the EVM score above 90%, regular refresher training and on-site coaching should be established, especially as new models and equipment.
- Strict adherence to Multi-Dose Vial Policy in health facilities and should be monitored to minimize unnecessary vaccine wastage.
- Each participating cold chain technician should be provided with a standard toolkit (including multimeters, clamp meters, and PPE) to perform the electrical and mechanical repairs practiced during the session.

Pre and Post Test Evaluation



१. भ्याक्सिन तथा सिरिन्जहरुको आवस्यकता अनुमान गर्दा निम्न मध्ये कुन कुन कुरालाई ध्यानमा राख्नु पर्दछ ?

A. Vaccine Wastage & Coverage Data
B. Immunization Session
C. Target Population
D. All of the Above

२. Voltage नाप्न कुन meter को प्रयोग हुन्छ ?

A. Ammeter
B. Watt meter
C. Multimeter
D. Energy meter

३. बिद्युत प्रबाह electrical shock नलाग्ने बस्तु कुन हो ?

A. Dry wood
B. Metal rod
C. Wet rope
D. Wet wood

४. सोलार पानल कुन स्थानमा राख्दा सुर्यको किरण वढी र लामो समय आउछ ।

A. Roof
B. Floor
C. Side walls
D. Doors

५. रेफ्रिजिरेटर र फ्रिजरलाई कति बाक्लो आइज जम्यो भने डिफ्रस्टिङ्ग गर्नु पर्दछ ?

A. 1 mm
B. 5 mm
C. 4 mm
D. 7 mm

६. रेफ्रिजेरेटरको बरफ जम्ने भागलाई के भनिन्छ ?

A. Cooler
B. Condenser
C. Refrigerator
D. Evaporator

७. ILR (Refrigerator) मा Fridge Tag उपकरणले] Low alarm कति बेला देखाउँछ ?
A. Temperature between 2 to 8 ° C
C. Temperature below -0.5 ° C for 1 hour
C. Temperature above 8 ° C for 10 hour
D. Temperature at 0 ° C

८. रेफ्रिजरेटरको तापक्रम अनुगमन गर्दा कुन कुन करामा ध्यान दिनु पर्दछ ?
A. Daily Temperature Monitoring
C. Maximum & Minimum Temperature Monitoring
B. Daily Record in Log Book
D. All of the above

९. गुणस्तरीय आईस प्याक जमाउनको लागि आईस प्याकलाई कति तापक्रममा जमाउनु पर्दछ ?
A. -15 to -25 0 C
C. At 0 0C
B. -10 to -15 0 C
D. 0 to -10 0C

१०. रेफ्रिजेरेटरको कन्डेन्सर फयान मोटरको bearing नै खराब भएमा के गर्नु पर्छ ?
A. Wash it
C. Grease it
B. Repair it
D. Replace it

११. समग्रमा Repair & Maintenance कार्य भन्नाले के बुझिन्छ ?
A. Replacement of components
C. Repair of component
B. Service of component
D. All of the above

१२. तल दिईएको मध्ये corrective maintenance भन्नाले के अर्थ लाग्छ ?
A. Break down maintenance
C. Predictive maintenance
B. Preventive maintenance
D. Schedule maintenance

१३.साधारणतया घरको प्रयोगको लागी विद्युत प्रधिकरणले कति भोल्ट को लाईन प्रदान गर्छ ?
A. 220 volt
C. 380 volt
B. 110volt
D. 12 volt

१४. कुनै पनि विद्युतिय उपकरणमा हुने Fuse को मुख्य काम के हो ?
A. Open the circuit
C. Protect the line
B. Protect the appliance
D. All of the above

१५. Solar Direct Drive Refrigerator Cum Freezer मा Ice Pack जमाउन राखिने उपयुक्त समय कुन हो ?

A. Morning 9-10 am
B. Evening 7-8 pm
C. Evening 3-4
D. Night 9-10 pm

१६. यी मध्ये कुन चाहि maintenance सस्तो र प्रभावकारी हुन्छ ?
A. Shut down maintenance
B. Preventive maintenance
C. Corrective maintenance
D. Break down maintenance

१७. निम्न उपकरणहरु मध्ये भ्याक्सिन भण्डारण गर्दा प्रयोग नहुने तापक्रम अनुगमन उपकरण कुन को ?
A. Fridge tag
B. Barometer
C. Stem Thermometer
D. Remote Temperature Monitoring Device

१८. रेफ्रिजेरेटर / फ्रिजरमा प्रयोग हुने कुन चाही उपकरण हो, जसले तापक्रमको आधारणमा मेशिन चल्ने र बन्द गर्ने गर्छ ?
A. Thermostat
B. Capacitor
C. Selector switch
D. Relay

१९. Refrigerator/Freezer मा कुन ग्यास (Refrigerant) प्रयोग गरिएको हुन्छ ?
A. LPG
B. HCFC
C. R600a
D. CFC

२०. कोल्ड चेन उपकरणहरु जडान गर्दा भित्ता (Wall) बाट कति दुरीमा राख्नु पर्दछ ?
A. Minimum 10 cm
B. 50 cm
C. 100 cm
D. No gap required

२१. तल दिईएको मा कुन चाहि उपकरण Active cold chain Equipment मा पर्दैन ?
A. Icelined Refrigerator
B. Deep Freezer
C. Cold box
D. Walk In Cooler

२२. Refrigerator failure हुनुको कारणहरु कुन कुन हुन सक्छन ?
A. Refrigerator door open
B. Poor staff training
C. Voltage Fluctuation
D. All of the Above

२३. जेनरेटरलाई कति समयको अन्तरालमा नियमित सर्भिसिङ गर्नु पर्छ ?
A. After 4 Month
B. 125 Hour
C. Every 6 month
D. Both B & C

२४. Lead Acid battery मा पानीको लेभल कम भएमा कस्तो प्रकारको पानी राखिन्छ ?
A. Ordinary water
C. Coolant

B. Distilled water D. All of the above

२५. भ्याक्सिन प्राप्त गर्दा के के कुराहरु पुनः चेक गर्नु पर्छ ?

A. Quantity C. Expiry Date

B. VVM Status D. All of the Above

Best of Luck

Answer:

Question Number	Answer
1	D
2	C
3	A
4	A
5	B
6	B
7	C
8	D
9	A
10	D
11	D
12	A
13	A
14	D
15	A
16	B
17	B
18	A
19	C
20	A
21	C
22	D
23	D
24	B
25	D

Appendices 2: Details of Participants

Facilitator Details

S.N.	Name of Facilitator	Designation	Organization	Expertise
1	Swotantra Raj Joshi	Mechanical Engineer	Management Division	Equipment Repair and Maintenance
2	Marichman Khadka	Cold chain Assistant	PHLMC	Cold Chain Specialist
3	Mohan Dev Joshi	Cold chain specialist	UNICEF	Cold Chain Specialist
4	Nawaraj Khadka	Immunization Officer	UNICEF	Cold Chain & Immunization
5	Nabin Kishore Gaire	Principal	KNIT	Equipment repair and Maintenance
6	Kamal Dhungana	HOD of Refrigeration & Air Conditioning Department	KNIT	Equipment repair and Maintenance
7	Pratik Yadav	Lecturer	KNIT	Equipment repair and Maintenance
8	Pradeep Chaudhary	Lecturer	KNIT	Equipment repair and Maintenance

Participant Details

S. N	Participant	Working Place	Designation	Council No	Picture
1	Jhaggu Prasad Acharya	Health Office, Dang	Cold Chain Assistant	B-18233 Med GM	
2	Manoj Kumar Shrestha	Health Office, Rukum (East)	Cold Chain Inspector	-	
3	Bhola Prasad Adhikari	Bankatwa PHC, Banke	Sr. AHW Officer	C-5337 Med CMA	
4	Durga Bahadur K.C	Shantinagar HP, Dang	Sr. AHW Officer	C-17553 Med CMA	
5	Marichman Khadka	Province Health Logistic Managment Center, Butwal	Cold Chain Assistant	C-46997 Med CMA	
6	Sunil Kumar Yadav	Health Office, Nawalparasi (West)	Cold Chain Assistant	B-20956 Med GM	
7	Yagya Bahadur K.C	Naubahini Rural Municipality,Pyuthan	AHW	C-24472 Med CMA	
8	Bal Bahadur Tharu	Raptisonari Rural Municipality, Health Section, Banke	AHW	C-43513 Med CMA	

9	Bimala Budha Magar	Health Office, Bardiya	Cold Chain Assistant	C-63344 Med CMA	
10	Mina Kumari Budhathoki	Health Office, Palpa	Cold Chain Assistant	B-20327 Med GM	
11	Sunita Kumari Roka Kshetri	Badachaur HP, Rolpa	Sr. ANM	16407	
12	Tapendra K.C	Health Office, Rolpa	Cold Chain Assistant	C-51754 Med CMA	
13	Lokendra Narayan Tharu	Patabhar HP, Bardiya	Sr. AHW	C-10740 Med CMA	
14	Roshan Gharti	Gulmidarbar Basic Hospital, Gulmi	Sr. AHW	C-36928 Med CMA	
15	Madhav K.C.	Rayapur PHC, Rupandehi	Sr. AHW	C-34811 Med CMA	
16	Kedar Nath Tharu	Jaynagar Health Post, Kapilvastu	Sr. AHW	C-42231 Med CMA	

17	Goma Kumari Kanwar	Urban Health Service Center, Sunwal Municipality-1,Nawalparasi(West)	AHW	C-23177 Med CMA	
18	Kamala Reshmi	Chhahara HP, Palpa	Sr. ANM	24626	
19	Kamal Pariyar	Bhingri PHC, Pyuthan	Sr. AHW Officer	C-21057 Med CMA	
20	Mani Ram Kunwar	Bhumikasthan Municipality, Arghakhanchi	Sr. AHW	C-51832 Med CMA	
21	Raja Ram Barai	Maharajgunj PHC, Kapilvastu	Sr. AHW	C-51696 Med CMA	
22	Sudip Sunar	Province Health Logistic Managment Center, Butwal	Biomedical Equipment Technician	-	
23	Giri Tramu	Devdaha Municipality,Rupandehi	Public Health Inspector	B-2093 Med GM	
24	Shyam Kumar Pal	Health Office, Gulmi	Cold Chain Assistant	B-18187 Med GM	

लुम्बिनी प्रदेश सरकार
स्वास्थ्य मन्त्रालय
प्रदेश स्वास्थ्य आपूर्ति व्यवस्थापन केन्द्र
बुटवल, रुपन्देही

स्थान: Korean Nepal Institute of Technology (KNIT) तामनगर, रुपन्देही

मिति : २०८२ माघ ०७ देखी १३ गते सम्म

जिल्ला कोल्डचेन स्टोर तथा खोप वितरण केन्द्रहरुमा कार्यरत कर्मचारी तथा प्रविधिकहरु लाई कोल्डचेन व्यवस्थापन तथा कोल्डचेन उपकरणहरुको आकस्मिक मर्मत सम्भार सम्बन्धी (७ दिने)तालिममा सहभागीको हाजिरी

क्र.स.	सहभागीको नाम/ थर	पद	संस्था	स्टेशनरी सेट	माघ ०७ गते	माघ ०८ गते	माघ ०९ गते	माघ १० गते	माघ ११ गते	माघ १२ गते	माघ १३ गते	सम्पर्क नम्बर
१	राजाराम बरई	सि०अ०हे०व	प्रा०स्वा केन्द्र महाराजगंज	1	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	9812942496
२	सुदिप सुनार	BMET	Biomedical Watshop, Khalneri	1	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	9847135832
३	यज्ञ वहादुर डेन्स्वो	A.H.W.	Naubahini Lm	1	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	9847858436
४	कमल परियार	सि.अ.हे.व.अ.	भिंग्री प्रा.स्वा.के.	1	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	9847867752
५	गिरी श्राम	ज.स्वा.नि.	दुवरह नपा	1	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	9857036325
६	कमला रेश्मी	सि० अ०न०मि०	रैनादेवि छहरा गा.पा, छहरा स्वा केन्द्र	1	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	9867206073
७	मणिराम कुँवर	सि.अ०हे.व.	भुमिकास्थान न.पा. अर्घाखाँची	1	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	9847070353
८	गोमा कुमारी कँवर	अ.हे.व.	शारदा स्वा.सेवा केन्द्र बुनवल नवलपरासी	1	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	9849900620
९	बल बहादुर थारु	अ.हे.व.	राप्ती सोनारी गा.पा.	1	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	9848044479
१०	लोकेन्द्र नारायण थारु	सि.अ.हे.व.	पातामार स्वास्थ्य चौकी गेरुवा-३, बर्दिया	1	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	9869593810
११	रोशन घर्ती	सि०अ०हे०व०	गुल्मी जिल्ला अस्पताल, गुल्मी	1	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	9857064259
१२	माधव के०सी०	सि०अ०हे० व०	रायपुर प्रा० स्वा० के० रुपन्देही	1	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	9843289849
१३	मनोज कुमार श्रेष्ठ	को.चे.नि	स्वा.का. कपिलवस्तु	1	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	9857831502

लुम्बिनी प्रदेश सरकार
स्वास्थ्य मन्त्रालय
प्रदेश स्वास्थ्य आपूर्ति व्यवस्थापन केन्द्र
बुटवल, रुपन्देही

स्थान: Korean Nepal Institute of Technology (KNIT) तामनगर, रुपन्देही

मिति : २०८२ माघ ०७ देखी १३ गते सम्म

जिल्ला कोल्डचेन स्टोर तथा खोप वितरण केन्द्रहरुमा कार्यरत कर्मचारी तथा प्रविधिकहरु लाई कोल्डचेन व्यवस्थापन तथा कोल्डचेन उपकरणहरुको आकस्मिक मर्मत सम्भार सम्बन्धी (७ दिने)तालिममा सहभागीको हाजिरी

क्र.स.	सहभागीको नाम/ थर	पद	संस्था	स्टेशनरी सेट	माघ ०७ गते	माघ ०८ गते	माघ ०९ गते	माघ १० गते	माघ ११ गते	माघ १२ गते	माघ १३ गते	सम्पर्क नम्बर
१४	दुर्गा वहादुर के.सी.	सि.अ.हे.व.अ.	श्रीगाउँखुला स्वास्थ्य चौकी, दाङ	1	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	9847830066
१५	फग्गु प्रसाद आचार्य	कों.चे. स.	स्वास्थ्य कार्यालय, दाङ	1	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	9866202409
	केदारनाथ थारु	सि.अ.हे.व.	जयनगर स्वा. चौकी	1	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	9867950975
	सुनिल कुमार यादव	को.चे.अ	स्वास्थ्य कार्यलय	1	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	9819883162
	विमला पुनमगर	को०चे०अ०	स्वा० का० बर्दिया	1	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	9746428442
	मिना कुमारी बुढाथोकी	को.चे.अ	स्वा.का.पाल्पा	1	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	9840942077
२०	सुनिता कुमारी श्रेष्ठ क्षेत्री	सि०अ.हे.व.	बडाचोर स्वा. चौ, रोल्पा	1	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	9866810027
२१	नरेन्द्र के.सी.	को.चे.अ	स्वास्थ्य कार्यालय रोल्पा	1	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	9868161975
२२	श्याम कुमार पाल	को. चे. अ.	स्वास्थ्य कार्यालय गुल्मी	1	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	9865502420
२३	भोला प्रसाद अधिकारी	सि अ हे व अधिकृत	कैलाशनाथ गा.पा. वार्ड पकडुरवा PHC	1	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	9848153310
२४												
२५												

Appendices 3: Schedule and Facilitators

समय	क्रियाकलाप	प्रक्रिया र विधि	सहजकर्ता
पहिलो दिन			
१०:००-११:००	**<u>उदघाटन सत्र</u>** • अध्यक्षता, आसनग्रहण • परिचय • स्वागत तथा गोष्ठिको उदेश्य • पूर्व परिक्षा		
११:००-११:४५	राष्ट्रिय खोप कार्यक्रमको उदेश्य, मुख्य उपलब्धि, चुनौती र भावी योजना	प्रस्तुतीकरण	Marichman Khadka
११:४५-१२:००	**चिया ब्रेक**		
१२:००-१:३०	जिल्ला र स्थानीय तहमा कोल्डचेन व्यवस्थापन प्रक्रिया, समस्या र चुनौती • सप्लाई चेनमा खोप तथा घोलकहरुको मौज्दात व्यवस्थापन • खोप तथा घोलकको ढुवानी गर्दा अपनाउनु पर्ने सावधानीहरु • भौतिक गणना • म्याद नाघेका वा विग्रिएका भ्याक्सिन र घोलकको सुरक्षित रुपमा बिसर्जन गर्ने कार्य	प्रस्तुतीकरण तथा छलफल	Mohan Dev Joshi
१:३०-२:००	**खाजा**		
२:००-३:३०	खोपको परिचय, आपूर्ति श्रृङ्खला, उत्पादन, बनावट र प्रकार	प्रस्तुतीकरण तथा छलफल	Marichman Khadka
३:३०-५:००	• आईसप्याक कण्डिसनिङ्ग • भी.भी.एम.को अनुगमन • बहुमात्रा भ्याक्सिन भायल नीति • बण्डलिङ्ग • सेक टेष्ट बारे जानकारी	प्रस्तुतीकरण तथा छलफल	Nawaraj Khadka
दोस्रो दिन			
१०:००-१०:१५	पहिलो दिनको पुनरावलोकन	छलफल	

१०:१५-११:४५	फ्रिज ट्यागको प्रयोगात्मक प्रदर्शन र छलफल	प्रस्तुतीकरण तथा छलफल	Mohan Dev Joshi
११:४५-१२:००	**चिया ब्रेक**		
१२:००-१:३०	कोल्ड चेन उपकरणहरुको मर्मत सभार गर्दा अपनाउनुपर्ने सुरक्षाका उपायहरु	प्रस्तुतीकरण तथा छलफल	Kamal Dhungana
१:३०-२:००	**खाजा**		
२:००-३:३०	सामान्य बिधुतिय ज्ञान समबन्धी जानकारी (Electrical Components)	प्रस्तुतीकरण तथा छलफल	Pradeep Chaudhary
३:३०-५:००	सामान्य विद्युत मर्मत सम्बन्धी प्रस्तुतीकरण तथा प्रयोगात्मक अभ्यास Electrical औजार उपकरणहरु प्रयोग गर्ने तरिका	प्रस्तुतीकरण र छलफल	Kamal Dhungana
तेस्रो दिन			
१०:००-१०:१५	दोस्रो दिनको पुनरावलोकन	छलफल	
१०:१५-११:४५	भ्याक्सिन व्यवस्थापनको लागि आकस्मिक योजना मर्मत सम्भार कृयाकलाय र कोल्डचेनमा प्रयोय गरिने फारमहरु	प्रस्तुतीकरण र छलफल समेत	Kamal Dhungana
११:४५-१२:००	**चिया ब्रेक**		
१२:००-१:३०	रेफ्रिजरेटर सचालन गर्दा अपनाउनु पर्ने कार्यहरु	प्रस्तुतीकरण तथा छलफल	Pratik Yadav
१:३०-२:००	**खाजा**		
२:००-३:३०	प्रयोगात्मक अभ्यास Mechanical औजार उपकरणहरु प्रयोग गर्ने तरिका	प्रस्तुतीकरण तथा छलफल	Nabin Kishore Gaire
३:३०-५:००	जेनेरेटर र भोल्टेज स्टेपलाईजरको प्रयोग र महत्व	प्रस्तुतीकरण तथा छलफल	Kamal Dhungana
चौथो दिन			
१०:००-१०:१५	तेस्रो दिनको पुनरावलोकन	छलफल	
१०:१५-११:४५	कोल्डचेन उपकरणको बृस्तृत जानकारी (WHO PQS Information)	प्रस्तुतीकरण तथा छलफल	Swotantra Raj Joshi
११:४५-१२:००	**चिया ब्रेक**		
१२:००-१:३०	प्रिभेन्टिभ मेन्टेनेन्स सम्बन्धी जानकारी	प्रस्तुतीकरण तथा छलफल	Kamal Dhungana

१:३०-२:००	**खाजा**		
२:००-३:३०	प्रभावकारी खोप व्यवस्थापन (EVM) को परिचय	प्रस्तुतीकरण तथा छलफल	Swotantra Raj Joshi
३:३०-५:००	करेक्टिभ मेन्टेनेन्स सम्बन्धी जानकारी	प्रस्तुतीकरण तथा छलफल	Kamal Dhungana
पाचौ दिन			
१०:००-१०:१५	चौथो दिनको पुनरावलोकन	छलफल	
१०:१५-११:४५	भ्याक्सिन र खोप सामाग्रीको परिमाण अनुमान तथा कोल्ड चेन उपकरणहरुको भण्डारण क्षमता निर्धारण	प्रस्तुतीकरण तथा छलफल	Swotantra Raj Joshi
११:४५-१२:००	**चिया ब्रेक**		
१२:००-१:३०	कोल्डचेन उपकरणको जडान प्रकृया र व्यवस्थापन Installation of HBC-80 Product Training Manual	प्रस्तुतीकरण तथा छलफल	Kamal Dhungana
१:३०-२:००	**खाजा**		
२:००-३:३०	Installation of HBD-116 Product Training Manual	प्रस्तुतीकरण तथा छलफल	Pradeep Chaudhary
३:३०-५:००	HTCD-90 Product Training Manual	प्रस्तुतीकरण तथा छलफल	Kamal Dhungana
छैठौ दिन			
१०:००-१०:१५	पाचौ दिनको पुनरावलोकन	छलफल	
१०:१५-११:४५	कोल्डचेन तथा भ्याक्सिन व्यवस्थापन कार्यनीति २०७० र भावी योजनाहरू	अवलोकन तथा छलफल	Swotantra Raj Joshi
११:४५-१२:००	**चिया ब्रेक**		
१२:००-१:३०	कोल्डचेन उपकरणहरुको मर्मत संभारको लागि आवश्यक औजार उपकरणहरुको प्रदशनी तथा कोल्डचेन उपकरण सम्बन्धी सामान्य मर्मत सम्भार	प्रस्तुतीकरण तथा छलफल	Kamal Dhungana
१:३०-२:००	**खाजा**		
२:००-३:३०	रेफ्रिजरेटरको Spare Parts समबन्धी जानकारी (Mechanical Components)	प्रस्तुतीकरण तथा छलफल	Pratik Yadav
३:३०-५:००	समुहमा खोप भण्डारण कक्षको अवलोकन र प्रस्तुतिकरण भ्याक्सिन	प्रस्तुतीकरण तथा अभ्यास	Marichman Khadka
सातौ दिन			

१०:००-१०:१५	छैठौ दिनको पुनरावलोकन	छलफल	
१०:१५-११:४५	रेफ्रिजेरेसन साईकल बारे जानकारी र प्रयोगात्मक अभ्यास (Refrigeration Cycle Simulator observations)	प्रस्तुतीकरण तथा अभ्यास	Kamal Dhungana
११:१५-११:३०	**चिया ब्रेक**		
११:३०-१:३०	प्रयोगात्मक अभ्यास (Phase line identification, power socket installation, practice on Multimeter and clamp meter)	प्रस्तुतीकरण तथा अभ्यास	Pradeep Chaudhary
१:३०-२:००	**खाजा**		
२:००-३:३०	प्रयोगात्मक अभ्यास (Practice on connection of Relay, OLP, capacitor, Capillary tube, compressor connection of Digital Thermostat in HBC 80 model ILR)	प्रस्तुतीकरण तथा अभ्यास	Pratik Yadav
३:३०-४:००	उत्तर परिक्षा	सहजकर्ता	
४:००-५:००	प्रशासनिक कार्य तथा समापन	सहजकर्ता	

Glimpse from Training

Fig 1: Participants Receiving Training Certificate


प्रदेश स्वास्थ्य आपूर्ति व्यवस्थापन केन्द्र


CERTIFICATE


HITACHI


राष्ट्रिय गान
CERTIFICATE


राष्ट्रिय गान


राष्ट्रिय गान


राष्ट्रिय गान


राष्ट्रिय गान


सयौं बुढा फूलका हामी एउटै माला नेपाली
सार्वभौम भई फैलिएका मेची महाकाली
फूलिका कोटीकोटी सम्पदाको औधल
वीरहरुको रगतले स्वतन्त्र र अटल
बहु जाति भाषा धर्म संस्कृति
अखण्डी राष्ट्र हाम्रो जय जय नेपाल


CERTIFICATE


CERTIFICATE


सबै बुढा फुलका हामी एउटै माला नेपाली
सार्वभौम भई फैलिएका मेची महाकाली
कोरिया नेपाल बहुप्राविधिक


सबै बुढा फुलका हामी एउटै माला नेपाली
सार्वभौम भई फैलिएका मेची महाकाली
कोरिया नेपाल बहुप्राविधिक


सबै बुट्टा फुलका हामी एउटै माला नेपाली
सार्वभौम भई फैलिएका मेची महाकाली
CERTIFICATE


CERTIFICATE

Fig 2: Facilitators Receiving Trainer's Certificate

Fig 3: Participants at Training Hall


KNIT
SHMT:01:074:075

Fig 4: Practical Lab Room


34a


15% Extra
Weldfre

Fig 5: Guests at Training from PHLMC, PHTC, MD, KNIT, UNICEF

Fig 6: Group Picture

THANK YOU!!!