Health Systems Transformation Platform

Competency Based Training Manual for In-Service Pharmacists in Primary Health Care Setting

A Participant Guide







Contact

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Abbreviation

Abbrev.	Full Form	Abbrev.	Full Form
ACT	Artemisinin-based combination therapy	LRTI	Lower Respiratory Tract Infection
ADE	Adverse Drug Event	MMR	Measles, Mumps and Rubella
ADMO	Assistant District Medical Officer	NCC	National Coordination Centre
ADR	Adverse Drug Reaction	NRC	Nutrition Rehabilitation Centre
APD	Acid Peptic Disease	NSAID	Non-Steroidal Anti Inflammatory Drugs
BCG	Bacillus Calmette-Guérin	NSQ	Not of Stannard Quality
BSKY	Biju Swasthya Kalyan Yojana	NVBDCP	National Vector Borne Disease Control Programme
CBMWT F	Common Bio-Medical Waste Treatment Facility	OPD	Out Patient Department
СНС	Community Health Centre	OPV	Oral Polio Vaccine
DDC	Drug Distribution Counters	ORS	Oral Rehydration Salts
DPT	Diphtheria, Pertussis and Tetanus	OSMCL	Odisha State Medical Corporation Limited
DT	Diphtheria, Tetanus	ОТ	Operation Theatre
DVDMS	Drugs and Vaccine Distribution Management System	RDT	Rapid Diagnostic Test
FEFO	First Entry First Out / First Expiry First Out	RSBY	Rashtriya Swasthya Bima Yojana
FIFO	First in First Out	SDH	Sub Divisional Hospital
GATHER	Greet, Ask, Tell, Help, Explain and Return	SDMO	Sub Divisional Medical Officer
GI	Gastro-Intestinal	SNCU	Sick Neonatal Care Unit
Hb	Haemoglobin	SP	Sulfadoxine-pyrimethamine
IBS	Irritable Bowel Syndrome	STG	Standard Treatment Guideline
ILR	Ice Lined Refrigerator	TT	Tetanus Toxoid
IM	Intra Muscular	URTI	Upper Respiratory Tract Infection
IPC	Indian Pharmacopeia Commission	VED	Vital Essential Desirable
IPD	In Patient Department	VEN	Vital Essential Non-essential
IV	Intravenous	WHO	World Health Organization
KISS	Keep It Short and Simple		

Background

Aligning competencies to deliver comprehensive primary care services at primary health care facilities is paramount. Competencies must be built during the preservice education of the healthcare workforce. Human Resources of institutions producing human resources for health must be aware of changing health needs. These institutions must maneuver health professional education to develop relevant competencies. Evidence suggests that preservice education alone is inadequate to develop the required competencies during preservice education. Therefore, health systems must make significant investments to build the competencies of Primary health workers during service. However, interventions to improve the competencies of health workers have not been developed to improve health services, especially in primary healthcare settings.

Consistent with other studies, Odisha Health System Strengthening diagnostic report, 2021 reports a significant competency gap among Primary health care providers, including Pharmacists.

Globally, including in Low- and middle-income countries (LMICs), the role of Pharmacists in Primary Care is becoming vital because they support Primary Health Care to meet the elevated burden of Chronic Care. Enhancing their Competency is essential for drug dispensing, timely and appropriate indenting, forecasting, storing, distribution, and managing drugs and consumables.

Health Systems Transformation Platform collaborated with the Government of Odisha, Community Pharmacy Division-Indian Pharmaceutical Association, and Pharmacy Wing-SCB Medical College and Hospital, Cuttack, to define, assess, and build the Pharmacist's Competencies in Primary Health Care Setting. For this, HSTP and its collaborative partners developed the Competency assessment framework and assessed the In-service pharmacist's competencies in sample districts. Based on the assessment findings, the HSTP-led collaborative partners developed this "Competency-Based Training Manual for Participants."

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Good Pharmacy Management



Physical Verification of Storeroom

Purpose: At the end of this activity, the participants will be able to develop a check list to assess the requirements of the Storeroom.

Steps: Write Yes / No

S. N.	Description	Yes	No
1	The store is designated and is separated from dispensing area		
2	Locks, doors, and windows secure the store.		
3	The building is in good condition, with no leaks, cracks, and incomplete windows.		
4	Enough air vents and air freely move in the store. There is a functional fan and an exhaust fan.		
5	The functional thermometer in each of the storage areas		
6	No obvious signs of pests and rodents' manifestations in the store		
7	Windows are painted white or have curtains.		
8	The store is tidy; shelves and items are dust free; floors are dust and junk-free; and walls are clean.		
9	The fridge is functional, and no foodstuff is stored together with drugs.		
10	Narcotics and Psychotropic Substances are kept in a locked cabinet or cupboard with additional security.		

- Ensure that the store room is well-ventilated, cleaned, and free from rodents.
- Narcotic / Habit-forming drugs are separately kept under locked conditions.

Space and Layout

Space and Layout: Ideal requirement and best use of Infrastructure to Optimise Pharmaceutical Service **Purpose:** To sensitize the participants on the ideal requirement of space and the best use of available infrastructure.

Principle:

Ideal Requirements: The physical infrastructure required for a hospital pharmacy depends on the size of the hospital and the service provided. At least the following infrastructure is needed irrespective of hospital size: Bulk Storage Facility, Facility for Storing Narcotics and other habit-forming drugs, and space for inpatient and outpatient dispensing (drug distribution counter). There may be a requirement for an after-hour Pharmacy.

- The storeroom/warehouse should be located in a dry, weather proof building.
- General Rule: 1 square meter per hospital bed for initial planning and costing, assuming the supplies are received every month. It is difficult to define the size because it depends on the range of services and the organization of services.
- Dispensing Point:
 - ♦ Space for waiting.
 - Space for counseling: to have privacy and a sitting place.
 - Should be closer to the outpatient clinic.



Best use of infrastructure:

- Keep the place neat.
- Organize the furniture so the pharmacy has enough space for all activities.
- Keep the working stock of materials at dispensing point. Too much stock would take away the available space.
- Replace the working stock daily from the store.
- Organize the working stock so that the minimum space is utilized.

Procedure:

- Lecture and Discussion.
- Activity: Infrastructure is always an issue. The participants can be asked to share their opinions on
 "optimizing the available infrastructure for storage and drug dispensing."

- Over stocking (not just working stock) at the dispensing point would take away the space.
- The infrastructure cannot be improved easily, and optimizing the utilization of available space is the solution.

Labelling of Places for Different Items

Purpose: To sensitize the participants to label places for different Items.

Principle: Labelling identifies the storage place and avoids confusion among pharmacists. Different labels are required at the store and Drug Dispensing Counter(DDC). When labels correctly identify the storage place, storing medicines and taking them out for use is convenient. Here are a few points:

Labelling at Store:

- Quarantine: This is where drug products are kept after receiving the supply but before verification and entering into a stock.
- Segregated place: Place for NSQ and Expired Medicine. These are not for use.
- Arranging Stock: Place for Tablets, Capsules etc. (Dosage Form); Labelling for Names starting with A;
 Labelling of Names starting with B, and so on.
- A place for Narcotics and Other Habit-forming Drugs: They should be separately kept under lock and key
- The place for Flammables: The space identified should have a label to avoid confusion.

Labelling at Dispensing Point / Drug Distribution Counter: It should help identify the products quickly. It is useful when a new pharmacist comes for duty.

Procedure:

• Lecture and Discussion: If such practice is not in operation, the participants may be asked to give their opinion and suggestion.

- If places are identified and labelled: It helps to locate an item.
- Not for Use items are separately kept: It avoids inter-mixing.

Managing Items Requiring Special Storage Conditions

Purpose: To familiarise the participants with common terminology associated with storage conditions and train them on how to manage adverse situations.

Principle: Medicines require appropriate temperature, humidity, and light exposure storage to maintain potency and product integrity.

Common Terminologies:

Temperature Controlled: Medicines must be kept at the temperature mentioned on the label. Heat melts ointments and suppositories. Heat makes many medicines degrade more quickly. Some terminologies:

- Store frozen: Some vaccines must be transported within the cold chain and stored at -20 °C. Frozen storage is normally for long-term storage at higher-level facilities.
- Do not freeze or do not store above 8 °C: They should be kept in the refrigerator but not in the freezer.
- Keep Cold: Keep in a refrigerator but not in the freezer.
- Keep Cool: Store between 8 °C to 25 °C.
- Store at room temperature or do not store at above 30 °C: Store at 15 °C to 30 °C.
- Store at ambient temperature: Store in a dry, clean, and well-ventilated area at room temperature from 15 °C to 25 °C.

Humidity-Controlled:

- Water and humidity can cause tablets to crumble or become mouldy and capsules to become sticky
 if they are not properly sealed.
- Keeping stock off the floor increases airflow around the medicine pack, reducing humidity. Fans help reduce humidity.
- Keeping stock off the floor can avoid water damage due to flooding.
- If there has been water in the store either because of leakage in the roof or flooding of flow, do not immediately discard all medicines. Water cannot enter if the medicines are in the original container. Labels should be intact.
- Protecting from moisture means it should be kept at a relative humidity of less than 60 %.

Light Protected: Light causes medicines to degrade more quickly. Most medicines are supplied in containers that protect them from light. Try to avoid sunlight coming directly into the store and pharmacy. Put curtains on windows: This protects the medicine from light and helps to keep the room cooler.

Managing Vaccine Storage: Cold chain is vital in vaccine storage. All vaccines and diluents must be stored in the refrigerator at 2 to 8 °C. For long-term storage, - 20 °C is preferred for BCG, OPV, Measles, and MMR. Do not freeze other vaccines—domestic and ice-lined refrigerators (ILR) for short-term storage; and deep freezers for long-term storage.

Vaccine	Temperature	Potency Maintained for	Remarks
Oral Polio (OPV)	- 20 °C 2 °C - 8 °C	1 year 3 Months	Avoid repeated thawing Keep on ice while using
Bacillus Calmette Guerine (BCG)	2 °C - 8 °C	1 year	Reconstituted vaccine, if not used within four hours, must be discarded
Diphtheria, Pertussis, Tetanus (DPT)	2 °C - 8 °C	2 years	Must not be frozen
Diphtheria, Tetanus (DT)	2 °C - 8 °C	2 years	Must not be frozen
Measles	2 °C - 8 °C	2 years	Should be used immediately after reconstitution
Typhoid (TAB)	2 °C - 8 °C	8 months	Must not be frozen
Tetanus Toxoid (TT)	2 °C - 8 °C	18 months	Must not be frozen. An unused portion to be discarded.
Hepatitis B	2 °C - 8 °C	4 years	Must not be frozen

Managing Refrigerator:

- The temperature maintained by the refrigerator is between 2 to 8 °C.
- The thermometer must be kept in the middle of the refrigerator.
- The refrigerator should be kept clean and defrosted at least once a month.
- The cold chain must be maintained when the refrigerator is cleaned. Cooler boxes should be used to maintain the cold chain.

Cleaning of Refrigerator:

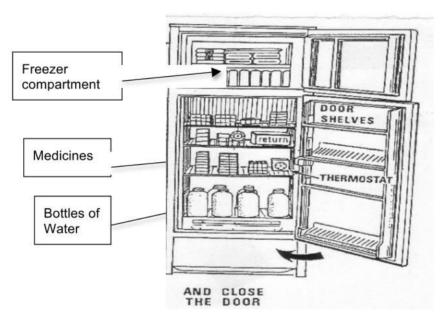
- The inside of the refrigerator should be cleaned with an appropriate antiseptic solution and wiped dry.
- The door basket should be cleaned, especially along the bottom edge of the upright units.
- The condenser coil on the back of the refrigerator should be cleaned, and dust removed from the condenser.

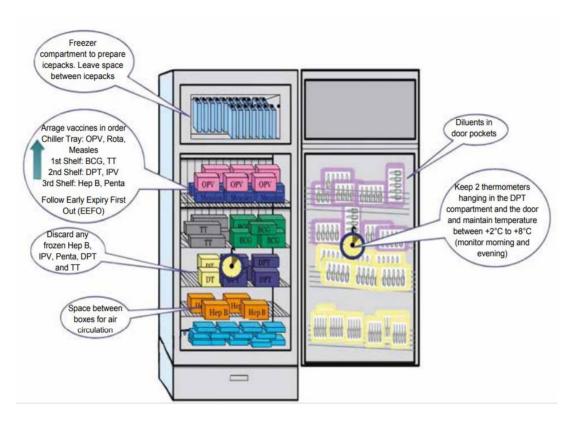
- Checking when to defrost: more than 10 mm of ice on the evaporator indicates the time for defrosting.
- Ensure that the door closes correctly.
- Plastic water bottles may help keep the refrigerator cool when the power is off. Do not keep food or drinks in the same refrigerator which is used for keeping medicines.

Procedure: Lecture and Discussion. Door shelves are to be avoided in the refrigerator.

Do not keep the refrigerator close to the wall. There must be space between the refrigerator/freezer to allow free air circulation.

Front Load Refrigerator





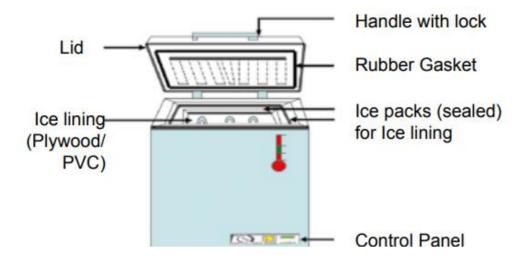
Good Practices in Storing Vaccines in Front-load Refrigerators (Domestic refrigerators)

- Refrigerators must be loaded correctly, as shown in the above picture, to maintain the temperature
 of the vaccines and diluents.
- Do not store other supplies such as drugs, ointment, serum, samples, food articles, drinks etc.
- Do not put vaccines on the door shelves.
- The temperature in door shelves is too warm to store vaccines, and when the door is opened, shelves are instantly exposed to room temperature.
- Do not place vaccines in the freezer, chiller, or baskets.

Managing Ice Lined Refrigerator (ILR)

- Keep all vaccines in the basket supplied along with the ILR.
- Leave space in between the vaccine boxes.
- Place a thermometer in the basket in between the vaccines.
- Keep freeze-sensitive vaccines at the top of the basket.
- Keep heat-sensitive vaccines in the bottom of the basket.
- The vaccines should be arranged as per their expiry dates. (Early expiry should be above the further expiry ones).

Parts of Ice Lined Refrigerator



- If medicines/vaccines are not properly stored or kept at temperatures higher than recommended on the label, they may expire well before the expiry date.
- Products should not be frozen unless mentioned. Freezing and heat both equally affect the potency.



Storing Systematically and Securely

Purpose: To familiarize the participants with the store's different drug product storage methods.

Principle: There are four main goals: the medicines must

- Be easily located and monitored
- Remain in good condition
- Must not be tempered with and
- Not be stolen or pilfered

Arranging Commodities: Nothing should be kept on the floor or close to the wall.

- If using pellets, stack cartons on pellets:
 - ♦ At least 10 cm off the floor
 - ♦ At least 30 cm away from walls and other stacks
 - ♦ Not more than 2.5 m high
- General Rule
 - Follow the storage condition as mentioned on the label of the product
 - Place the liquid products on the lower shelves or bottom of stacks
 - ◆ Products that require cold storage should be kept in an appropriate temperaturecontrolled zone
 - ♦ Store high-security or high-value products in the appropriate security zone
 - ♦ Segregate the expired and NSQ products immediately
 - ♦ Store all materials so that FIFO / FEFO can be followed.
 - Arrange cartons with arrows pointing up. It makes identification labels, expiry dates, and manufacturing dates clearly visible. Write this information on the visual side.
- Orderly Arrangements: These are
 - ♦ Alphabetical Order: This would help to locate the item easily. The order is maintained based on the generic name.
 - ◆ Therapeutic / Pharmacologic Basis: Practicing in a big store may be difficult.
 - ♦ Dosage Forms: The place is separately identified for tablets, capsules, liquids etc.
 - ♦ Frequency of use: Frequently used products should be kept in a place with easy access.

Random bin: This identifies a specific storage space or cell with a code that corresponds to its aisle, shelf, and position in the shelf.

Commodity coding: The code has all information about the product, including the place where stored. The code provides info on storage temperature, humidity, level of security, and flammability.



General Guideline for storage on the shelf:

- Top Shelves: Dry medicines (tablets, capsules, ORS packets). Use airtight containers. If the top shelf is near to ceiling or out of your reach, use the shelf to store items that are not sensitive to heat and not used regularly.
- Middle Shelves: Store liquids, injectables, and ointments. Do not put solid medicines below them. If the liquids leak, the medicines below may get spoiled.
- Bottom Shelves: Store other supplies such as surgical items, condoms, and labels. Bulky items or full
 unopened cartons can also be stored on bottom shelves.
- Storing habit-forming / Attractive Items: They should be kept under lock and key. They should not be kept close to the entry of the store.

While storage following points should also be considered:

- Feasibility of periodic stock counts to check the expired products;
- Products approaching expiry date should be able to be identified;
- Sterile products are to be checked for intact seal;
- Other stocks are to be verified for contamination, leakage, faulty package, etc.

Procedure: Lecture and Discussion

Activity: Giving a List of Medicines and asking them about storage needs; or Asking the Participants to list three medicines or medical products that need to be kept in the refrigerator.

- It is essential for Pharmacists to be familiar with the current storage practices and also know how to arrange the products in store.
- General Storing Guidance: Buffer stock on the top shelf and heavy, bulky goods at the bottom of the shelf.

Understanding the Supply System, Including Local Purchasing

Purpose: To make the participants familiar with the supply system of the Odisha Government

Principle:

- The availability of medicines at a health facility is crucial to provide health care. Medicines consume a
 good amount of financial resources and perhaps are next to human resources in a health system. "No
 medicines; there is No program."
- To optimize the procurement process of medical products (quality products at the most competitive rate), the government has established an agency, OSMCL, with a mandate to procure medical products for the whole state centrally. It follows the pooled procurement, which provides an opportunity to purchase the items at a competitive rate. The supplier selected is responsible for the quality of products.
 OSMCL has its own quality assurance mechanism to ensure the availability of quality products in the supply system.
- The individual health facility gets its supply from the District Warehouse through indenting. Each health facility is assigned to a warehouse for receiving supplies. Planning and timely indenting should be the Priority of the health facility to ensure no stockouts.
- The quantity required for the health facility for the next year is projected, and the same is conveyed to
 OSMCL, which consolidates the whole state and plans for procurement. If our projection is much
 different from the actual requirement, either there will be overstocking of items or stockouts in the
 health facility. The process of projection is called forecasting the requirements, and care should be taken
 while calculating the requirements.
- Usually, 80 -90 % of the drug budget is meant for centralized procurement.
- Local Procurement:
 - 10 20 % of the budget allotment is permissible for local purchases.
 - Local purchase is allowed:
 - ♦ If the items are not procured centrally, as the volume of requirement is small enough for centralized tendering.
 - In case of an emergency requirement and there is a stockout of a particular item.
 - When the drug item is proprietary, and the generic type is not available in the market with justification.
 - In emergencies like natural calamities, spread out of epidemics etc., when the availability of medicine is of prime importance.
 - ♦ When it is not possible to predict the requirement of a particular drug or consumables as the requirement is contingent upon some future event.

- When the requirement is specific to a particular facility, location, or situation.
- Medicines urgently required for the patient and outside EDL with justification.

However, in the case of local procurement, all entries related to the item(s) have to be made in the online drug inventory management system (e-Ausadhi)

Restriction on local purchases:

- Local purchases shall be made at the district or institution only out of the fund allocated and made available to them.
- Even in the case of local purchases of medicines, Priority is to be given to medicines available in generic names.

Conflict of Interest: The purchasing authority should ensure no conflicting interest. A signed document with no conflict of interest is helpful if required.

Procedure:

- Lecture and Discussion.
- The participants may be asked to share their experiences.

- The supply system's delivery time should be considered while placing indents.
- The local purchase should be the last option for ensuring the supply of medicines to the patient.

Inventory Management

Purpose: At the end of this activity/exercise/chapter, the participants will be able to know the procedure to be followed while receiving supplies to ensure that the intended products with the ordered quantity are received.

Steps:

- Check whether the consignment is for your facility. Do not receive, if it is not for your facility.
- Accept the consignment if it is meant for your facility.
- Check for types of goods.
- Count the number and types of boxes/packages as they are offloaded.
- Unpack the mixed boxes/packages. Check the cartons against the invoice. Retain the discrepancy items in quarantine.
- Remove to the storage area.
- Record into the stock register.
- Investigate all discrepancies and records.

- Ensure that you receive the products for which you have sent the indent.
- Receiving the wrong consignment creates confusion in the supply system.

Reordering the Appropriate Quantity at the Appropriate Time

Reordering of right quantity at the right time would ensure no stock out. Two terminologies are important: Reorder quantity; and the time to reorder.

Purpose: At the end of this activity, participants would be able to know the reorder time and quantity to reorder in the day-to-day management of the pharmacy.

Principle: Reorder level is the stock position at which new order will be placed. This level is crucial to prevent stock out. No medicines, No service. Reorder Quantity level = [Average Consumption X Lead Time] + Buffer Stock (average consumption and lead time are in the same units of the time period). Ordering should be done to bring the stock up to reorder level.

Steps:

- Decide the reorder factor for the health facility. [Reorder factor is usually supply interval in months X 2 in most first-level health facilities]. The supply is in every month, then reorder factor is 2.
- Calculate the reorder level for each item of the facility. The average monthly consumption of cotrimoxazole pediatric tablets is 3 boxes. Then reorder level = Average monthly consumption X reorder factor = 3 X2 = 6 boxes.
- Decide when and how much to order: Reorder level balance in stock = Amount to order. If the balance is less than the REORDER LEVEL, it is time to order the item. Place an order for the difference between the item's REORDER LEVEL and the BALANCE IN STOCK amount. If reorder level of cotrimoxazole tablets, pediatric, is 6 boxes, then place an order; if the stock is less than this, the reorder. If the stock in hand is 2 boxes, then the amount to order = 6 boxes 2 boxes = 4 boxes to order.

- If the stock in hand is less than reorder level, then it is time to reorder.
- If stock in hand is more or equal to reorder level, do not reorder.
- Amount to reorder = Reorder level Stock in hand.

ABC and VEN Analysis

Purpose: At the end of this activity, the participants will be able to know the procedure for ABC and VEN Analysis & Interpreting the results.

Principle: When funds available are inadequate to purchase all drugs in the quantities that are estimated to be needed, it is necessary to prioritize the procurement list to match available financial resources. ABC and VEN Analysis are done for previous procurement.

ABC Analysis

The ABC analysis is used to identify high-cost medicines which should be kept under greater control. Categories A: first 20 % of the items accounting for approximately 80 % of cumulative value (cost); B: 40 % accounting for a further 15 % of cumulative value; and C: remaining 40 % accounting for a mere 5 % of total value. Ordering class A items more often and in smaller quantities will reduce inventory holding costs.

Steps:

- List all items purchased or consumed and enter the unit cost.
- Enter consumption quantities over a defined period.
- Calculate the value of consumption.
- Calculate the percentage of the total value represented by each item.
- Rearrange the list. Rank items in descending order by total value,
- starting at the top with the highest value.
- Calculate the cumulative percentage of the total value for each item at the top;
- add the Percentage to that of the item below in the list.
- Choose cut-off points for A, B, and C categories. Generally, A items have the highest annual usage, with 10 to 20 percent of the items usually accounting for 75 to 80 percent of the funds spent.



Stock Data

Medicine	Form	Unit Cost in ₹	Total Number of Units	Value in ₹	Percentage of the total value
Lithium carbonate 300 mg	Tablet	0.84	900000	756000	11.19
Trigluoperazine 5 mg	Tablet	0.19	700000	133000	1.97
Chlorpromazine 100 mg	Tablet	0.36	500000	180000	2.67
Trihexyphenydil 2 mg	Tablet	0.18	2000000	360000	5.33
Fluoxetine 20 mg	Capsule	0.23	1000000	230000	3.41
Risperidone 2 mg	Tablet	0.78	300000	234000	3.47
Buprenorphin 0.2 mg	Tablet	2.04	170000	346800	5.14
Phenytoin Na 100 mg	Tablet	0.14	600000	84000	1.24
Carbazepine CR 200mg	Tablet	1.19	1600000	1904000	28.19
Sodium valproate SR 500 mg	Tablet	3.48	300000	1044000	15.46
Sodium valproate SR 200 mg	Tablet	1.39	700000	973000	14.41
Haloperidol 5 mg	Tablet	0.119	800000	95200	1.41
Haloperidol	Injection	93.26	1800	167868	2.49
Fluphenazine 5 mg	Injection	10.4	11000	114400	1.69
Imipramine 25 mg	Tablet	0.26	500000	130000	1.93
Total				6752268	

Rearrangement of Data

Medicine	% of total	Cumulative %	A/B/C
Carbazepine CR 200mg	28.19	28.19	Α
Sodium valproate SR 500 mg	15.46	43.65	
Sodium valproate SR 200 mg	14.41	58.06	
Lithium carbonate 300 mg	11.19	69.25	
Trihexyphenydil 2 mg	5.33	74.58	
Buprenorphin 0.2 mg	5.14	79.72	
Risperidone 2 mg	3.47	83.19	В
Fluoxetine 20 mg	3.41	86.6	
Chlorpromazine 100 mg	2.67	89.27	_
Haloperidol	2.49	91.76	С
Trigluoperazine 5 mg	1.97	93.73	_
Imipramine 25 mg	1.93	95.66	_
Fluphenazine 5 mg	1.69	97.35	
Haloperidol 5 mg	1.41	98.76	
Phenytoin Na 100 mg	1.24	100	_

Activity

- 1. Identify the A items.
- 2. What do you suggest for A items?

- ABC divides the item into three categories: A, B, and C, based on the values.
- Items in A category require greater vigil and should be more frequently ordered instead of ordering at one time.

VEN Analysis

Vital Medicines: They are potentially life-saving or crucial to providing basic health services. They have significant withdrawal side effects (making regular supply mandatory).

Essential Medicines: They are effective against less severe but significant forms of the disease but are not vital to provide basic healthcare.

Non-Essential Medicines: They are used for minor or self-limiting illnesses, are of questionable efficacy, or have comparatively high costs for a marginal therapeutic advantage. They are also termed Desirable, and VEN is termed VED Analysis.

Principle

Guidance for Categorization

Characteristics of Medicine or Target Condition	Vital	Essential	Non – Essential
Occurrence of the target condition			
Persons affected (percent of the population)	Over 5	1-5	Less than 1
Persons treated (number per day at the average health center)	Over 5	1-5	Less than 1
Severity of the target condition			
Life-threatening	Yes	Occasionally	Rarely
Disabling	Yes	Occasionally	Rarely
Therapeutic effect of the medicine			<u> </u>
Prevents serious disease	Yes	No	No
Cures serious disease	Yes	Yes	No
Treats minor, self-limiting symptoms and conditions	No	Possibly	Yes
Has proven efficacy	Always	Usually	May or may not
Has unproven efficacy	Never	Rarely	May or may not

Activity: Categorize the medicines into V, E, and N

- 1. Phenobarbitone 30 mg
- 2. Phenoxymethyl penicillin tab 250 mg
- 3. Pyrimethamine + Sulphadioxine (25 mg + 500mg)
- 4. Ferrous sulphate + Folic acid (200 mg + 0.5 mg)
- 5. Adrenaline 1 ml injection
- 6. ORS
- 7. Cotrimoxazole tablet
- 8. Gentamycin inj
- 9. Salbutamol 4 mg
- 10. Vitamin A capsule
- 11. Lignocaine 25 ml injection
- 12. Praziquantel 600 mg
- 13. Gentian violet paint 500 ml (0.5%)
- 14. Benzyl benzoate application
- 15. Magnesium trisilicate tab
- 16. Chlorpromazine tab
- 17. Vitamin B Complex
- 18. Mebendazole tablet
- 19. Lignocaine + adrenaline injection
- 20. Aspirin tab
- 21. Ferrous suplhate tab
- 22. Propranolol HCL Tab



- V and E categories are to be given Priority in resource-constraint situations.
- Needs vigilance to ensure no stock out of V items.

Managing Slow-Moving Products

Purpose: To train the participants on identifying and managing slow-moving products

Principle: Slow-moving products are procured (purchased/received) without issuing activities for a certain period. The discrepancy between the products/items that move quickly and those that are rarely used leads to the accumulation of slow-moving stock. It is very challenging to manage slow-moving products; it is very challenging.

Suppose excess stocking of slow-moving products is noticed by the supervisory staff or officers from higher facilities, it brings a wrong impression of the inefficiency of our facility. The temptation is to lower budgetary allocation, leading to a shortage of fast-moving items with no reduction of most of the problem stock.

Managing strategies:

- Promoting the use of slow-moving items by substitution for other medicines as appropriate The
 doctors' cooperation is needed. They should be informed in advance of the overstocking of such
 medicines.
 - A close review of reorder level and quantities Attention should be given not to reorder slow-moving items.
 - Careful monitoring of ordering procedure to ensure such products are not ordered.
 - Informing higher level facility The other facilities / Medical Service Corporation is informed of excess availability of such items. These can be transferred to other facilities. During Covid - 19 period, this practice is extensively followed.

Slow-moving products can be easily identified by looking at the stock of medicines. With computerized stock, this is simpler.

Activity: The participants are asked to share any experience of them.

- Ensure that the slow-moving products are not overstocked.
- These products may expire if no intervention is initiated to use the slow-moving items.

Managing Habit-Forming Drugs

Purpose: To sensitize the participants on managing the habit-forming drugs appropriately.

Principle: Narcotics and other psychotropic drugs are potential habit-forming drugs. Special care is necessary for their storage and dispensing, failing which such drugs may be abused.

Storage: These products must be stored in an access-controlled environment. Some examples include morphine, opium preparations, pethidine, papaveretum, hydrocodone, tramadol, pentazocine, codeine, dextropropoxyphene, buprenorphine, diazepam, lorazepam, nitrazepam, flunitrazepam, and oxazepam.

- The participants may have just a few of them in their facility.
- Access controlled storage: A separate locked room, cabinet, or safe (or locked wire gauge within the storage facility).
- Ideally, a warning light or bell will be activated if products are inappropriately accessed.
- Limiting the access of staff: Senior most / Store in Charge and another pharmacist.
- Limiting the number of keys for controlled location. Keep the list of persons who have keys.
- Count such products at more frequent intervals.

Dispensing:

- Dispense only on prescription.
- Dispense for the restricted number of days (as prescribed).
- Counsel the patients not to share these medications with others, cautioning them, "These can cause habit formation."
- Do not keep more stock in the dispensing area.

Procedure:

- Lecture and Discussion.
- Activity Listing out the Habit-Forming Products in Participant's Facility.

- Habit-forming products are to be kept under lock and key for ensuring limited access.
- Habit-forming products are to be dispensed only on doctors' prescriptions and for a limited period.

Managing Drugs and Vaccine Distribution System

Purpose: To familiarise the participants with the Drugs and Vaccine Distribution System of the Odisha Government

Principle: The Government of Odisha has developed centralized procurement and distribution system by establishing Odisha State Medical Service Corporation Limited (OSMSCL). The OSMCL has key functions like timely procurement of quality medicines, surgical equipment, instruments, furniture etc., through fair, transparent, and competitive bidding.

There are 39 warehouses across the state, and the medicines are stored in these warehouses after procurement. The medicines are distributed to various health facilities based on indenting. Once the drugs reach the health facilities, they are distributed through Drug Distribution Counters (DDC).

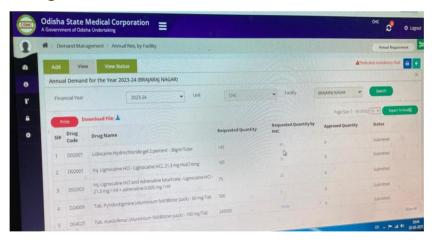
Procedure:

- Lecture and Discussion.
- Practice Session with e-Niramaya Software, including placing indents.

Key Points

- OSMCL is responsible for procurement and distribution; all communication is through the software.
- Pharmacists at all levels should be familiar with the process of distribution.

e-Niramaya Demand Management Module:



Stock Verification

Purpose:

- To develop the form for stock verification.
- To learn the process for stock verification.
- To learn the documentation of any discrepancy.

Principle: Stock verification should be conducted at defined intervals (less than once a year). It is also known as physical inventory (physical counting of stock). Physical verification is useful in:

- Identifying the discrepancy between the stock that is available and that should be available according to stock record [ensure availability as per record].
- Identifying and explaining the discrepancy due to miscalculation, omission, and unexplainable loss.
- Assessing the quality of stored products.

Steps:

- Choose a date in advance and set a cut-off date several days earlier.
- Prepare the inventory area where stock verification is to be conducted. The cartoons are neatly stacked so that all commodities are readily accessible. The partially opened cartoons are clearly visible and not concealed.
- Counting the products:
 - ◆ Begin at one end of the aisle and work to the other end before starting the next aisle.
 - Go from the top of the shelves to the bottom. Do not skip any stacks or rows.
 - Record all counts in **basic units** rather than boxes or tins because the quantity of their contents varies according to the supplier. Basic units are the smallest units (tablets, capsules, tubes, syringes, ampoules, bottles) where drugs can be dispensed to a patient. Be sure to count the actual quantities in partial (open) cartons.
 - Any damaged or expired supplies should be recorded on a separate sheet specifically for this purpose. These supplies are removed from the stock. Expiry dates for every item should be recorded, and nearly-to-expire drugs should be marked.
 - Ideally, two persons should engage in counting, and the data of each person should be noted.
 - Update the stock record: Record the amounts on the stock cards and write 'Physical Inventory' in the ' 'remark column. If the inventory amount differs from the calculated amount, note in the remarks column that you are correcting. For example, "Corrected by physical count" or "Found expired during inventory.

Stock Verification						
Name of the health facility: Date of verification:						
Item	Expiry date	Quantity in stock card	Quantity counted	Differences	Remarks	
ASA Tablets	11 / 2023	2400	2346	54	Calculation error in stock card	
Amoxicillin Capsule 500 mg	12/2024	500	500	NIL		

Take action as needed: if there is no discrepancy, nothing is required. If a discrepancy is found, the correct
physical quantity should be written on the stock card in a different color. If discrepancies are large or
frequent, further investigation should be carried out to find the cause and to take action (tighten security
or be careful in record keeping).

- Use the least busy time for stock verification to avoid disruption in store activities.
- Stock verification for selective products may be done more often than others, mainly when earlier discrepancies are found for expensive drugs and habit-forming products.

Recognizing the Poor Quality Medicines

Purpose: To train the participants to recognize poor quality medicines.

Principle: All medicines need to have an acceptable standard of quality. The hospitals must procure medicines of standard quality. The medicines which do not conform to the quality standards are called Not of Standard Quality (NSQ).

Medicines of poor quality can be dangerous. The health workers and patients trust that the medicine is of good quality. The following are the consequences of the use of poor-quality medicines:

- The patient does not get better;
- Resistance to the medicine develops;
- Money and resources are wasted;
- People lose trust in the health system or health facility.

Sometimes there are indications of poor quality in the appearance of the medicine or its labelling. Quality can be assessed only by certified laboratories, but there are indicators that the pharmacist can look to ensure such products (NSQ) are neither received nor dispensed.

Indicators of Poor Quality:

	All Products				
Packaging	Broken, Ripped				
Labels	Missing, Unreadable, Incorrectly Spelt, or False Information				
	Different Dosage Forms				
Liquids, Syrups	Discoloration, Cloudiness, Sediment, Broken Seal on the Bottle, Cracks in the Bottle, Dampness or Moisture in Packing				
Tablets	Discoloration, Crumbly Tablets, Stickiness, Missing tablets in strip/blister, Unusual Smell				
Capsules	Discoloration, Stickiness, Crushed, Split Capsules				
Suspensions	Not returning to even Suspension after shaking.				
Injections	Cracks in Ampoule, Dampness or Moisture in Packaging, Stained Packaging, Discoloration, Sediment, Cloudiness				
Condoms or Latex	Dryness, Brittleness, Cracks				

Procedure: Lecture and Discussion.

Activity: The participants may be asked to share their experiences.

- Recognizing the poor quality of medicine would ensure that they do not get entry into the health system.
- The pharmacist should be vigilant in identifying poor quality medicines.



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Good Dispensing Practices



Good Dispensing Practices

Purpose: To familiarise with the steps involved in Good Dispensing Practices

Principle: Good Dispensing Procedure ensures errors are observed and corrected at all stages. It ensures the delivery of medicines to the right patient in the right amount and adequately labeled. It is essential that the participants can read and understand the prescription. They can determine the quantities prescribed and the quantities to be dispensed.

Steps:

- 1. Receiving and validating the prescription The prescription is of the same hospital and is the current one.
- 2. Understanding and interpreting the prescription The prescription must have the following:
 - a. Name, gender, and age of the patient;
 - b. Name of the Drug (s) and the strength;
 - c. Dose and Dosage;
 - d. User's instruction like oral or external use etc.;
 - e. Signature of prescriber and date.

If the prescription is not complete, preferable to go back to the doctor for clarification before dispensing. Ensure that the dose is correct and identify the Drug-drug interaction.

[A prescription may be discussed, asking the participants to find out what are the lacuna or points where the prescription requires further clarification]

- 3. Preparing the items for the issue:
 - a. Write a label Though the label is already available in strip or bottle, a customized label is necessary;
 - b. The label must have the following info: Patient name, dose, and instructions for use.

The label must be fixed as sticker in such a way that vital drug information is not masked.

- 4. Documenting the action taken Dispensed the quantity.
- 5. Issuing the medicines with clear instructions for use At least the following info:
 - a. When to take after or before food:
 - b. How to take -For example; Swallow with water; Chew before swallowing; Do not break.
 - c. How to store at home Not to keep in kitchen or bathroom; Keep away from children
 - d. Ensure that the patient or care giver understands the instruction. If necessary, ask the patient to repeat.

- Ensure that errors are avoided.
- Efforts should be made to ensure the patient/care giver understands the instruction.





Improving the Use of Medicines: Patient Counselling and Medication Adherence

Purpose:

- To train the participants on how to provide patient counseling.
- To train the participants: how to measure adherence and how to improve.

Principle:

Patient Counselling: WHO estimates that only 50 % of people take their medicines correctly. One
reason is that people are often unclear about how to take the medicines. Providing clear information
and discussing with the people how to take their medicines correctly and safely is crucial. Safe and
effective drug therapy most frequently occurs when the patients are well-informed about the
medications and their use. A sympathetic interaction between the pharmacist and the patient is
called patient counseling.

GATHER principle is usually advocated for patient counseling [G- Greeting, A - Ask, T - Tell, H - Help the patient, E - Explain, R - Return].

- What information is needed to be given:
 - What the medicine is for: For example, for treating infection; treating diabetes etc.
- How to take/use medicines:
 - Swallow with water; Swallow intact without breaking; Apply to the affected skin area;
 Insert into the vagina.
 - Keep under the tongue (sublingual tablets);
 - Chew before swallowing.
 - Apply sparingly (can be replaced with 'Apply Thinly').
 - Instil one drop into the conjunctival sac (can be replaced with 'Put one drop into each eye').
- How much to take (dose):
 - One tablet; One Capsule; One Five ml Spoonful; One puff of an inhaler.
 - Measure the liquid medicines with the supplied measuring spoon.
- How often to take and when:
 - How many times a day; Before bed at night; Before food; After food.
 - Before food: half to one hour before; or two hours after.
 - After food: (not on an empty stomach), preferably up to half an hour after food.
 - Three times a day: can be better described When you wake up; In the middle of the day; and When you go to sleep.

- How long to take:
 - Number of days; Number of weeks; Number of Months.
 - Ask the patients to come back for more medicines before they are finished in case of chronic conditions.
 - Take for the entire duration (as prescribed) Do not stop without a doctor's advice.
 - Take full course even if you are feeling better.
- Special Instructions:
 - Shake the bottle before measuring the dose; The medicine may make you dizzy or sleepy - Do not drive a vehicle.
 - Do not keep medicines within reach of children.
 - Do not keep it in kitchen/bathroom.
- What to do if there are any problems:
 - Consult the doctor or other heath workers if you experience unusual feelings.
 - If you experience skin rash or other allergic issues, stop using and consult back to your doctor immediately.
 - Do not worry if you experience orange color urine (while taking rifampicin).

At the end of counseling, please ensure the patient correctly understood. It may require asking the patient to repeat the instruction.

- Medication Adherence (earlier it was known as compliance):
 - Medication adherence is the extent to which a person's behavior taking medication, following a diet, and/or executing lifestyle changes, corresponds with agreed recommendations from a health care provider.
 - In developed countries, adherence to long-term therapies in the general population is around 50%, much lower in developing countries. Research shows that achieving adherence rates above 80% is difficult even in resource-rich countries.
 - Treatment failure If the Adherence rate for ART is less than 90-95% it could lead to developing resistance. Poor adherence compounds the challenges of improving health in poor populations and results in waste and underutilization of already limited treatment resources
 - The direct costs of complications attributable to poor control of diabetes are 3–4 times higher than those of good control.
 - Non-adherence to blood pressure medicine increases the risk of ischaemic heart disease 3to 4-fold and overall cardiovascular risk by 2- to 3-fold. The incidence of stroke increases

approximately 3-fold in patients with borderline hypertension and approximately 8-fold in those with definite hypertension.

- Reasons for Non-Adherence:
 - Toxicity/side effects
 - Share with others
 - Forgot
 - Feel better
 - Too ill
 - Stigma, disclosure, and privacy issues
 - Drug stock-outs / non-availability in the dispensary
 - The patient lost/ran out of pills
 - Delivery or travel problems
 - Inability to pay
 - Alcohol
 - Depression etc.
- Techniques for measuring adherence:
 - Self-reporting The patient reports about not taking medicines. But the method is not reliable. The patient may not be telling the truth.
 - Electronic Adherence Monitoring Medication consumption is assured but expensive and not always feasible.
 - Pill Counts Remaining / Unused medications are counted. It relies on the patient's truthfulness in bringing unused medicines.
 - Refilling data Medication consumption assumed but not confirmed.
 - Bioassay not practicable.
- Methods to improve adherence:
 - Make the patient partner in the treatment so that they would be responsible.
 - Patient Counselling Sensitising them on the need for adherence and clearing their doubts.
 - Third-party observing like in DOTS therapy.

Procedure:

- Lecture and Discussion.
- Role Play: Medication Counselling.

Key Points

- Patient counseling is important in improving medication use, including promoting adherence.
- Patient counselling should be done without medical terminologies and in a language that the patient understands.



Identifying ADRs and Reporting

Purpose:

- To make the participants familiarise with methods of identifying ADR; and
- To make the participants familiarised with the ADR reporting system.

Principle:

Adverse Drug Reaction (ADR) is a noxious and unintended response to medicine that occurs in a normal dose. The term ADR is being gradually replaced by Adverse Drug Events (ADE).

Serious Adverse Drug Reaction includes:

- Death
- Life-threatening illness
- Hospitalization (initial or prolonged)
- Disability (significant, persistent, or permanent)
- Congenital anomaly
- Required intervention to prevent permanent impairment or damage

India has a Pharmacovigilance Programme of India under which ADR reporting falls. Indian Pharmacopeia Commission (IPC), Ghaziabad, is the National Coordination Centre (NCC). The nearest Medical College is a Centre for Adverse Drug Reaction Monitoring. The ADR need not have confirmation; the suspected reaction and the suspected Drug are to be reported.

- Identifying ADR:
 - The Patient Complaint of unusual feelings.
 - The patient's case sheet if the treating doctor documents this in the case sheet.
 - The nurse noticed the unusual behavior of the patient.
- Reporting ADR:
 - Who can report: All health care professionals (Clinicians, Dentists, Pharmacists, Nurses) and Consumers.
 - Where to Report: Nearest Pharmacovigilance Centre, usually located in the Medical College. One can directly submit the report at NCC.
 - Is there any format: The Pharmacovigilance Programme has a form. The minimum data required:

 Patient's Initial, Age at the Onset of Reaction, Reaction Term, Date of Onset of Reaction,

 Suspected Medicines, and Reporter's Name.

Procedure:

- Lecture and Discussion.
- Activity: Filling up the ADR Reporting Form.



SUSPECTED ADVERSE DRUG REACTION REPORTING FORM

For VOLUNTARY reporting of Adverse Drug Reaction by Healthcare Professionals INDIAN PHARMACOPOBA COMMISSION(National Coordination Centre-Pharmacovigilisnee Programme of In Ministry of Health & Family Welfare, Government of India Sactor-23, Raj Nagar, Ghazisbad-201002

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- Every medicine has the potential to cause ADR.
- Reporting ADR helps in documenting, which would help to prevent such ADRs.
- In the state of confusion between side effects and ADR, it is preferable to report that event under ADR.

Encouraging patients to return the unused/expired medicines

Purpose: To sensitize the participants to take proactive steps to request the patients to return the unused/expired medicines.

Principle:

Every house / every patient may have unused medicines. They may also have expired medicines. Most of the people do not have adequate knowledge of how to dispose of them. Either they throw them or flush into the drain.

- The unused medicines may be good medicines with the package and labeling intact. This may happen in case the patient dies, in case the patient's treatment protocol changes; or the patient is no longer interested in using them.
- The medicines might have expired during the treatment. This usually happens when a patient or caregiver procures medicines with short shelf life.

During counselling, the pharmacist may impress upon the patient or caregiver on the need to return unused/expired medicines. The pharmacist may initiate innovative programs:

- Take Back the medicines:
 - It will reduce the risk of drug misuse.
- Keep a Box: the patient/caregiver is encouraged to return the unused/expired medicines.

The returned drugs can be disposed of along with other bio medical wastes. This is perhaps the best way to dispose them off. This will not affect the environment.

Some Points on Not Disposing of Unuse/ Expired Medicines:

- Lying around at home can get into the wrong hands, leading to accidental poisoning or Drug over dose.
- When drugs are inappropriately disposed of (just throwing them with domestic wastes), they may contaminate our ground water, lakes, rivers, or other source of water, threatening human and aquatic life and leading to Anti-Microbial Resistance.

Procedure:

• Lecture motivating them to initiate this innovative work. This is usually not practiced.

- Strong motivation is needed to initiate such programs.
- The unused/expired medicines are collected for reuse and appropriate disposal.

Disaster Management- Medicine Management

Purpose: To sensitize the participants on the need preparing to prepare a List of Essential Medicines for disaster relief.

Principle: Hazards like cyclones, floods, landslides, and earthquakes are common in our country. It is necessary that health services must prepare with the necessary tools to provide relief to the affected people during a disaster. Common health problems like cholera, typhoid, leptospirosis, diarrhea, gastrointestinal problems, malaria, dengue, skin problems, trauma, tetanus, snake bite, meningitis, pneumonia, acute malnutrition, and mental health are faced. Disaster preparedness and relief must be considered in three phases:

- 1. High Priority responding to the acute phase of emergency and disaster;
- 2. Medium Priority for post-disaster management; and
- 3. Public Health Intervention for sustainable benefits.

The present attention is on High Priority interventions for outreach service. The affected persons can be brought to health facilities after disaster management.

High Priority Medicines:

- Prevention and treatment of communicable diseases: malaria, leptospirosis, meningitis and encephalitis, fever, acute respiratory infections, diarrhoea.
- Gastrointestinal tract problem: nausea, vomiting and gastrointestinal (GI) muscle spasm.
- Injuries: physical trauma, prevention and management of wound infection, prevention of tetanus and rabies and treatment of venom toxicity.
- Major and minor surgery, including coagulation problems.
- Mental health: Anxiety, depression, psychosis and epilepsy.
- Reproductive health: Prevention and treatment of sexually transmitted infections gonococcal infections: gonorrhea and chlamydia and non-gonococcal: trichomoniasis and bacterial vaginosis.
- Skin infections.
- Non-communicable diseases: Severe acute asthma (bronchospasm).

The pharmacy must ensure the availability of essential medicines for disaster relief. It should keep a list of emergency suppliers.

Procedure:

Activity - The participants may be asked to refer to local STG and develop Essential Medicine List during a disaster.

Key Points

- Availability of essential medicines is life-saving.
- The planning can serve the affected people better.



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Good Practices to Reach Out for the Community Activities



Organizing Outreach Camps and Biomedical Waste Management

Purpose:

- To educate the participants on the factors that need to be considered while organizing the outreach medical / health camps; and
- To sensitize the participants on the appropriate management of biomedical wastes.

Principle:

- Organizing Outreach Medical / Health Camps:
 - Organizing Health Camps are effective strategies for bringing health care to the unreached. The
 camps are primarily organized for screening target diseases and providing health care during a
 disaster. This is an outreach activity, and outreach activity provides local satisfaction. The
 following points/factors need consideration while planning for an outreach camp:
 - Planning: Planning for the venue, manpower, finance, other resources, logistics, and transportation.
 - Manpower Requirements: Doctor, pharmacist, nurse and laboratory technician.
 - Camp inauguration: Local social leaders may be invited.
 - Local partners: Students, Clubs, and Institutions they can be volunteers for registration and crowd control.
 - Provision for adequate good quality medicines.
- Managing Biomedical Wastes:

The salient points:

- Biomedical waste generated during the activities of Diagnosis, treatment and immunisation of human beings or any research activities pertaining thereto or in the production or testing of biological or health camps.
- Compliance with Biomedical Waste (BMW) Rules 2016 and 2018 is necessary.
- Waste generated in health camps should be managed on the same lines as biomedical waste for the hospital. About 15 % of the waste is hazardous. Disposal should be done with care and caution.
- Five Stages of Biomedical waste management:
 - Segregation: Waste is segregated at the site of generation. They should be grouped as classified colour-coded containers/bags.



S. No.	Category	Type of Waste	Colour & Type of Container				
	Yellow Category	Human Anatomical Waste Soiled Waste Discarded or Expired Medicine Chemical Liquid Waste Chemical Laboratory Waste Chemotherapy Drug Vials	Yellow colour non chlorinated plastic bags or containers				
	Red Category	Contaminated Waste (Recyclable)	Red colour non chlorinated plastic bags and containers				
	White Category	Waste Sharps including metals	White colour puncture proof, leak proof, tamper proof containers				
	Blue Category	Glassware Metallic Body Implants	Puncture proof and leak proof boxes or containers with blue coloured marking (2018 Amendment)				

[Guidelines for Implementation of 'Kayakalp' Initiative, Ministry of Health and family Welfare, Government of India, 2015.]

- Collection: General waste should not be collected along with them. The bags should be sealed once three-fourth is filled. The collection of the waste should be done by the waste handlers only after downing of the appropriate PPE i.e., gum boots, heavy-duty gloves, face masks, and eye wear.
- All the bags need to be labelled with biohazard symbol, date of generation, and area of generation for easy traceability.
- Storage: The sealed bags are temporarily stored safely till it is disposed of. For health camps, the bags can be transported to the hospital.

- Transportation: The sealed bags are transported back to the hospital or an outsourcing contract agency may be requested to collect the materials at the camp it self. The bags should remain secured during transportation and do not have any sharp edges. Care should be taken to avoid spillage and scattering of wastes.
- Disposal: The disposal must be made within two days of collection. This is usually out sourced. Just to understand what procedure is followed, is briefly mentioned:
- Contract with Common Bio-Medical Waste Treatment Facility (CBMWTF): All the hospitals, which are
 situated within a distance of 75 km of CBMWTF, need to have a formal agreement/contract with the
 CBMWTF for transportation and disposal of BMW generated from the hospital. These hospitals have
 to hand over the waste to the CBMWTF for final disposal.
- Not in Contract with CBMWTF: Hospitals situated outside 75 km areas of the CBMWTF should ensure that they have the facility of waste disposal within the premises of the hospital i.e., deep burial and sharp pits. Hospitals need to have approval from the Pollution Control Board office for all the deep burial pits and sharp pits created in the hospital, and records of the same need to be maintained by the hospital.
 - Deep Burial Pits: A pit or trench should be dug about two meters deep. It needs to be half-filled with waste and then covered with lime within 50 cm of the surface before filling the rest of the pit with soil. On each occasion, when wastes are added to the pit, a layer of 10 cm of soil shall be added to cover the wastes. The groundwater level should be a minimum of six meters below the lower level of the deep burial pit.
 - Sharp Pits: Sharp pit should be a 1mt×1mt×1mt concrete lined protected pit with a cemented lid. Once dry, the pit is sealed. Another sharp pit is created for further use.

Procedure: Lecture and Discussion. The participants may be requested to share their experiences.

- Organizing health camps in communities is necessary to reach out the vulnerable populations.
- Planning would help in achieving the goal: Providing healthcare to the people near to the community.
- Building local partnerships helps.

Educating the Public on Disease Prevention and Health Promotion

Purpose: To train the participants to create awareness of disease prevention and health promotion.

Principle: The disease prevention and health promotion topics are very vast. Three examples are discussed here.

Disease Prevention: Typhoid Fever.

Improving Use of Medicines:

- A common pattern of inappropriate use of medicines
 - Not taking medicines as intended by the prescriber.
 - Self-medication with prescription medicines
 - Misuse of antibiotics
 - Overuse of injections
 - Overuse of relatively safe medicines
 - Unsafe use of herbal medicines
 - Use of non-essential combinations
 - Use of needlessly expensive medicines

Health Promotion: Health promotion is the process of enabling people to increase control over and to improve their health. It moves beyond a focus on individual behavior towards a wide range of social and environmental interventions. Health Promotion is a public Health Activity.

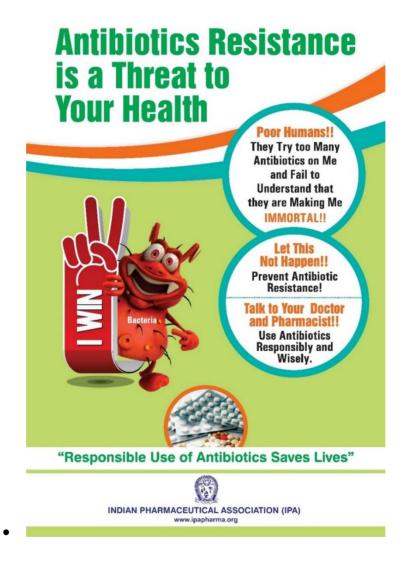
Procedure: Decide the contents of your presentation/talk. Here are few suggestions -

Typhoid Fever: This is an acute infectious illness that affects the gastro-intestinal tract. *Salmonella typhi* is the causative organism.

- Mode of transmission it spreads through the faecal oral route. The pathogen is present in the stools and urine of patients during acute illness. Contamination of drinking water by sewage or contamination of food from flies are the main reasons.
- Incubation period: 5 to 20 days.
- Preventive Measures:
 - Vaccination
 - Proper disinfection of patient's urine and stools.
 - Take safe water and food: Boiled and Cooled water should be used for drinking. Cut fruits and vegetables must not be eaten raw.
- Collect the Information, Education, and Communication (IEC) materials for disease prevention.

Improving the Use of Medicine (Preventing the Misuse of Antibiotics):

- People do not understand the need to take the full course. The advice often given by the health worker does not make sense to them. The antibiotics are expensive too.
- Antibiotics are powerful tools to fight against bacterial infections. They are not useful in viral
 infections like cough and cold. Inappropriate use of antibiotics leads to resistance. The antibiotic
 effective today will not be effective tomorrow. Antibiotic resistance is viewed as one of the biggest
 threats to humankind.
- Take antibiotics if needed. Do not self-medicate but take the advice of doctors.
- Take antibiotics as advised for the entire duration of treatment.



Examples of Antibiotics: Amoxycillin, Azithromycin, Ciprofloxacin etc.

Tobacco Control

- Tobacco is the foremost preventable cause of death worldwide.
- Smokeless Tobacco Use is more common in India compared to smoked form. Examples of Smoked
 Form of Tobacco Use: Smoking of Cigarettes, Beedi. Examples of Smokeless Tobacco Use: Betel Quid
 (Pan) with tobacco, Gutkha, and Gudakhu.
- Ill Effects of Tobacco Use: Major risk factor for Cancer, Cardiovascular Diseases (CVD), Diabetes, Chronic Lung Disease, stroke, infertility, blindness, Tuberculosis (TB), Oral Cavity.
- Quitting Tobacco use reduces the above risk factors and gives many socioeconomic benefits.
- Nicotine Replacement Therapy is available in various forms: Gum, Patch, Lozenge, Inhaler, and Nasal
 Spray.

Benefits of Quitting Tobacco Use

- In 8 hours: Oxygen levels return to normal.
- In 24 hours: The risk of heart attack begins to decrease.
- In 72 hours: Lung function improves.
- In 1-9 months: Coughing and shortness of breath decrease.
- In 12 months: Heart disease risk is half compared to tobacco users.
- In 5 years: Stroke risk is reduced.
- In 10 years: The risk of lung cancer is less than half compared to tobacco users.
- In 15 years: The risk of heart disease is similar to a person who never smoked.
- Reduced risk of diseases attributable to tobacco use
- Reduced health care expenditure means more money for other essential expenditures
- You become a role model for your children as well as for your society
- Collect the IEC materials for health promotion (tobacco use).



Key Points

- Health Education improves the community's perception related to health and illness.
- Improvement in health literacy encourages the community to take an active part in improving their health.

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Drug Regulations



Drugs and Cosmetics Act & the Rules

Purpose: To familiarise the participants with the various regulatory provisions as applicable to hospital pharmacy

Principle: A drug Sale Licence is not necessary (Schedule K), but the following conditions are to be complied:

- The dispensing and supply of drugs shall be carried out by or under the supervision of a qualified person (registered pharmacist).
- The premises where drugs are supplied or stocked are open for inspection and sampling of drugs.
- Drugs are stored under proper storage conditions.
- Transferred from warehouse and purchased from licensed dealer/seller. The drugs are centrally procured and distributed.

Drugs covered under Narcotic Drugs and Psychologic Substance Act, like morphine tablets, are to be dispensed to terminally ill cancer patients (palliative care). They are to be kept under lock and key. They are subjective to inspection and sampling.

Steps Involved:

- 1. Identifying the medicines requiring special vigilance (lock and key storage).
- 2. Keeping appropriate documentation as and when the medicines are taken out of lock and key storage.
- 3. Ensure the local purchase from a licensed drug seller and document including the bill.
- 4. Ensure the availability of procurement records and proper storage for medicines.

- Safely preserve the procurement record (the delivery vouchers received along with the supply).
- Keep the Narcotic Drugs under lock and key.

Narcotic Drugs and Psychotropic Substances Act

Purpose: To familiarise the participants with the need for compliance with the Narcotic Drugs and Psychotropic Substances Act (related to the storage and dispensing of controlled substances)

Principle: Certain medicines have the potential for addiction and are likely to be abused. They are often in high demand and have the potential for resale in the black market. They require increased security.

They are:

- Narcotics: Morphine, Opium preparations, Pethidine, Papaveretum, Hydrocodone, and Tramadol;
- Other opioid and strong analgesics: Pentazocine, Codeine, Dextropropoxyphene, and
 Buprenorphine; and
- Psychotropic Drugs: Diazepam, Lorazepam, Nitrazepam, Flunitrazepam, and Oxazepam.

They should be kept under lock and key (may be in a separate locked room). Ideally, a warming light or bell should be in place and activated when products are accessed improperly. Every entry and exit should be recorded.

- Access to the controlled substances must be limited to one person, who is responsible, usually the store-in-charge pharmacist.
- Limit the number of keys made for the controlled location and keep a list of people with keys.

They are covered under Narcotic Drugs and Psychotropic Substances Act. Non-adherence to the storage and dispensing guidelines invites punitive action. The harsh punishment is 10 years of rigorous imprisonment for clerical errors.

[Recognised Medical Institutions (Institutions recognized by the State Drugs Controller are authorized for purchasing, possessing, and dispensing essential narcotic drugs for medical and scientific purposes.]

Procedure: Lecture and Discussion.

Storage Record: Narcotic Drug register must be a bound register with consecutively numbered. A
separate page must be used for each narcotic Drug.

They must be kept in a separate cupboard. No other materials be kept with them. The cupboard must have the lock and key system. Ideally, the locks and keys should be kept with two persons, like bank locker.

Narcotic Drugs should have entries like Date, Name, and Address of Supplier, Quantity Received, and Balance Stock.

All records must be kept for two years.

Unused / Left Over Drugs: Flush under running water in the sink in the presence of the witness and document in the narcotic register with the witness's signature.

2. Dispensing Record: The pharmacist usually requires a triple prescription to dispense.

Dispensing Record of Controlled Medicines / Substances Name of the Medicine /Substance, Form, Strength, Pack Size									
	Name and	Giving the	Balance	Dispensed	Available after	the Staff			
	Address	Medicine /			Dispensing / New				
		Substance			Stock				

- Controlled Medicines have the potential for abuse. They should be kept under lock and key to prevent unauthorized use.
- Non-compliance with the Narcotic Drugs and Psychotropic Substances Act invites punitive action.

State's Drug Management Policy

Purpose: To make the participants familiar with Odisha's Drug Management Policy and Protocol

Principle: The salient points from Procurement to Use are described.

• Procurement:

- From the financial year 2015 -2016, the Odisha State Medical Corporation procures health sector goods like drugs.
- Decentralized Procurement: The decentralized procurement process begins after being certified by the concerned sub-store pharmacist or central store pharmacist that the medicines or items are not available.

The stock entry of decentralised procured materials is done at sub centre in the case of district / tertiary care hospitals. However, suppose all other hospitals within its domain use the bulk purchase. In that case, stock entry should be done at the central warehouse.

Distribution:

- The PHCs / other hospitals and CHCs are supplied from the Block CHCs. Odisha Medical Service Corporation may provide the transport facility to the PHCs, but the stock entry will be done at Block CHC.
- The sub-stores (the stores to cater to the need of internal requirements) of the Medical Colleges, Tertiary Health Institutions, District Head Quarter Hospitals, Sub Divisional Head Quarter Hospitals, and Community Health Centres will be managed by Store MO/ ADMO / SCDMO / MO in charge, and Senior Pharmacist of the concerned institution.
 - They are responsible for:
 - Timely indenting to central drug warehouse;
 - Indenting appropriate quantity in the prescribed format;
 - Regular replenishment of the substances from the central warehouse.
 - Issue of stock from the sub-store to Drug Distribution Counters (DDC).
- The sub-store pharmacist is overall in charge of supply chain management, and indent flow in the hospital's prescribed format.

Central Drug warehouse \rightarrow Sub store \rightarrow DDCs \rightarrow Wards \rightarrow Patient.

He is responsible for the quality of storage conditions (temperature and humidity).

• Management of Drug Distribution Counters:

- The supply of drugs and consumables to DDCs is done from sub storesbased on intent placed by DDC pharmacist. DDC pharmacist is in charge of DDC.
- The supervision and monitoring of DDCs are the responsibilities of sub store pharmacist and Head of the Institution.
- Each institution must have a micro plan of time, frequency, mapping, and flow of indent and supply of drugs from the central warehouse to the end user through proper management of sub store and DDCs.
- All pharmacists of DDCs must have adequate training in the respective modules of e-Aushadhi to
 use computers effectively. Since training is module-specific, the institution must not shift
 workforce randomly.
- Transportation and Logistics:
 - The transportation of drugs and medical consumables is to be done under the direct supervision of OMSCL.

Management of OPD DDC:

- Each DDC will have two pharmacists.
- Patients should receive medications for the entire duration as prescribed.
- Each prescription is to be scanned and uploaded in the DDC module of e-Aushadhi software.
- The scanned copy of the prescription is for future reference. Prescription slips and IPD prescription slips will be utilized across the state.
- Efforts should be taken to provide comfort to the patients: Waiting and sitting Spaces, Ventilation,
 Drinking water facilities, Separate facilities for ladies, Persons with Disabilities (PWD), and elderly patients.
- One OPD DDC caters to around 250 patients daily. In space constraints, OPD DDC may function as IPD / 24 X 7 DDC beyond OPD hour.

Management of IPD DDC:

- IPD DDC is manned by computer-skilled pharmacists. The pharmacist is responsible for computer entry of indent and issue to wards. More than one pharmacist may be allotted if there is a high patient load.
- IPD DDC drugs and other items to indoor wards, OT, Labour Room, Sick Neonatal Care Unit (SNCU), Nutrition Rehabilitation Centre (NRC), and other indoor consuming units.

- All indoor consuming units will keep stock of essential medicines and consumables they can
 utilize. The unit must have a mechanism of fixed day/time of placement of indent and previous
 consumption report with IPD DDC.
- For other medicines, the patient's attendant can take the prescription slip to the IPD DDC / 24 X
 7 DDC and take medicines.
- The pharmacist of IPD DDC receives the prescription slip from the patient's attendant, scan and uploads it to the computer. He should issue the drugs and consumables to the attendant with a computer-generated receipt. The pharmacist receives the indent and bed-wise consumption of drugs and consumables from the ward in charge and issues to the concerned ward as per the indent after entry in e-Aushadhi software.
- At the time of discharge of the patient, the discharge slip is to be scanned, uploaded to the
 computer and entered into the e-Aushadhi software. Suppose any medicine for home use is
 prescribed. In that case, they should be issued to the patient by OPD DDC / 24 X 7 DDC, along
 with the computer-generated receipt.
- The timing of IPD DDC should be such that it is convenient for all indoor consuming units to give their indent and receive stock.

• Management of 24X7 DDC:

- There must be at least one DDC in every District Head Hospital and tertiary care institution which operates 24 X 7. DDC should be located close to the casualty to satisfy all the requirements.
- An OPD DDC may function 24 X 7 beyond the OPD hour with additional manpower who will issue drugs to casualty/emergency patients, discharge patients after scanning of prescription, and to indoor wards and other indoor consuming units as per indent and consumption during emergency need.
- The shift distribution, leave the reserve, and contingency are to be managed by the senior most pharmacist of the sub store approved by ADMO (Medical) / SDMO. The duty hour and shift time must be such that accountability pertaining to the transaction during duty hour can be fixed with a pharmacist. The Director / Principal / Superintendent of Medical Colleges must personally monitor the function of DDCs of their respective institution.
- At the end of every duty hour, the -generated stock balance printout must be duly signed and the ledger closed accordingly.
- The stock inside the DDC is the responsibility of the pharmacist of the DDC. Care should be taken not to swap pharmacists from one DDC to the other.

• Management of Block / SDH level and downwards:

- The Block receives the stock for the entire Block. The Block CHC must maintain its separate substore (independent from the warehouse) for its own internal storage and consumption and will be linked to Block DDC.
- The pharmacist at the block level will manage both sub store and DDC. There will be one DDC for each CHC, which will be operated from 8 AM to 10 PM, functioning as OPD and IPD DDC.
- The services of a multi-purpose health worker (male) with a pharmacy background of the concerned CHC are utilised at block Block for assisting the block pharmacist in managing DDC.
 Even though there might be no 24 X 7 pharmacy at CHC level, medicines for indoor patients must be available 24 X 7.
- In charge of the ward or indoor consuming units submits indent and consumption record in prescribed format daily to the pharmacist and receives the stock for use in IPD and during an emergency when DDC is closed.
- Rastriya Swasthya Bima Yojana (RSBY) or Biju Krushaka Kalyan Yojana (BKKY) DEO will assist the
 block pharmacist in receipt of drugs and consumables from the central drug warehouse, issue to
 DDCs through sub store, issue to PHCs / CHCs, scanning of prescriptions, uploading in computer
 and issue to the patient and wards / consuming units through e-Aushadhi software.
- At SDH, there is one IPD DDC and one OPD DDC. Either of these will operate as 24 X 7 DDC.
- For SDH, the sub-store pharmacist manages the IPD DDC to supply drugs and consumables.
- RSBY or BKKY DEO at SDH will assist the SDH pharmacist with all computerized entries at the SDH warehouse, sub-store, and IPD DDC at e-Aushadhi.
- PHCs receive stock through the block warehouse. The pharmacist of PHC is responsible for submitting the indent to the respective Block and dispensing the drugs for PHC consumption.
- The sub-centers under the jurisdiction of PHCs will receive the supply from the respective PHCs.

 The monthly consumption reports and indent must move upwards from sub-centers to PHCs to be compiled at the block level, which must be e-transferred to the district central warehouse.

Management of Urban PHCs:

- ADMO (PH) of Bhubaneswar is the indenting officer under Bhubaneswar Municipality. The institutions will get drugs and medical consumables from the central warehouse in Bhubaneswar.
- Other urban PHCs in other districts or municipalities are provided medicines from respective district warehouses through ADMO (PH).

• Management of Insurance Schemes:

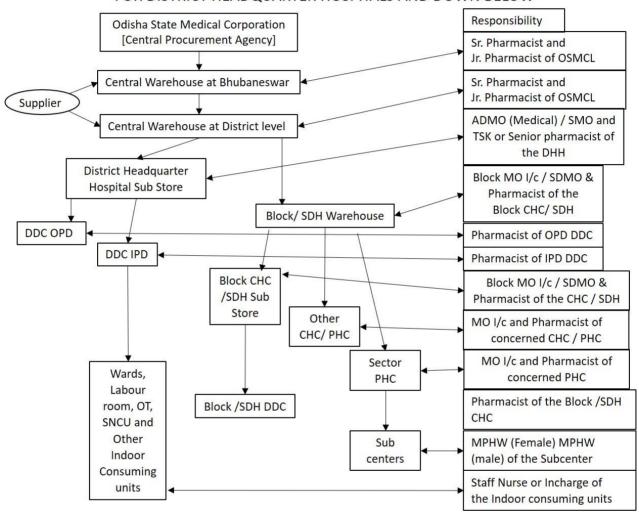
- Insurance Schemes like RSBY and BSKY should be given Priority.
- When the patient claims any insurance, the prescription shall go to the IPD DDC / DDC 24 X 7, which will immediately check the availability of generic equivalent at the DDC, sub-store, or central warehouse. In case of non-availability, the prescription will be scanned, and after being certified regarding non-availability on the body of the prescription, medicines from outside may be given.

• Inventory Management:

- Inventory management at the warehouse should be done scientifically using the principle of First Entry First Out (FEFO) and First Expiry First Out (FEFO).
- Racking arrangement and proper storage need to be ensured under the direct supervision of OSMCL.
- Monitoring of Prescription Practices (Prescription Audit):
 - The prescription audit is one mechanism to ensure rational drug use.
 - Drugs and Therapeutic Committee (DTC) at different levels (Block / District / Medical
 College / Major Health Institutions) would carry out the monthly prescription audit.
 - The following points are suggested to promote rational prescribing:
- At least a provisional diagnosis should be established, and the exact needs to be mentioned in OPD and IPD prescriptions.
- Medicine Name is to be written in generic name only.
- Three copies of the prescription (carbon copies) are to be written. The copy retained will be used for prescription audit.
- A prescription or carbon copy is valid if it has the signature of the treating doctor.
 - Pharmacists should dispense medications as per the prescription. If the prescription is for seven days, medicines are to be dispensed for all seven days. Medicines can be dispensed for up to one month for chronic disease conditions.
 - After receiving the prescription, the pharmacist will dispense medications with counseling regarding the dosage, administration, and other related information as per the prescription. The pharmacist will issue the drugs along with the original prescription and computer-generated receipt.

FLOW OF DRUGS AND MEDICAL CONSUMABLES

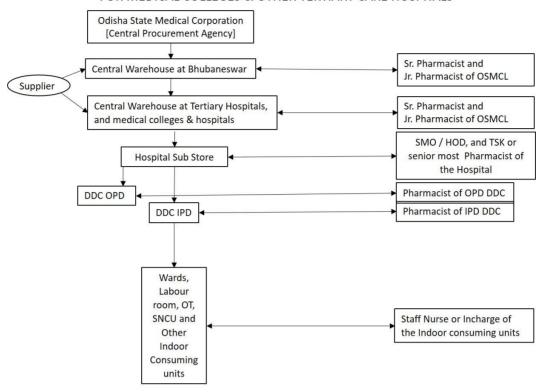
FOR DISTRICT HEADQUARTER HOSPITALS AND DOWN BELOW



[Guidelines for Operationalisation of Free Medicine Distribution Scheme, Government of Odisha, Department of Health and Family Welfare, 2015]

FLOW OF DRUGS AND MEDICAL CONSUMABLES

FOR MEDICAL COLLEGES & OTHER TERTIARY CARE HOSPITALS



Procedure: Lecture and Discussion

Key Points

- Drug Management Policy is the driving force for drug management at all levels of healthcare.
- The basic philosophy is to ensure the uninterrupted availability of medicines at the service point.

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Communication



Communication and Its Importance

Purpose: To sensitize the participants on the importance of communication in day-to-day work.

Principle: Communication is an activity for conveying information. In our day-to-day work, a major portion of our time goes into communication. When the information received and perceived by the recipient is the same as what was sent, it is called effective communication. Communication can be verbal or non-verbal. Verbal communication is common. Pharmacists are involved in different types of verbal communication, like dealing with colleagues and patients. Written communication is required while submitting a leave application to order the materials to supply.

The principles of effective communication:

- The first principle is looks, actions, and words: looks are not just about expressions, but the one presents himself or herself; the body language, non-verbal gestures, and mannerisms; right words are to be said at the right time. Wrong words at the wrong time could be catastrophic.
- The second principle is to become audience friendly. Keep it short and simple (KISS) should be the mantra.
- The third principle is to be polite. Politeness always pays, and others will be interested if the person is polite to whom the people are talking.
- The fourth principle is to become humorous and provide the human touch.

Steps involved:

1. An example to show how communication gets distorted when information passes from one to the other. When participants are sitting, the person sitting either at the beginning or last is to be told about a information. This can be written (one sentence) and asked him/her to convey to the next participant. Finally, the last person will be asked about the information he/she has received.

This would sensitize the participants on proper communication, which they should practice.

2. Another example to show - how to write a leave application. They can be asked to write a leave application and discuss it.

- KISS is the principle.
- Understand the person's capability and speak in a language that is understandable to him/her.

Types Of Communication

Purpose: To familiarise the participants with different types of communication (they are dealing with / likely to encounter) and the required skills.

Principle: Communication is passing on information from one to the other (transfer of information). The competency of performing communication appropriately is communication skills. Communication is not just to deliver the message but to effect a change in the recipient in respect of his knowledge, his attitude, and eventually, his behavior.

Broadly, communication can be divided into two types: Verbal Communication and Non-verbal Communication.

Verbal communication is the conversation between two. Conversation with patients or caretakers is the best way to ensure they understand the information. The pharmacist should encourage each person to ask questions; the answers must be more than yes or no. It is vital that "the pharmacist gives his / her attention to the conversation and listen carefully to people they speak." The pharmacist should speak respectfully and kindly to all members.

The pharmacist needs to be / should:

- Polite, positive, and caring;
- Develop and maintain a good rapport with the patient or client.

Verbal communication has several advantages:

- Save time information can be quickly passed;
- Less chance of misinterpretation as it offers the opportunity for clarification; and
- Improves interpersonal relationships.

Verbal communication has some disadvantages too:

- Requires privacy;
- · Chance of misunderstanding remains; and
- Not convenient for a lengthy discussion.

Non-verbal communication is crucial as well. Out of total communication, verbal communication is just 10 %. Often said, "Action speaks louder than words." Two essential types of non-verbal communication are; written communication and body language.

Written communication: It is a formal form of communication. The pharmacist may require to provide the written information to the patient. The patient information leaflets fall under this category of communication. The written materials should be of easily readable fonts, size, and free of errors like spelling and grammar.

Advantages of written communication:

- It keeps a permanent record of communication;
- The information is precise and explicit;
- Useful in situations of difficulties in talking and hearing;
- It is legally acceptable.

Disadvantage of written communication:

- Literacy issue in our country.
- Paper and printing cost.
- Time-consuming.
- Subject to scrutinization.

Body Language and Gestures: Body movement and gestures are critical in communication. Impressive body language is one of the most excellent assists of a good communicator. Body language is physical behavior, expression, and mannerism. It includes facial expressions, gestures, postures, head movement, and eye contact. Positive body language includes open postures, standing with raised shoulders, maintaining good eye contact, and warm smiles. Examples of negative body language are arms crossed across the chest, tense facial expressions, hands on hips, and body turned away from the persons with whom communicating.

Procedure: Lecture and Discussion.

- Effective communication is an important requirement/quality of a successful person.
- Practice improves body language and communication abilities.

Communication In Patient Counselling

Purpose:

Principle: Patient Counselling is effectively talking to patients about the proper use of medicines. The pharmacist should consider the following points while counseling:

- Language / cultural understanding: Be sensitive to the language and cultural beliefs of the individual with whom the pharmacist is talking. Avoid using medical terms.
- Gender: Some women may prefer to talk to only female pharmacists. Some men may like to speak to men;
- Age: People of different ages have different interests, thoughts, and needs. The pharmacists must be courteous while talking to elderly persons.

The following information may be conveyed in a simple and easily understandable way.:

- What the medicine is for;
- How to take medicine;
- How much to take (dose);
- How often to take medicine and when;
- How long to take the medicine;
- Special instruction; and
- What to do if there are any problems.

Procedure: Role play - Counselling for ORS preparation and use.

[The composition of ORS for 1000 ml solution:

Sodium Chloride - 2. 6 g

Dextrose, anhydrous - 13.5 g

Potassium Chloride - 1.5 g

Sodium Citrate - 2. 9 g]

- 1. Prepare the solution according to the instruction on the ORS packet. Be aware that all packets are not the same. Some may be for preparing one litre, while others may be for preparing 200 ml.
- 2. The quantity of water and the quantity of powder is important to maintain the desired osmolarity.

 The concentrated solution should be avoided.
- 3. Leftover the solution to be thrown out after 24 hours of preparation. It should never be used.
- 4. Give the patient small sips at a time. Continue giving every five minutes day and night until the patient urinates normally.

- 5. Keep giving the solution even if the patient vomits.
- 6. If the patient's condition deteriorates, go to the hospital.

Key points

- Patient Counselling is an important communication between pharmacist and patient for improving medicine use.
- ORS does not stop diarrhoea, but prevents life-threatening dehydration.



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Good Professional Practices

PROFESSIONAL ETHICS



Profession and Ethics

Purpose: To make pharmacists familiar with professional ethics (in general).

Principle: Pharmacy is a versatile, dynamic, growing, and increasingly diverse profession. Those Who practice pharmacy are called pharmacists. They store, preserve, and dispense medicinal products and counsel on the proper use and adverse effects of medicines following prescriptions issued by medical doctors and other health professionals. Of late, the pharmacists' responsibilities have expanded with the inclusion of providing pharmaceutical care.

A profession is a disciplined group of individuals who adheres to ethical standards and are accepted by the public as possessing special knowledge and skills, and are prepared to apply this knowledge and exercise these skills in the interest of others. The code of ethics is embedded with the profession, which governs the profession's activities. Such codes require behaviour and practice beyond the personal moral obligations of an individual.

Ethics is considered a science of morality. Morality explains what is right and what is wrong. Ethics and Law are independent but overlap with each other. Strict adherence to a code of ethics would make the professional proud of their actions.

Declaration the pharmacist given before registration.

- 1. I solemnly pledge to consecrate my life to serving humanity.
- 2. Even under threat, I will not use my pharmacy knowledge contrary to the laws of Humanity.
- 3. I will maintain the utmost respect for human life from the time of conception.
- 4. I will not permit considerations of religion, nationality, race, party politics, or social standing to intervene between my duty and my patient.
- 5. I will practice my profession with conscience and dignity.
- 6. The health of my patient will be my first consideration.
- 7. I will respect the secrets which are confined in me.
- 8. I will give my teachers the respect and gratitude which is their due.
- 9. I will maintain, by all means in my power, the honor and noble traditions of pharmacy profession.
- 10. I will treat my colleagues with all respect and dignity.
- 11. I shall abide by the code of ethics as laid down by the Pharmacy Council of India.

I certify that I have read and agree to abide by the abovementioned declarations.

I make these promises solemnly, freely, and upon my honor.

Signature	 	
Name		

- The privilege of a registered pharmacist: He / She can engage in the practice of the profession of pharmacy. He/she is also eligible to recover the charge/expenses incurred in lieu of discharging duties as defined by PCI.
- Wearing clean white overall (coat/apron) with a badge displaying the name and registration number.
- Registered pharmacists shall display as suffixes to their names only recognized pharmacy qualifications/degrees or certificates/diplomas and memberships/honors that confer professional knowledge or recognize any exemplary qualification/achievements.

Procedure: Lecture and Discussion

- What is the profession?
- What is ethics?
- Why is professional ethics important?
- Adhering to Professional Ethics:

- Pharmacists need to adhere to high ethical standards while practicing pharmacy.
- The Pharmacy Council of India is the authorized body to develop ethical guidelines.

Ethical Guidelines for Practicing Pharmacists

Purpose: To familiarise the hospital pharmacists with the code of ethics as applicable.

Principle: The code of Ethics, as adopted by the Pharmacy Council of India, has the following components as applicable to hospital pharmacists -

Handling Prescription - When a prescription is presented for dispensing, it should be received by a pharmacist without any discussion or comment regarding the merits and demerits of its therapeutic efficiency. The pharmacist should not show any physiognomic expression of alarm or astonishment upon receipt of a prescription; such things may cause anxiety in patients or their agents and even shake their faith in their physician. Any question on a prescription should be answered with every caution and care; it should neither offend a patron nor disclose any information which might have been intentionally withheld from him.

It is not within the privilege of a Pharmacist to add, omit or substitute any ingredient or alter the composition of a prescription without the consent of the prescriber unless the change is emergent or is demanded purely by the technique of the pharmaceutical art and does not cause any alteration in the therapeutic action of the recipe. In case of any obvious error due to any omission, incompatibility, or overdosage, the prescription should be referred back to the prescriber for correction or approval of the change suggested. While such an act is imperative in the patient's best interest, it should not be done in a manner that may jeopardize the reputation of the prescriber concerned.

In the matter of refilling prescriptions, a pharmacist should solely be guided by the instructions of the prescriber aid; S/he should advise patients to use medicines or remedies strictly by the intention of the physician as noted on the prescription.

Handling of Drugs - All possible care should be taken to dispense a prescription correctly. Further, a Pharmacist should always use drugs and medicinal preparations of standard quality available. He should never fill his prescriptions with spurious, sub-standard, and unethical preparations. A Pharmacist should be very Judicious in dealing with drugs and medicinal preparations known to be judicious or to be used for addiction or any other abusive purposes. Such drugs and preparations should not be supplied to anyone if there is reason to suppose that it is required for such purpose.

Apprentice Pharmacists - While in charge of a hospital pharmacy where apprentice pharmacists are admitted for practical training, a pharmacist should see that the trainees are given full facilities for their work so that on the completion of their training, they have acquired sufficient technique and skill to make themselves dependable pharmacists. No certificate or credentials should be granted unless the above criterion is attained and the recipient has proved himself worthy of the same.

Advertisement and Display - No display material on the premises, in the press, or elsewhere should be used by a pharmacist in connection with the sale to the public of undignified medicines or medical appliances. No article or preparation advertised to the public by means of display material of the kind mentioned above should be exhibited in a pharmacy if it is known or could reasonably be known that the article or preparation is so advertised.

Relationship with Medical Professionals - Pharmacists under no circumstances take to medical practice to diagnose diseases and prescribe remedies, even if the patient asks. A pharmacist may render first aid to the victim in case of accidents and emergencies.

Liaison with the public - Pharmacists should keep himself/herself abreast with the modern developments in pharmacy and allied sciences by regularly reading books, journals, and magazines to advise physicians on pharmaceutical matters and educate the public about maintaining healthy and sanitary living conditions.

The pharmacist should never disclose any information he acquired during his professional activities to any third party or person unless required by law to do so. He should never betray the confidence that his patrons repose in him or which he has won by virtue of his eminent character and conduct.

Pharmacist in Relation to his Profession -

- Expose, without fear or favour, the incompetent, corrupt, dishonest or unethical conduct of the other professional members.
- Extend help and cooperation to a fellow member in his legitimate needs, scientific, technical, or otherwise; S/he is to be, at the same time, vigilant to weed the undesirable out of the profession and thus help to maintain its fair name and traditions.

Law abiding citizens - A pharmacist engaged in a profession has to be an enlightened citizen endowed with a fair knowledge of the laws of the land and strive to countenance and defend them. He should be particularly conversant with the enactments pertaining to food, Drug, pharmacy, health, sanitation, and the like and endeavor to abide by them in every phase of his life. A pharmacist is a whole unit whose life cannot be divided into compartments.

Relationship with Professional Organizations - To inculcate a corporate life in his professional colleagues, a pharmacist should join and advance the cause of all such organizations, the aims and objects of which are conducive to the scientific, moral, and cultural well-being of pharmacists and at the same time are in no way contrary to the code of pharmaceutical ethics.

Decorum and Propriety - A pharmacist should always refrain from doing all such acts and deeds
which do not align with the decorum and propriety of the pharmaceutical profession or which are
likely to bring discredit or upgrade to the profession or himself.

Procedure:

- Lecture and Discussion:
- Group Discussion on Conflict of Interest.

Key Points

- Code of Ethics about Medical Professionals, Other Pharmacy Professionals, and the Public are to be kept in mind during Professional Activities.
- Wherever conflict arises, what is right is to be adopted.

Bibliography

- 1. Code of Pharmaceutical Ethics, Pharmacy Council of India, New Delhi.
- 2. Code of Pharmacy Ethics in Pharmacy Practice Regulations, 2015, Pharmacy Council of India.

Emergency / Clinical Role



^{*}This role is based on the Government of Odisha's Office Order File No.PT3-HFW-MSII-MSNG1M-0028-2016, 26512/H Dated 21/09/2021.

Fever

Purpose: To train the participants on identification and treatment options for Fever without doctors.

Principle: When the body temperature exceeds normal, it is called fever. Normal body temperature is 98.4 °F or 37 °C (+/- 1°). The Hypothalamus (a part of the brain) normally regulates the body temperature. Fever is a body temperature of over 100 °F or 37.8 °C. Fever itself is not a disease. Fever gives a warning that everything is not normal. Fever responds to the body's defense to fight an infection or illness. Infection is the most common cause of fever. Occasionally, tissue death may produce fever – Injury, Trauma, Heart attack (death of a part of the heart muscle), and Jaundice (death of liver cells). It can be the reaction to some medicine or vaccine. Fever can occur when the surrounding area is very hot & body temperature maintenance fails. Heat Stroke (Sun Stroke / Hyperthermia) is a classic example. Sunstroke is a serious and notifiable condition.

Differences Between Fever and Sun Stroke:

	Fever	Sun Stroke
Temperature	More than 100 °F	More than 104 °F
Sweat	Profuse sweating	No Sweating
Paracetamol response	Decreases or subsides	No effect
Dehydration	Less dehydration	Gross dehydration
Death	Rare	Very common
Body temperature variation between morning & evening	Present	Lost

Identification: Look at the symptoms –

- Headache and body pain
- Shivering or chills or feeling cold
- Increased heart rate (thumping of heartbeat)
- Sweating on and off or contentious
- Body feels warm
- Loss of appetite
- Excessive thirst
- Reduced urination

Common causes of fever:

- Bacterial infections
- Viral infections
- Urinary tract infections
- Throat or lung infections
- Skin ulcers
- Vaccination
- Cancer
- Reaction to medicine
- Allergic reaction

How to measure temperature:

- By Means of a Digital or Glass thermometer
- Keeping below the tongue for 1 minute
- In children it can be measured by keeping in the rectum for 1 minute
- Measurement in axilla is no more done
- In hot climate during summer, it is practically not possible to measure the temperature because the outside temperature is higher than body temperature (40-45°C) In such climates the patient is kept in AC room for some time and then the temperature is measured

Potential Treatment options:

- Plenty of fluids to treat or prevent dehydration
- Tablet acetaminophen (paracetamol) 500 mg as and when fever is present
- Other NSAIDs like ibuprofen 400 mg, aspirin 325mg etc. may be used instead of paracetamol
- For children aspirin to be avoided
- Syrup or tablets of promethazine or domperidone or ondansetron may be given if nausea or vomiting present
- For suspected bacterial infections antibiotics can be given
 - Azithromycin 500 mg once daily for 5 days
 - Cefixime 500mg tablets twice daily for 7 days
 - Amoxicillin 500 mg thrice daily for a week
 - Amoxicillin 500 mg with clavulanic acid 125mg tablets twice daily for 7 days

When to refer to a doctor:

- Pain in the abdomen with fever
- Vomiting or nausea
- Stiff neck (bending of neck is painful)
- Seizures
- Altered behaviour
- Confusion or irritability
- Rash (small bleeding spots below the skin or small blisters or raised discoloured skin etc.)
- Passing urine or motion in the bed
- Fever do not subside with paracetamol
- Persisting fever even after 4 days
- Not drinking sufficient fluids or dehydration
- Less of urination
- When body temperature is more than 104 °F
- Difficulty in breathing or chest pain

Additional Guidance:

- Follow public health guidelines (wear masks, social distancing, frequent washing of hands, use of sanitizers)
- Avoid touching the nose, mouth, and eyes
- Cover the mouth and nose during coughing or sneezing
- Avoid sharing cups, water bottles, and utensils

Procedure: Lecture and / or discussion

- Fever itself is not an issue; the underlying cause must be addressed.
- Sunstroke is life-threatening.
- Antibiotics, if used should be taken for the full course.

Diarrhea

Purpose: To train the participants on identification and treatment options for Diarrhoea without doctors.

Principle: Abnormal loose stools are called diarrhea. The food we take is broken down into smaller substances for absorption in the GI tract. The absorption occurs throughout the GI tract. Therefore, the food is maintained in liquid form throughout the GI tract. In the last part of GIT (Large Intestine), the water is mainly reabsorbed, and the stool becomes hard or semisolid. In the intestine, there are plenty of good bacteria which help in digestion and absorption. Normal movement (expulsion) of the bowels occurs on the peristaltic movements of the gastrointestinal tract.

Therefore, diarrhea occurs due to:

- Water is not reabsorbed in the large intestine;
- Less normal bacteria in the intestine (or excess of unwanted bacteria)
- Excessive peristaltic movements
- Irritation to the GI Tract

Antibiotics kill normal as well as abnormal bacteria. Antibiotics are not an ideal choice to treat, but when the diarrhea is due to bacteria or their toxins, then antibiotics are required.

Peristaltic movement reduction is also improper because it will retain the causative organisms or toxins in the GIT. Irrational drugs which stop the peristaltic movements (Loperamide) are not be used.

The brain also helps in the peristaltic movement. This is why people rush to the toilet before the examination, before travel, or with anxiety; fear, and apprehension. Some people are very much prone to small things & the GIT gets irritated frequently. In such people, the diarrhea persists and is called IBS (irritable bowel syndrome).

Therefore, there is no ideal drug treatment for common diarrhea.

The best option is to restore the loss of water and electrolytes. Due to loose stools lot of water & electrolytes (sodium, potassium, chloride etc.) are lost in the stool. The patient becomes dehydrated. ORS is the ideal choice.

To restore the normal bacterial flora of the intestine. Supplementing good bacteria and their spores (available in the market with different trade names).

Some persons are intolerant to certain substances. For those people avoiding such items is ideal—lactose intolerant – Milk, which is rich in lactose, to be avoided.

Most of the diarrhea is self-limiting. It stops in 3 to 4 days when it persist for a longer time, termed as irritable bowel syndrome (the bowel itself is irritable).

Diarrhea is a protective function of the body. It expels unwanted toxic materials, viruses & bacteria from the body. Diarrhea is more common in young and older people as the body's protective power (resistance) is poor. These people become very sick unless rehydrated fast.

Few diarrheas are fast spreading and become epidemics – Cholera is an example. When many persons in a locality are affected, then the concerned authorities to be intimated

Known Causes of Diarrhoea:

- Viruses (Cholera)
- Bacteria
- Food poisoning is caused by (Salmonella) due to ingestion of tinned food which may be
 life-threatening
- Medicines
- Allergy to certain foods (lactose intolerance)
- Toxins
- Radiation therapy

Rare causes:

- Tumors in the intestine
- Excess of peristaltic movements due to intestinal obstruction (Vomiting is persistent and more, lose stools are less prominent)

For Identification: Look at the symptoms –

- Pain in abdomen
- Mild fever
- Black coloured stool (Malena)
- Vomiting
- Urgency to defecate (passes stool in the clothes before reaching toilet)
- Bloating sensation of abdomen
- Dehydration
- Malnutrition
- Weight loss in long standing diarrhoeas

Potential Treatment options:

General treatment:

- Rehydrate Rehydration with Oral Rehydrating Salts (ORS).
- Plenty of drinks with a pinch of salt and sugar.
- When the patient cannot take liquids, IV Normal Saline, Dextrose Normal Saline (DNS), or Ringer Lactate will be given.
- Associated with vomiting Ringer lactate is preferred as the loss of electrolytes is more
- Anti-motility drugs not to be given (Loperamide or Imodium; Lomotil or Diphenoxylate)

When to refer to a doctor:

- Diarrhea doesn't stop in 2 days.
- Persistent vomiting.
- Black-colored stools or blood in the stool.
- Fever more than 102°F.
- Persisting heart rate more than 100 per minute.
- Low blood pressure (less than 90/60).
- Rigid (hard) abdomen with pain on palpation (tender).
- Less urination.
- Dry mouth and shrunken skin.

Prevention is Better than Cure:

- Wash hands properly before taking food.
- Use gloves while treating or examining the patients.
- Avoid tinned food.

Procedure: Lecture and / discussion

- Although ORS is the first choice, it does not reduce diarrhea but protects the individual from serious issues like dehydration and loss of electrolytes.
- Antibiotics, though not a choice unless it is due to bacterial infection, should be used in full course.

Malaria

Purpose: To train the participants on identification and treatment options for Malaria in the absence of doctors.

Principle: Malaria is caused by a parasite called Plasmodium. This parasite enters the body by the bite of a female anopheles mosquito. When the infected mosquito bites another healthy person, the parasite enters the healthy person's body. The Anopheles mosquito bites in the night. These mosquitoes lay eggs in the fresh and still water collected in small pits.

Malaria can be prevented by avoiding Mosquito bites. Medicated mosquito net use at night is advisable. Keeping the surroundings clean without water collection in broken pots or utensils will prevent mosquitospread.

Malaria is commonly diagnosed by the sequence it occurs in. It starts with severe chills; after some time, the chills subside; high fever develops; after a few hours, the fever subsides; followed by profuse sweating. Same way, it again presents after 1 or 2 days. The patient becomes very weak.

Occasionally malaria can affect the brain (Cerebral Malaria), or Kidney, resulting in black-colored urine (Blackwater fever), which may be life-threatening.

Identification: Look at the symptoms -

- Severe chills followed by high-grade fever
- Profuse sweating
- Pain all over the body
- Joint pain
- The general feeling of discomfort
- Headache
- Muscle or joint pain
- Fatigue
- Rapid breathing
- Rapid heart rate

Sometimes may have

- Cough
- Nausea and vomiting
- Diarrhea

- Abdominal pain
- Mental confusion
- Death

Microscopy and Rapid Diagnostic Test (RDT) may be used for malaria confirmation.

Potential Treatment options: As specified by the NVBDCP guideline -

Dosage Chart for treatment of uncomplicated P. vivax malaria

	Day 1		Day 2		Day 3		Day 4- 14
Age group	CQ (150 mg base)	PQ (2.5 mg)	CQ (150 mg base)	PQ (2.5 mg)	CQ (150 mg base)	PQ (2.5 mg)	PQ (2.5 mg)
Less than 1 year	1/2	0	1/2	0	1/4	0	0
1-4 years	1	1	1	1	1/2	1	1
5-8 years	2	2	2	2	1	2	2
9-14 years	3	4	3	4	1½	4	4
15 years or more	4	6	4	6	2	6	6

CQ: Chloroquine (250 mg tablet contains 150 mg base); PQ: Primaquine

Treatment Chart for P. falciparum malaria

ACT (Artemisinin Based Combination Therapy) -SP (Sulfadoxine - Pyrimethamine) Dosage Schedule

Age	Colour of	Day – 1 Day -		y – 2 Day – 3		
group (in years)	blister pack	AS	SP	AS	PQ	AS
0-1	Pink	1 Tablet (25 mg)	1 tablet (250 mg + 12.5 mg)	1 tablet (25 mg)	Nil	1 tablet (25 mg)
1-4	Yellow	1 tablet (50 mg)	1 tablet (500 mg + 25 mg)	1 tablet (50 mg)	1 tablet (7.5 mg base)	1 tablet (50 mg)
5-8	Green	1 tablet (100 mg)	1 tablet (750 mg + 37.5 mg)	1 tablet (100 mg)	2 tablets (7.5 mg base each)	1 tablet (100 mg)
9-14	Red	1 tablet (150 mg)	2 tablets (500 mg +25 mg each)	1 tablet (150 mg)	4 tablets (7.5 mg base each)	1 tablet (150 mg)
15 & above	White	1 tablet (200 mg)	2 tablets (750 mg + 37.5 mg each)	1 tablet (200 mg)	6 tablets (7.5 mg base each)	1 tablet (200 mg)

Notes:

- SP is not to be given to children below 5 months of age, and they should be treated with an alternate ACT
- Primaquine and ACT-SP are not to be given to pregnant women, and they should be treated with a suitable alternate ACT

Treatment of *P. falciparum* Malaria in Pregnancy

- Before starting treatment for *P. falciparum* malaria, women in the reproductive age group (15-45 years) should be asked about their pregnancy status, and if the answer is no or the pregnancy test is negative, they should be treated with ACT. If the answer is yes, they should be referred to the subcentre for treatment with quinine.
- The treatment for uncomplicated *P. falciparum* cases in pregnancy in 1st trimester is a quinine salt given in a dose of 10 mg/kg body weight three times daily for 7 days.
- Quinine should not be taken on an empty stomach as it may induce hypoglycemia. Quinine produces unpleasant side effects in most patients, e.g., metallic taste, nausea, and sometimes tinnitus (ringing in ears).
- The patients should be explained that such side effects may occur, but they are not dangerous, and it is
 essential that they complete the full prescribed treatment.

Instructions on Drug Intake

- The first oral dose in malaria treatment should always be consumed in the presence of the health care provider.
- Children under 5 years of age and pregnant women should be asked to wait 15 minutes after taking the dose. If there is no vomiting, the remaining part of the blister pack is given to the patient/caretaker to take home with the following instructions clearly:
 - ♦ The patient should complete the full treatment,
 - If the treatment is not completed, the disease may recur in a more serious form, which may be more difficult to treat
 - ◆ The patient should use bed nets to prevent the spread of malaria

Suppose the patient vomits within 15 minutes under observation of the health care provider, after taking the first dose of the drug. In that case, he/she should be allowed to rest for 15 minutes. Then the dose is repeated by opening a new blister pack and discarding what remains of the previous one. If the patient vomits again, the case should be considered as a case of severe malaria and managed accordingly.

Diagnosis of Severe Malaria

All attempts should be made to confirm the diagnosis of severe malaria cases by microscopy or RDTs. At PHCs, CHCs and district level hospitals, RDTs should be used only during emergency hours and when the

laboratory technician is unavailable. For follow-up and monitoring of the progress, only microscopy should be done.

When to Refer to Higher Center:

- Persistence of fever even 48 hours after initiating treatment
- Continuous vomiting and inability to retain oral drugs
- Headache continues to increase
- Severe dehydration, seen as dry, parched skin or sunken face
- Feeling too weak to walk
- Change in sensorium, e.g., confusion, drowsiness, blurring of vision, photophobia, disorientation
- Convulsions
- Bleeding and clotting disorders
- Suspicion of severe anaemia
- Jaundice
- Hypothermia

Procedure: Lecture and / discussion

- Typical symptoms include shaking chills, high-grade fever, and profuse sweating one after the other in order. Microscopy / RDT may be used for confirmation of malaria.
- The treatment protocol is to be followed.
- The use of medicated mosquito nets at night is advised.

Ringworm

Purpose: To train the participants on identification and treatment options for ringworm in the absence of doctors.

Principle: The skin lesion looks like a ring, which is called a ringworm infection. It is not caused by a worm, though called ringworm. It is a fungal infection of the skin. There are different types of fungal infections. Skin fungal infections are not serious. Fungal infections of internal organs or the brain are catastrophic. Fungal infections can occur anywhere in the body but are common in sun-unexposed areas like the axilla, groins, body, and scalp; and tight clothing like the under-garment areas. They grow quickly in moist areas due to sweat (Axilla, Groin). They are named differently as per the area they infect. Scalp infection is called tinea capitis, groin infection is called taenia cruris, nail infection is called tinea unguium.

They spread from person to person by contact. They can also spread from animals; soil; by using the same contaminated objects like clothing, combs, towels, bedsheets etc.

Identification: Look at the symptoms -

- Presence of ring-like appearance (with elevated areas on skin) More reddish in colour.
- The affected area is less shiny than normal skin and is sometimes dry and scaly. It looks
 different than normal skin and causes itching.

Potential Treatment Options:

- Anti-fungal cream/lotion: Terbinafine/ Clotrimazole/ Betamethasone) two to three times a day. Washing hands is necessary after each application.
- Systemic drugs (oral or Injectable): Usually not necessary unless the infection does not improve in 4 weeks.
 - ◆ Tab./Cap. Fluconazole 150 mg once weekly for six to eight weeks. For fungal infection of nails it has to be used for several months.

Advice: The patient may be advised to regularly clean the body with soap, prevent tight dress use and maintain hygienic conditions.

Procedure: Lecture and / discussion

- The presence of a ring-like appearance (with elevated areas on the skin) is a symptom.
- It is preferrable to advise patients to maintain hygienic conditions.
- Washing hands after each application is necessary.

Helminthiasis

Purpose: To train the participants on identification and treatment options for helminthiasis without doctors. **Principle**: Helminth means a worm. The condition is called Helminthiasis or helminthic infestation when multiple worms are present in the body. Most of these worms are present as parasites in the GI tract. They live on the food we ingest or by sucking blood from our bodies.

The common worms are:

- Roundworms are round (cylindrical) and long look like an earthworm. They are 15 to 35 cm in length. They sometimes become clusters and obstruct the intestine. The patient will have repeated vomiting and pain abdomen. Rarely do these worms migrate (visit other areas like lungs, throat) and cause lung diseases with cough and breathing difficulty.
- Pinworm or threadworm They look like milky white thread pieces about 1 to 2 cm long. They come
 out of the anus at night to lay eggs outside in the peri-anal area. It causes itching around the anus,
 mainly in the night.
- Tapeworms look like a small tape flat of about ½ to 1 cm in width and variable in length. The full
 worm size is 2 to 25 meters long. Most of the time, small pieces of the worm break and pass in the
 stool.
- Hookworm they are tiny worms not visible to the eyes. They look like a hook in a microscope so-called hookworms. These hooks stick to the inner surface of the intestine and suck blood from the body. Though each worm sucks 0.2 to 0.5 ml of blood daily, being huge in number, they cause blood loss and anaemia.
- Guinea worm these worms come out of the skin are white and about 60 to 80 cm long. They cause blisters mainly in the skin of feet and come out of the body to lay eggs outside when the surrounding area is cool.

Mode of transmission:

- The feco-oral route transmits most worm infestations. By ingesting the eggs or larva, the worms grow
 and become parasites in the body. Food handlers and cooks, if infected, can transmit the eggs to
 others with their contaminated hands.
- Tapeworms are transmitted when uncooked or undercooked meat (beef and pork) or fish is eaten.
 They commonly stay in the intestine of pigs and cows. Nowadays, they are rare as most people take cooked food.
- Cyclops transmit Guinea worms. The Worm usually comes out of the skin and lays eggs in a cool medium (when people submerge their feet in the pond or well water. These eggs are ingested by

cyclops present in the water. This water containing infected cyclops is ingested – then the disease occurs.

Identification: Look at the symptoms -

- The patient reported moving worms in stool.
- Stool examination reveals the presence of worms or their eggs or the larva of the worms.

Potential Treatment Options:

- Most of these worms are killed by a single dose of Albendazole 400 mg. Albendazole is available in liquid or tablet form. The eggs of the worms may survive for a few days to weeks. Therefore, a second dose after a week is preferable for complete eradication. Alternatively, Mebendazole tablets of 100 mg may be taken twice a day for three days.
- Ivermectin can also be used. The dose is based on body weight. They are available as 3 mg tablets.
 - ♦ 30 to 50 Kg weight patients are given 3 tablets as a single dose
 - ♦ 50 to 75 kg 4 to 5 tablets as a single dose
 - ♦ 75 to 95 kg 5 to 6 tablets as a single dose
- The guinea worms do not respond to any drugs. They commonly form blisters around the feet before rupturing
 the skin. Once it ruptures the blister and is seen the worm is wrapped around a stick and pulled gently daily,
 little by little, and the whole worm is removed. It takes a few days to weeks to pull the full worm. Once broken
 there will be secondary infections.

Procedure: Lecture and / discussion

- All family members should take medicines simultaneously to prevent re-infection.
- Medicines should be taken for full course.

Scabies

Purpose: To train the participants on identification and treatment options for scabies in the absence of doctors.

Principle: Scabies is caused by a type of mite – just like lice of the scalp. These mites are smaller than the lice and are invisible to human eyes. These mites usually prefer to live in moist folded areas like finger webs, axillary folds, and the inner side of thighs or buttocks. They spread through the towels, bed sheets, and contact with family members.

Identification:

Look at the symptoms -

- Itching, often severe and usually worse at night
- Small blisters or bumps on the skin

In adults and older children, scabies is most often found:

- Between the fingers and toes
- In the armpits
- Around the waist
- Along the insides of the wrists
- On the inner elbows
- On the soles of the feet
- On the chest
- Around the nipples
- Around the genitals
- In the groin area
- On the buttocks

In infants and young children, common sites of scabies usually include the following:

- Fingers
- Face, scalp, and neck
- Palms of the hands
- Soles of the feet

Potential Treatment Options:

- Use of Antibiotics: If there is oozing of fluid or pus, it indicates infection. In such cases, the infection is to be treated first by antibiotics (any one regiment):
 - Ciprofloxacin 500 mg tablets twice daily for 7 days (adults);

- Amoxicillin 500 mg tablets three times a day for 7 days; or
- Cefadroxil 500 mg tablets twice daily for 7 days. Once the area becomes dry (without any discharge), the real medicine is to be applied. For children, lower doses are to be given.

Application of Lotions:

- Lotion Permethrin / Gamma Benzene Hexachloride kills the causative parasite. The lotion is to be applied when there is no discharge or pus from the area.
- Appling all over the body except the scalp & face (unless they are infected) at night. The next day, after the soap bath, washed clothes are to be used. This may be done for 2 days for all the family members. The medicine may be diluted to 50 % for children with water before use.
- No food should be taken using hands without cleaning; during the same period, clothes to be washed with hot water.

Other Potential Treatment Options:

• To reduce itching, the tablets cetirizine / levocetirizine /Chlorphenamine

Procedure: Lecture and / discussion

- All the family members need to be treated together. Otherwise, the chance of reinfection is high.
- On application of lotions, nothing should be taken orally without cleaning hands.
- The antibiotics full course is to be taken (unless the adverse reaction is contraindicated).

Upper Respiratory Tract Infection

Purpose: To train the participants on identification and treatment options for Upper Respiratory Tract Infections (URT) in the absence of doctors.

Principle: Respiratory system is concerned with breathing and oxygen exchange. The respiratory system is divided into two parts: URT (Upper Respiratory Tract) comprises of nose, mouth, throat (pharynx), voice box (larynx), and tonsils. Infection in these areas is called URTI. Other areas below the respiratory system's voice box are termed LRT (Lower Respiratory Tract). Viruses or bacteria cause URTI. Infection due to viruses or bacteria is difficult to diagnose without investigations. Most viral infections subside by themselves in 7 to 10 days, but bacterial infections are to be treated with antibiotics. Some infections are very serious, like Diphtheria (rare now); COVID-19 (Corona Virus Disease); Bird Flu disease (Avian influenza). Occasionally the infection can spread to other areas:

- Ear (Otitis Media),
- Sinuses (Sinusitis)
- Brain (Encephalitis)
- Meninges (Meningitis)
- Other parts of the respiratory system (bronchitis/pneumonia/lung abscess)

Respiratory infections occur due to contact with infected people. When an infected person coughs, sneezes, or talks; the virus or bacteria comes out of his / her mouth and nose and enters healthy persons nearby through inhalation. Sometimes by touch and contact also, they may spread.

The following are suggested to avoid respiratory tract infections: Wear masks; Wash hands with soap and water; Stand at a distance; Keep the patient's mouth away from your mouth and nose.

Identification: Look at the symptoms -

- Running nose
- Irritation of eyes with tears & red eyes
- Gritty feeling of the eyes
- Throat pain
- Voice change
- Dry cough or with expectorations
- Fever
- Body pain
- Difficulty in swallowing

Potential Treatment Options:

General Treatment:

- Paracetamol 500 mg tablets three to four times a day
- Cetirizine 10 mg or levocetirizine 5 mg once in the night
- CPM (Chlor-pheniramine-maleate) 4 mg thrice daily
- Theophylline 69 mg + etophylin 231 mg tablets thrice daily

Use of Antibiotics:

- Ciprofloxacin or Cefadroxil 500 mg tablets twice daily for 7 days; or
- Azithromycin 500 mg tablets daily once for 5 days; or
- Cefixime 250 mg tablets twice daily for 7 days; or
- Amoxycillin + Clavulanic Acid (500 mg + 125 mg) twice daily for 7 days

When to Refer to a doctor:

- The patients with breathing difficulty sometimes with sounds (strider and wheeze).
- Breathing rate (Respiratory Rate) increases to more than 25 per minute (normal 14 -18).
- The oxygen saturation is less than 90 % (normal 95 to 100 %) which can be measured by pulse-oximeter.
- Heart rate may be very high.
- Bluish discoloration of the tongue, nails, palms, or body (Cyanosis)
- Low blood pressure (Less than 100/60)
- If the patient coughs out blood-stained sputum or blood
- Continuous high-grade fever (more than 102 °F)

Procedure: Lecture and / discussion

- The antibiotics should be used for the full course.
- Referring to the doctor at the appropriate time is crucial.

Acid Peptic Disease

Purpose: To train the participants on identification and treatment options for Acid Peptic Disease (APD) in the absence of doctors.

Principle: Acid Peptic Disease is a disorder of the stomach or duodenum (part of the digestive system). The stomach produces acid and enzymes. They break down the food we eat into simple substances (smaller particles) for absorption and kill the bacteria, viruses, worms, and eggs that go with food. The inner side of the stomach has a mucous layer; that protects the body from acid. Acid Peptic Disease occurs when acid in the digestive tract eats away (damages) the inner surface of the stomach or small intestine. It may produce ulcers or bleeding. Occasionally it may cause a hole (Perforation), which requires immediate surgery.

Causes of APD:

- Alcohol intake
- Drugs (Aspirin, Ibuprofen, Steroids, or other Pain killers like NSAIDs)
- Spicy foods (chilies, acidic foods like tamarind or lemon etc.),
- Fasting (food neutralises acid)
- Smoking
- Stress
- Introduction of Ryle's tube

APD is known by different names—Gastritis (erosion or inflammation); Peptic Ulcer; Dyspepsia; Stomach ulcer; Duodenal ulcer.

For Identification: Look at the symptoms –

- Pain in the upper abdomen
- Profuse blood vomiting (Hematemesis)
- Black coloured stool (Malena)
- Frequent vomiting
- Disturbs Sleep
- Bloating sensation in the abdomen
- Chest pain
- Heartburn
- Swallowing difficulty
- Weight loss

Anaemia

Potential Treatment options:

General treatment:

Regular, timely food (every 4th hour)

• Smoking, Tobacco chewing, Alcohol, and Spicy foods are to be stopped.

NSAIDs, painkiller drugs, and steroids to be stopped

 Tablet Omeprazole 20 mg or Pantoprazole 40 mg or Rabeprazole 20 mg once daily before food orally

Tablet Ranitidine 150 mg or Famotidine 20 mg twice daily before food

Medicines that protect the tissue damage, such as sucralfate

Misoprostol, a medicine that prevents APD in people who take NSAIDs regularly

 Domperidone 30 mg or Ondansetron 4 mg two or three times a day if vomiting or nausea occur

• Liquid Antacids (combination of magnesium hydroxide, aluminium hydroxide, magnesium aluminium silicate, and simethicone) 30 ml three to six times a day – they neutralise the acid

 Calcium bicarbonate (eatable soda) pinch with water – neutralises acid – excess use is not advisable

Injectable Pantoprazole 40 mg IV may be given once or twice a day (when oral drugs are not able to take). It is always advisable to dilute the injectable drug with 100 ml of normal saline).
 To be given only IV – not by any other route

Injectable Ranitidine 50 mg diluted with 100 ml of normal saline IV three to four times daily.
 Ranitidine injection can also be given IM.

When to Refer to a doctor:

Blood vomiting

Black coloured tarry stools

Frequent vomiting with dehydration or no food intake

• Persisting heart rate of more than 100 per minute

• Low blood pressure (less than 90/60)

• Rigid (hard) abdomen with pain on palpation (tender)

• Anaemia (Hb less than 9 %)

Procedure: Lecture and discussion

Key Points

- Patients should take food every four hours to avoid staying long on an empty stomach.
- These medicines should not be taken for a long time without medical advice.

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