



3/25/2019

Training manual for Clinic Supervisors

Village Tract Health Center Level



HSS

CLINICAL CONSULTANT, MAE TAO CLINIC

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PART I: HEALTH ORGANIZATION DEVELOPMENT

- Leadership and communication skill
- Supportive Supervision and Conflict Management

See on [HOD-Trainer-Manual-03-12-2018 \(1\).pdf](#)

- Medical Ethic

PART II: GENERAL AND SYSTEMIC APPROACH

GENERAL APPROACH TO PATIENTS

When you receive the patient in the consultation room, take the following steps:

1. Greet the patient.
2. Make the patient comfortable: invite the patient to sit down, or lie down if they are very sick.
3. Give the patient privacy:
 - Make sure nobody else can overhear or see the patient during the examination.
 - If possible, there should be no more than one patient at the same time in the consultation room.
 - One medic should carry out the consultation in a private room/ area.
 - Take special (privacy) care when doing a gynecological or genital examination.
4. Check for DANGER SIGNS (see below). If the patient shows any danger signs then provide urgent and immediate treatment, consult the doctor and admit to IPD or refer to hospital.
5. Take a history and look at their record book (lemma):
 - Main symptoms
 - Ask about any other symptoms
 - Medical problems – including any recent illnesses and treatment (especially important for antibiotics)
 - Medication history – do they take medications including traditional medicine
 - Family history – e.g. if has cough and suspect TB ask if anyone else in the family has been coughing
 - Smoking/alcohol – at same time advise them to stop/take less
6. Examine the patient thoroughly including vital signs (BP, PR, RR, temperature, SpO₂) and weight.
7. Do any investigations that you think are appropriate e.g. CBC, malaria screen, biochemistry etc.
8. Make a list of possible diagnosis and select the most likely (sometimes there is more than one diagnosis).
9. Classify the patient as to whether they need:
 - Referral to hospital (DR-ABCDE first)
 - IPD admission (emergency room or IPD)
 - OPD treatment
10. Discuss with the doctor if the patient is unwell, the condition and treatment are complicated or if you are uncertain.
11. Give appropriate treatment.
12. Explain to the patient (or the family) what is wrong with him/her and the treatment you are going to give. If you do not know the diagnosis, tell the patient you do not know (be honest), then explain what can be done to find out.
13. If the patient needs admission, but they need to go home, explain to them why it is important for them to stay at the clinic e.g. 'because you are very unwell and you need strong antibiotics into the vein.' If they still want to go home then give them oral treatment if possible, and explain the danger signs to them and that they should come back to the clinic immediately if they have any. Write what you said to the patient in the lemma and that they have left the clinic against your advice.
14. Give preventative (see below) or screening care e.g. for children < 5 years old, check their immunization status and for signs of malnutrition or anemia.

15. If the patient is to receive OPD medical treatment and advice:

- Give them practical instructions on how to take the treatment at home (if they understand well they will be able to explain to you how they will take their medication).
- Give them the first dose of any oral drugs in the clinic.
- Ask the patient to wait for one hour before leaving the clinic in order to make sure the patient does not vomit the treatment.
- Give advice on foods and fluids during illness, and hygiene (wash hands).
- Consider whether supervised treatment is needed.

16. Give follow-up care (see below). Ask the patient to return for a follow-up OPD visit, if needed, and give a specific date. Also teach the patient and/or the family how to recognize danger signs* (emphasize the specific danger signs for the disease). If the patient develops danger signs, he/she should return to the clinic immediately.

E.g. if you diagnose a child with common cold or bronchitis, give follow-up care health education to the family. Tell the parents to return to the clinic immediately if the child develops difficulty breathing or fast breathing.

17. Write down briefly the patient's complaints, examination (including vital signs/weight), and laboratory findings in the lemma. Then write down clearly the diagnosis and the treatment in the lemma. Write if any preventative care/ screening given.

18. When the patient comes back for the OPD follow-up visit, ask if your treatment has been effective and ask if the patient feels better. Continue or change treatment if necessary. Assess the patient for any new problems.

SYSTEM BASED CHECKLISTS

CARDIOVASCULAR HISTORY TAKING

Trainee's Name- -----

Ward -----

Roll number -----

Date -----

No	Activities	Assessment Yes/No	Marking Score	Given Score	Comments
1.	Preparation <ul style="list-style-type: none"> ▪ Introduction ▪ Consent and Explanation 		1 1		
2.	Patient's Particular <ul style="list-style-type: none"> ▪ Name ▪ Age ▪ Sex ▪ Occupation ▪ Registration No ▪ Address 		1 1 1 1 1 1		
3.	Presenting Complaint <ul style="list-style-type: none"> ▪ Chest pain ▪ Orthopnoea ▪ Paroxysmal nocturnal dyspnoea (PND) ▪ Ankle swelling ▪ Palpitations ▪ Alternative Dyspnoea ▪ Painful Joints 		1 1 1 1 1 1 1		

4.	History of Present Complaint Chest Pain <ul style="list-style-type: none"> ▪ Site (Where) 1 ▪ Onset (Gradual, Sudden) 1 ▪ Character (harp / dull ache / burning) 1 ▪ Radiation 1 ▪ Association (All symptoms associated with pain) 1 ▪ Time course (Worsening, Improving, Fluctuation) 1 ▪ Exacerbating/ Relieving Factors 1 ▪ Severity 1 High Blood Pressure <ul style="list-style-type: none"> ▪ The initial visit 1 ▪ How long 1 ▪ Detail history of Life style such as diet, exercise, 1 ▪ Regular taking drugs 1 Painful Joints <ul style="list-style-type: none"> ▪ Large Joints 1 ▪ Small Joints 1 ▪ Migratory Nature 1 				
5.	Systemic Inquiry 1. Respiratory System <ul style="list-style-type: none"> ▪ Dyspnea 1 ▪ Wheeze 1 ▪ Cough 1 ▪ Sputum 1 ▪ Hemoptysis 1 ▪ Chest pain 1 2. Gastrointestinal System <ul style="list-style-type: none"> ▪ Abdominal pain 1 ▪ Nausea 1 ▪ Loss of appetite 1 ▪ Vomiting 1 ▪ Hematemesis 1 ▪ Bowel habit 1 ▪ Bleeding per rectum 1 ▪ Melena 1 3. Musculoskeletal System <ul style="list-style-type: none"> ▪ Myalgia 1 ▪ Arthralgia 1 ▪ Back pain 1 ▪ Joint swelling 1 4. Nervous System <ul style="list-style-type: none"> ▪ Headaches 1 ▪ Visual disturbances 1 ▪ Hearing 1 ▪ Tinnitus 1 ▪ Photophobia 1 ▪ Fits 1 				

	<ul style="list-style-type: none"> ▪ Unsteady gait ▪ Weakness ▪ Paralysis 		1		
	<ul style="list-style-type: none"> ▪ Frequency urine ▪ Nocturia ▪ Pyuria ▪ Oliguria ▪ Polydipsia ▪ Polyuria ▪ Loin pain ▪ Haematuria 		1		
	<ul style="list-style-type: none"> ▪ Menarche ▪ Menopause ▪ Menstrual cycle ▪ Dysmenorrhea ▪ Intermenstrual bleeding ▪ Post coital bleeding 		1		
	<ul style="list-style-type: none"> ▪ Insomnia ▪ Stress ▪ Anxiety 		1		
	<ul style="list-style-type: none"> ▪ Insomnia ▪ Stress ▪ Anxiety 		1		
	<ul style="list-style-type: none"> ▪ Anxiety 		1		
6.	Past Medical History <ul style="list-style-type: none"> ▪ Hypertension ▪ Heart Diseases ▪ Diabetes Mellitus ▪ Stroke ▪ Asthma ▪ Tuberculosis ▪ Any operation 		1		
	<ul style="list-style-type: none"> ▪ Hypertension ▪ Heart Diseases ▪ Diabetes Mellitus ▪ Stroke ▪ Asthma ▪ Tuberculosis ▪ Any operation 		1		
	<ul style="list-style-type: none"> ▪ Diabetes Mellitus ▪ Stroke ▪ Asthma ▪ Tuberculosis ▪ Any operation 		1		
	<ul style="list-style-type: none"> ▪ Stroke ▪ Asthma ▪ Tuberculosis ▪ Any operation 		1		
	<ul style="list-style-type: none"> ▪ Asthma ▪ Tuberculosis ▪ Any operation 		1		
	<ul style="list-style-type: none"> ▪ Tuberculosis ▪ Any operation 		1		
	<ul style="list-style-type: none"> ▪ Any operation 		1		
7.	Family History <ul style="list-style-type: none"> ▪ Family Number ▪ Some Genetic Related Diseases (Hypertension, Diabetes Mellitus, Cancer) 		1		
	<ul style="list-style-type: none"> ▪ Family Number ▪ Some Genetic Related Diseases (Hypertension, Diabetes Mellitus, Cancer) 		1		
	<ul style="list-style-type: none"> ▪ Some Genetic Related Diseases (Hypertension, Diabetes Mellitus, Cancer) 		1		
8.	Drug History <ul style="list-style-type: none"> ▪ Allergic to a particular drug ▪ Regular taking drugs 		1		
	<ul style="list-style-type: none"> ▪ Allergic to a particular drug ▪ Regular taking drugs 		1		
	<ul style="list-style-type: none"> ▪ Regular taking drugs 		1		
9.	Social History <ul style="list-style-type: none"> ▪ Accommodation(housing) ▪ Marital Status ▪ Job ▪ Diet ▪ Smoking ▪ Drinking (Alcohol) ▪ Betel Chewing 		1		
	<ul style="list-style-type: none"> ▪ Accommodation(housing) ▪ Marital Status ▪ Job ▪ Diet ▪ Smoking ▪ Drinking (Alcohol) ▪ Betel Chewing 		1		
	<ul style="list-style-type: none"> ▪ Marital Status ▪ Job ▪ Diet ▪ Smoking ▪ Drinking (Alcohol) ▪ Betel Chewing 		1		
	<ul style="list-style-type: none"> ▪ Job ▪ Diet ▪ Smoking ▪ Drinking (Alcohol) ▪ Betel Chewing 		1		
	<ul style="list-style-type: none"> ▪ Diet ▪ Smoking ▪ Drinking (Alcohol) ▪ Betel Chewing 		1		
	<ul style="list-style-type: none"> ▪ Smoking ▪ Drinking (Alcohol) ▪ Betel Chewing 		1		
	<ul style="list-style-type: none"> ▪ Drinking (Alcohol) ▪ Betel Chewing 		1		
	<ul style="list-style-type: none"> ▪ Betel Chewing 		1		
	Total Score				

Unsatisfactory ≤ 50

Satisfactory= 51 - 70

Good= 71 – 91

Trainee's Comment

Supervisor's Comment

Supervisor's

Trainee's

Signature -----

Signature -----

Name -----

Name -----

Date -----

Date -----

CARDIOVASCULAR EXAMINATION

Trainee's Name-----

Ward -----

Roll number -----

Date -----

No	Activities	Assessment Yes/No	Marking Score	Given Score	Comments
1.	<u>Preparation</u> <ul style="list-style-type: none"> ▪ Introduction ▪ Consent and Explanation ▪ Washing your hands 		1 1 1		
2.	<u>Vital Signs</u> <ul style="list-style-type: none"> ▪ BP----- mmHg ▪ PR----- <ul style="list-style-type: none"> • Rate • Rhythm • Volume (low, Moderate, High) • Tension (Normal, Abnormal) • Character (Normal, Bounding, Collapsing) • Condition of Arterial Wall (Normal, Thickening) • Equality in both sides • Radio-Femoral Delay ▪ RR----- times/min ▪ T----- C (or) F ▪ Body weight 		1 1 1 1 1 1 1 1 1 1 1 1		
3.	<u>General Examination</u> <ul style="list-style-type: none"> ▪ Ask the patient tenderness anywhere before examination. ▪ Body weight <ul style="list-style-type: none"> ▪ Obese ▪ Average ▪ Underweight ▪ Wasting/(Cachexic) ▪ Conscious level <ul style="list-style-type: none"> ▪ Alert ▪ Confuse 		1 1 1 1 1 1		

	<ul style="list-style-type: none"> ▪ Unconscious ▪ Signs of Distress <ul style="list-style-type: none"> ▪ Dyspnea ▪ Orthopnea ▪ Wheeze ▪ Stridor ▪ Hydration Status <ul style="list-style-type: none"> ▪ Sunken eyes (thirsty/tear absent...) ▪ Mucus membrane dryness <u>Head, Neck & Chest</u> <ul style="list-style-type: none"> ▪ Central cyanosis ▪ Anemia ▪ Jaundice ▪ Eye Problem (Redness/Tearing/Discharge/Injury.....) ▪ Puffy face ▪ Exophthalmia ▪ Nasal bleeding, Gum bleeding ▪ Mouth Ulcer ▪ Dental Hygiene ▪ Tonsil Enlargement ▪ Neck Swelling ▪ Lymph Nodes Enlargement (Cervical, Axilla, Inguinal) ▪ JVP ▪ Carotid Pulsation ▪ Skin pigmentation ▪ Gynecomastia <u>Upper Limbs</u> <ul style="list-style-type: none"> ▪ Peripheral cyanosis ▪ Capillary Refilling Time ▪ Clubbing ▪ Tar Staining ▪ Leukonychia (white nails or milk spots,) ▪ Koilonychia (Spoonng) ▪ Palmar erythema ▪ Palmar pallor (Anemia) ▪ Spider- Naevi ▪ Flapping tremor ▪ Tattoo marks, injection marks ▪ Osler’s node (painful, red, raised lesions found on the hands and feet) ▪ Splinter hemorrhage <u>Lower Limbs</u> <ul style="list-style-type: none"> ▪ Edema (Pitting or Non-Pitting) ▪ Limbs (Amputation/ Deformity) 								1		
									1		
									1		
									1		
									1		
									1		
									1		
									1		
									1		
									1		
									1		
									1		
									1		
4.	<u>Local Examination (Inspection)</u>										
	▪ Chest Shape										
	1. Normal Barrel Shape								1		
	2. Deformity								1		

	<ul style="list-style-type: none"> ▪ Surgical Scar ▪ Visible Pulsation ▪ Apex Beat 		1		
5.	<u>Local Examination (Palpation)</u> <ul style="list-style-type: none"> ▪ Localization of Apex Beat ▪ Thrill ▪ Heaving 		1		
6.	<u>Local Examination (Auscultation)</u> <ul style="list-style-type: none"> ▪ <u>1st and 2nd heart sound</u> <ul style="list-style-type: none"> ▪ Mitral Area ▪ Tricuspid Area ▪ Pulmonary Area ▪ Aortic Area ▪ Regular (Lub Dub) ▪ Irregular (Tachy/Brady/Abnormal heart sound...) ▪ <u>Features of heart failure</u> <ul style="list-style-type: none"> ▪ Basal crepitation ▪ Ascites ▪ Hepatomegaly ▪ Splenomegaly ▪ Dependent Pitting Edema (Ankle and sacrum) 		1		
7.	Washing Hand		1		
	Total Score				

Unsatisfactory-<50

Satisfactory= 51-65

Good = 66-81

Trainee's Comment

Supervisor's Comment

Supervisor's

Trainee's

Signature -----

Signature -----

Name -----

Name -----

Date -----

Date -----

RESPIRATION SYSTEM HISTORY TAKING

Trainee's Name- -----

Ward -----

Roll number -----

Date -----

No	Activities	Assessment Yes/No	Marking Score	Given Score	Comments
1	Preparation <ul style="list-style-type: none"> ▪ Introduction ▪ Consent and Explanation 		1 1		
2	Patient's Particular <ul style="list-style-type: none"> ▪ Name ▪ Age ▪ Sex ▪ Occupation ▪ Registration No ▪ Address 		1 1 1 1 1 1		
3	Presenting Complaint <ul style="list-style-type: none"> ▪ Dyspnea ▪ Wheeze ▪ Cough ▪ Sputum ▪ Hemoptysis ▪ Fever ▪ Chest pain 		1 1 1 1 1 1 1		
4	History of Present Complaint <p>Dyspnea</p> <ul style="list-style-type: none"> ▪ Severity (Exertion, at rest) ▪ Trigger <p>Wheeze</p> <ul style="list-style-type: none"> ▪ Time of onset (Day, Night) ▪ Trigger <p>Cough</p> <ul style="list-style-type: none"> ▪ Productive ▪ Dry ▪ Duration <p>Sputum</p> <ul style="list-style-type: none"> ▪ Amount ▪ Color (Whit, Yellow, Red,) ▪ Odor (bad smell) <p>Hemoptysis</p> <ul style="list-style-type: none"> ▪ Amount ▪ Color (Red,) ▪ Odor (bad smell) ▪ Blood Stained ▪ Blood clot <p>Fever</p> <ul style="list-style-type: none"> ▪ Grade (Low, High) ▪ Pattern (Continued, Intermittent, Remittent) 		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		

	<ul style="list-style-type: none"> ▪ Constitutional symptoms of TB (Weight Loss, Loss of Appetite, Night Sweat) <p>Chest Pain</p> <ul style="list-style-type: none"> ▪ Site (Where) ▪ Onset (Gradual, Sudden) ▪ Character (sharp / dull ache / burning) ▪ Radiation ▪ Association (All symptoms associated with pain) ▪ Time course (Worsening, Improving, Fluctuation) ▪ Exacerbating/ Relieving Fact ▪ Severity 		1		
5	<p>Systemic Inquiry</p> <p>Cardio Vascular System</p> <ul style="list-style-type: none"> ▪ Chest pain ▪ Orthopnoea ▪ Paroxysmal nocturnal dyspnoea (PND) ▪ Ankle swelling ▪ Palpitations ▪ Alternative Dyspnoea <p>Gastrointestinal System</p> <ul style="list-style-type: none"> ▪ Abdominal pain ▪ Nausea ▪ Loss of appetite ▪ Vomiting ▪ Hematemesis ▪ Bowel habit ▪ Bleeding per rectum ▪ Melena <p>Musculoskeletal System</p> <ul style="list-style-type: none"> ▪ Myalgia ▪ Arthralgia ▪ Back pain ▪ Joint swelling <p>Nervous System</p> <ul style="list-style-type: none"> ▪ Headaches ▪ Eye Problem (Redness/Tearing/Discharge /Injury.....) ▪ Hearing ▪ Tinnitus ▪ Dizziness ▪ Fits ▪ Unsteady gait ▪ Weakness ▪ Paralysis <p>Renal System</p>		1		

	<ul style="list-style-type: none"> ▪ Dysuria ▪ Frequency ▪ Nocturia ▪ Pyouria ▪ Oliguria ▪ Polydipsia ▪ Polyuria ▪ Loin pain ▪ Haematuria <p>Reproductive System</p> <ul style="list-style-type: none"> ▪ Menarche ▪ Menopause ▪ Menstrual cycle ▪ Dysmenorrhea ▪ Intermenstrual bleeding ▪ Post coital bleeding ▪ Dyspareunia <p>Mental Status</p> <ul style="list-style-type: none"> ▪ Insomnia ▪ Stress ▪ Anxiety 		<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>		
6	<p>Past Medical History</p> <ul style="list-style-type: none"> ▪ Hypertension ▪ Heart Diseases ▪ Diabetes Mellitus ▪ Stroke ▪ Asthma ▪ Tuberculosis ▪ Lung Cancer ▪ Any operation 		<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>		
7	<p>Family History</p> <ul style="list-style-type: none"> ▪ TB Contact ▪ Family Number ▪ Some Genetic Related Diseases 		<p>1</p> <p>1</p> <p>1</p>		
8	<p>Drug History</p> <ul style="list-style-type: none"> ▪ Allergic to a particular drug ▪ Regular taking drugs 		<p>1</p> <p>1</p>		
9	<p>Social History</p> <ul style="list-style-type: none"> ▪ Accommodation(housing) ▪ Job ▪ Marital Status ▪ Diet ▪ Smoking ▪ Drinking ▪ Betel Chewing 		<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>		
	Total Score				

Unsatisfactory ≤ 81

Satisfactory= 82 - 95

Good= 96 -105

Trainee's Comment

Supervisor's Comment

Supervisor's

Trainee's

Signature -----

Signature -----

Name -----

Name -----

Date -----

Date -----

RESPIRATORY SYSTEM EXAMINATION

Trainee's Name- -----

Ward -----

Roll number -----

Date -----

No.	Activities	Assessment Yes/No	Marking Score	Given Score	Comments
1.	<u>Preparation</u> <ul style="list-style-type: none"> ▪ Introduction ▪ Consent and Explanation ▪ Washing your hands 		1 1 1		
2.	<u>Vital Signs</u> <ul style="list-style-type: none"> ▪ BP----- mmHg ▪ PR----- beat/min ▪ RR----- times/min ▪ T----- C (or) F ▪ Body weight 		1 1 1 1 1		
3.	<u>General Examination</u> <ul style="list-style-type: none"> ▪ Ask the patient tenderness anywhere before examination. ▪ <u>Body weight</u> <ul style="list-style-type: none"> ▪ Obese ▪ Average ▪ Underweight ▪ Wasting/ Cachexic ▪ <u>Conscious level</u> <ul style="list-style-type: none"> ▪ Alert ▪ Confuse ▪ Unconscious ▪ <u>Signs of Distress</u> <ul style="list-style-type: none"> ▪ Dyspnea ▪ Orthopnea ▪ Wheeze ▪ Stridor ▪ <u>Hydration Status</u> <ul style="list-style-type: none"> ▪ Sunken eyes (thirsty, tear absent...) ▪ Mucus membrane dryness ▪ <u>Head, Neck & Chest</u> <ul style="list-style-type: none"> ▪ Central cyanosis 		1 1 1 1 1 1 1 1 1 1 1		

	<ul style="list-style-type: none"> ▪ Anemia ▪ Jaundice ▪ Eye problem (redness, tearing, discharge, injury) ▪ Puffy face ▪ Exophthalmia ▪ Nasal bleeding, Gum bleeding ▪ Mouth Ulcer ▪ Dental Hygiene ▪ Tonsil enlargement ▪ Neck Swelling ▪ Lymph Nodes Enlargement (Cervical, Axilla, Inguinal) ▪ JVP ▪ Skin pigmentation ▪ Gynecomastia ▪ Upper Limbs <ul style="list-style-type: none"> ▪ Peripheral cyanosis ▪ Capillary Refill Time ▪ Clubbing ▪ Tar Staining ▪ Leukonychia (white nail or milk Spots) ▪ Koilonychia (spooning) ▪ Palmar erythema ▪ Palmar Pallor (Anemia) ▪ Spider- Naevi ▪ Flapping tremor ▪ Tattoo marks, injection marks ▪ Lower Limbs <ul style="list-style-type: none"> ▪ Edema (Pitting or Non-Pitting) ▪ Limbs (Amputation/ Deformity) 		<p>1 1</p>		
4.	Local Examination (Inspection) <ul style="list-style-type: none"> ▪ Chest Shape ▪ Movement <ol style="list-style-type: none"> 1. Symmetrical 2. Asymmetrical 3. Deformity ▪ Scar ▪ Visible Veins 		<p>1 1 1 1 1 1</p>		
5.	Local Examination (Palpation) <ul style="list-style-type: none"> ▪ Position of Trachea <ol style="list-style-type: none"> 1. Normal 2. Left shift 3. Right Shift ▪ Expansion of Chest <ul style="list-style-type: none"> ▪ Fully ▪ Restricted (Tightness) 		<p>1 1 1 1 1</p>		
6.	Local Examination (Percussion) <ul style="list-style-type: none"> ▪ Resonance <ol style="list-style-type: none"> 1. Normal 2. Hyper resonance 		<p>1 1</p>		

	3. Dullness		1		
	4. Stony Dullness		1		
	▪ Equal Resonance on both lungs area		1		
7.	Local Examination (Auscultation)				
	▪ Breath Sound				
	1. Vesicular		1		
	2. Bronchial		1		
	▪ Vocal fremitus		1		
	▪ Vocal Resonance		1		
	▪ Rhonchi		1		
	▪ Added Sounds (crept/wheeze/low air /pleura rub.....)		1		
8.	Washing hand		1		
	Total Score				

Unsatisfactory = < 37

Satisfactory= 38- 50

Good = 51 – 67

Trainee's Comment

Supervisor's Comment

Supervisor's

Trainee's

Signature -----

Signature -----

Name -----

Name -----

Date -----

Date -----

GASTROINTESTINAL SYSTEM HISTORY TAKING

Trainee's Name- -----

Ward -----

Roll number -----

Date -----

No	Activities	Assessment Yes/No	Marking Score	Given Score	Comments
1.	Preparation				
	▪ Introduction		1		
	▪ Consent and Explanation		1		
2.	Patient's Particular				
	▪ Name		1		
	▪ Age		1		
	▪ Sex		1		
	▪ Occupation		1		
	▪ Registration No		1		
	▪ Address		1		
3.	Presenting Complaint				
	▪ Abdominal pain		1		
	▪ Nausea		1		
	▪ Loss of appetite		1		
	▪ Vomiting		1		
	▪ Hematemesis		1		
	▪ Bowel habit		1		
	▪ Bleeding per rectum		1		
	▪ Melena		1		
	▪ Mass in Abdomen		1		

4.	History of Present Complaint Abdominal pain <ul style="list-style-type: none"> ▪ Site (Where) 1 ▪ Onset (Gradual, Sudden) 1 ▪ Character (sharp, dull ache, colicky, burning) 1 ▪ Radiation 1 ▪ Association (All symptoms associated with pain) 1 ▪ Time course (Worsening, Improving, Fluctuation) 1 ▪ Exacerbating/ Relieving Factors 1 ▪ Severity 1 Vomiting <ul style="list-style-type: none"> ▪ Amount 1 ▪ Color 1 ▪ Odor 1 ▪ Taste (Sour/Bitter...) 1 Bowel Habit <ul style="list-style-type: none"> ▪ Normal 1 ▪ Change (Diarrhea, Constipation) 1 Bleeding Per Rectum <ul style="list-style-type: none"> ▪ Amount 1 ▪ Color 1 ▪ Odor 1 Melena <ul style="list-style-type: none"> ▪ Amount 1 ▪ Previous episodes 1 Mass in Abdomen <ul style="list-style-type: none"> ▪ Onset 1 ▪ Single or Multiple 1 ▪ Rate of Growth (Slow, Rapid) 1 ▪ Association factors (fever/Wt. loss/ LOA) 1 				
5.	Systemic Inquiry Cardio Vascular System <ul style="list-style-type: none"> ▪ Chest pain 1 ▪ Orthopnoea 1 ▪ Paroxysmal nocturnal dyspnoea 1 ▪ Ankle swelling 1 ▪ Palpitations 1 ▪ Alternative Dyspnoea 1 Respiratory System <ul style="list-style-type: none"> ▪ Dyspnea 1 ▪ Wheeze 1 ▪ Cough 1 ▪ Sputum 1 ▪ Hemoptysis 1 ▪ Chest pain 1 Musculoskeletal System <ul style="list-style-type: none"> ▪ Myalgia 1 				

	<ul style="list-style-type: none"> ▪ Arthralgia ▪ Back pain ▪ Joint swelling <p>Nervous System</p> <ul style="list-style-type: none"> ▪ Headaches ▪ Eye problem (redness, tearing, discharge, injury....) ▪ Hearing ▪ Tinnitus ▪ Dizziness ▪ Fits ▪ Unsteady gait ▪ Weakness ▪ Paralysis <p>Renal System</p> <ul style="list-style-type: none"> ▪ Dysuria <ul style="list-style-type: none"> ▪ Frequency urine ▪ Nocturia ▪ Pyuria ▪ Oliguria ▪ Polydipsia ▪ Polyuria ▪ Loin pain ▪ Haematuria <p>Reproductive System</p> <ul style="list-style-type: none"> ▪ LMP (Menstrual cycle) ▪ Menarche ▪ Menopause ▪ Menstrual cycle ▪ Dysmenorrhea ▪ Intermenstrual bleeding ▪ Post coital bleeding <p>Mental Status</p> <ul style="list-style-type: none"> ▪ Insomnia ▪ Stress ▪ Anxiety 		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
6.	<p>Past Medical History</p> <ul style="list-style-type: none"> ▪ Previous of GI problem (Including diagnosis) ▪ Hypertension ▪ Heart Diseases ▪ Diabetes Mellitus ▪ Stroke ▪ Asthma ▪ Tuberculosis ▪ Any operation 		1 1 1 1 1 1 1 1 1		
7.	<p>Family History</p> <ul style="list-style-type: none"> ▪ Family Number ▪ GI Cancer ▪ Some Genetic Related Diseases 		1 1 1		

8.	Drug History <ul style="list-style-type: none"> ▪ Allergic to a particular drug ▪ Regular taking drugs (Name of Medication) 		1 1		
9.	Social History <ul style="list-style-type: none"> ▪ Accommodation(housing) ▪ Job ▪ Marital Status ▪ Diet ▪ Smoking ▪ Drinking ▪ Betel Chewing 		1 1 1 1 1 1 1		
Total Score					

Unsatisfactory ≤ 50

Satisfactory= 51 - 85

Good= 86-104

Trainee's Comment

Supervisor's Comment

Supervisor's

Trainee's

Signature -----

Signature -----

Name -----

Name -----

Date -----

Date -----

ABDOMINAL EXAMINATION

Trainee's Name- -----

Ward -----

Roll number -----

Date -----

No.	Activities	Assessment Yes/No	Marking Score	Given Score	Comments
1.	Preparation <ul style="list-style-type: none"> ▪ Introduction ▪ Consent and Explanation ▪ Washing your hands 		1 1 1		
2.	Vital Signs <ul style="list-style-type: none"> ▪ BP----- mmHg ▪ PR----- beat/min ▪ RR----- times/min ▪ T----- C (or) F 		1 1 1 1		
3.	General Examination <ul style="list-style-type: none"> ▪ Ask the patient tenderness anywhere before examination. Body weight <ul style="list-style-type: none"> ▪ Obese ▪ Average ▪ Underweight ▪ Wasting/ Cachexic Conscious level <ul style="list-style-type: none"> ▪ Alert ▪ Confuse 		1 1 1 1 1 1		

	<ul style="list-style-type: none"> ▪ Unconscious 		1		
	Signs of Distress				
	<ul style="list-style-type: none"> ▪ Dyspnea ▪ Orthopnea ▪ Wheeze ▪ Stridor 		1 1 1 1		
	Hydration Status				
	<ul style="list-style-type: none"> ▪ Sunken eyes (thirsty, tear absent...) ▪ Mucus membrane dryness 		1 1		
	Head, Neck & Chest				
	<ul style="list-style-type: none"> ▪ Central cyanosis ▪ Anemia ▪ Jaundice ▪ Eye problem (redness, tearing, discharge, injury) ▪ Puffy face ▪ Exophthalmia ▪ Nasal bleeding, Gum bleeding ▪ Mouth Ulcer ▪ Dental Hygiene ▪ Tonsil enlargement ▪ Neck Swelling ▪ Lymph Nodes Enlargement (Cervical, Axilla, Inguinal) ▪ JVP ▪ Skin pigmentation ▪ Gynecomastia 		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
	Upper Limbs				
	<ul style="list-style-type: none"> ▪ Peripheral cyanosis ▪ Clubbing ▪ Tar Staining ▪ Leukonychia ▪ Koilonychia ▪ Palmar erythema ▪ Palmar Crease (Anemia) ▪ Spider- Naevi ▪ Flapping tremor ▪ Tattoo marks, injection marks 		1 1 1 1 1 1 1 1 1 1		
	Lower Limbs				
	<ul style="list-style-type: none"> ▪ Edema (Pitting or Non-Pitting) ▪ Limbs (Amputation/ Deformity) 		1 1		
4.	Local Examination (Inspection)				
	<ul style="list-style-type: none"> ▪ Shape ▪ Normal ▪ Flat ▪ Protruded (Extend beyond or above a surface) ▪ Distension ▪ Move with respiration ▪ Umbilicus ▪ Visible mass 		1 1 1 1 1 1 1 1		

	<ul style="list-style-type: none"> ▪ Scar ▪ Dilated veins ▪ Spider Naive ▪ Caput medusas 		1		
5.	<p><u>Local Examination (Palpation)</u></p> <ul style="list-style-type: none"> ▪ Light palpation- (9) Regions ▪ Deep Palpation- (9) Regions ▪ Tenderness ▪ Rebound Tenderness <p><u>Liver</u> (If palpable)</p> <ol style="list-style-type: none"> 1. Size 2. Edge (sharp/round) 3. Consistency (Soft, Firm, Hard) 4. Tenderness <p><u>Spleen</u> (if palpable)</p> <ol style="list-style-type: none"> 1. Size <p><u>Kidney</u></p> <ol style="list-style-type: none"> 1. Ballotable (or) Not 2. Tenderness <p><u>Any Mass</u></p> <ol style="list-style-type: none"> 1. Site (in 9 Regions) 2. Size 3. Shape 4. Tenderness 		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
6.	<p><u>Local Examination (Percussion)</u></p> <ul style="list-style-type: none"> ▪ Liver ▪ Spleen ▪ Shifting Dullness ▪ Fluid Thrill 		1 1 1 1		
7.	<p><u>Local Examination (Auscultation)</u></p> <ul style="list-style-type: none"> ▪ Bowel Sound ▪ Liver Bruit ▪ Splenic Rub 		1 1 1		
8.	Hand Washing		1		
	Total Score				

Unsatisfactory < 45

Satisfactory= 46 - 50

Good= 51 -57

Trainee's Comment

Supervisor's Comment

Supervisor

Signature -----

Name -----

Date -----

Trainee

Signature -----

Name -----

Date -----

PART III: CHART REVIEW CHECKLISTS

OBJECTIVES

- To provide opportunity for staff to refresh and review their practical skills
- To ensure standard of care is equal across all clinic
- To provide quality assurance feedback to managing level

Chart Review - Pneumonia

Department: _____ R/N: _____

Review Date: _____ Sample No: _____

Reviewed by: _____

		Score
1	History taking	
1.1	Patient particulars	
	Name	1 point
	Age	1 point
	Sex	1 point
	Address	1 point
1.2	Chief complaint	
	Cough	2 points
	Duration	2 points
	Fever	2 points
	Sputum (>5Y)	2 points
	If yes: is there blood	2 points
	Difficult to breath / fast breathing	2 points
	Chest pain (>5Y)	2 points
	Cyanosis (child <5Y)	2 points
	Poor breast feeding / poor appetite	2 points
1.3	Past history	
	TB contact	2 points
	History of recurrent respiratory infection / TB	2 points
	Chronic disease e.g. asthma, heart disease	1 point
	Smoking (adult)	1 point
	Check vaccines up to date (child <5Y)	1 point
2	Physical examination	
2.1	Vital signs	
	Temperature	2 points
	Pulse Rate	2 points
	Respiratory Rate	2 points
	BP (>5Y)	2 points
	Pulse oximeter	2 points
	Weight	2 points
2.2	General Examination	

	Level of consciousness	2 points	
	Cyanosis (central)	2 points	
	Difficult to breath	2 points	
	Chest indrawing	2 points	
	Crepitation/wheeze/decreased air entry	2 points	
	Heart auscultation	2 points	
3	Laboratory		
	Malaria smear (if fever)	2 points	
	Chest X-ray (if suspect TB)	2 points	
	Sputum test (if suspect TB)	2 points	
4	Diagnosis		
	Differential Diagnosis	3 points	
	Correct Provisional Diagnosis (mild/severe pneumonia)	3 points	
5	Treatment		
5.1	Correct treatment		
	Give correct antibiotics (oral if mild / IV if severe)	3 points	
	Give correct dose of antibiotics	3 points	
	Give maintenance IV fluids (if necessary)	3 points	
	Give Oxygen (if necessary)	3 points	
5.2	Supportive treatment		
	Treat for fever	3 points	
	Give Vitamin A prevention if mild/moderate or treatment if severe (Child <12Y)	3 points	
	Deworming every 6 months	3 points	
5.3	Health education and prevention		
	Give health education on pneumonia	10 points	
6	Others		
	Name of health care provider	2 point	
	Make the next appointment / Follow Up	2 point	
	Total score	100 points	

Comments:

Instructions:

Select only new cases

If question is Not Applicable (NA), give full mark (for example vitamin A for adult patient)

Chart Review - Diarrhea

Department: _____

R/N: _____

Review Date: _____

Sample No: _____

Reviewed by: _____

		Score
1 History taking		
1.1 Patient particulars		
Name	1 point	
Age	1 point	
Sex	1 point	
Address	1 point	
1.2 Chief complaint		
Duration of diarrhea	2 points	
Number of episodes per day	2 points	
Watery	2 points	
Blood	2 points	
Mucus	2 points	
Any worm in stool	2 points	
Abdominal pain/rectal pain	2 points	
Vomiting	2 points	
Fever	2 points	
Thirsty	2 points	
Urine output	2 points	
1.3 Past history		
History of diarrhea	2 points	
Any family with diarrhea	2 points	
Breastfeeding or bottle feeding (child < 2 Y)	2 points	
Check vaccines up to date (child <5Y)	2 points	
Any chronic disease	2 points	
2 Physical examination		
2.1 Vital signs		
Temperature	2 points	
Pulse Rate	2 points	
Respiratory Rate	2 points	
Weight	2 points	
BP (adults)	2 points	
2.2 General examination		
Level of consciousness	2 points	
Pallor	2 points	
2.3 Signs of Dehydration		
Sunken eye	2 points	

Sunken fontanelle (child < 1 Y)	2 points	
Skin pinch/turgor	2 points	
Mouth and tongue wet or dry	2 points	
2.4 Abdominal examination		
Soft/distension	2 points	
Tenderness	2 points	
Liver/spleen	2 points	
2.5 Systemic examination		
Systemic examination (CVS and respiratory)	2 points	
3 Laboratory		
If fever: Malaria smear	2 points	
4 Diagnosis		
Differential diagnosis	2 points	
Correct provisional diagnosis	2 points	
Classification of diarrhea (Acute watery, dysentery, persistent diarrhea)	2 points	
Classification of dehydration (none, mild/some and severe dehydration)	2 points	
5 Treatment		
5.1 Correct treatment		
If mild dehydration: give ORS in IPD, if severe dehydration: give IV fluid	2 points	
Give appropriate antibiotic and correct dose for certain causes (e.g. dysentery, HIV)	2 points	
5.2 Supportive treatment		
Vit A every 6 months (child <12Y)	2 points	
Deworming every 6 months	2 points	
Zinc supplement (child <12Y)	2 points	
5.3 Health education and prevention		
Give health education on diarrhea	10 points	
6 Others		
Name of health care provider	2 point	
Make the next appointment / Follow Up	2 point	
Total score	100 points	

Comments:

Instructions:

Select only new cases
If question is Not Applicable (NA), give full mark (for example vitamin A for adult patient)

Template updated on 18/04/2016

Chart Review – Dengue Fever

Department: _____

R/N: _____

Review by: _____

Sample no: _____

Reviewed Date: _____

		Score
1	History taking	
1.1	Patient particulars	
	Name	1 point
	Age	1 point
	Sex	1 point
	Address	1 point
	Occupation	1 point
	Marital status	1 point
	Ask LMP (if female 12-49Y)	1 point
1.2	Chief complaint	
	Fever	2 points
	Duration of fever	2 points
	headaches	1 points
	body ache	2 points
	Persistent vomiting	1 points
	Pain in abdomen	2 points
	Bleeding: gums, hematoma...	2 points
	Urine output	2 points
1.3	Past history	
	Any medication	2 points
	Got dengue before	2 points
	Any other chronic disease	1 points
	Check vaccines up to date (child <5Y)	1 points
1.4	Dengue Risk factor	
	Any contact with dengue patient	1 points
2	Physical examination	
2.1	Vital signs	
	Temperature	2 points
	Blood Pressure	3 points
	Pulse Rate	2 points
	Respiratory Rate	2 points
	Weight	2 points
2.2	General examination	
	Level of consciousness	2 points
	Pallor	2 points
	gum or nose or rectum bleeding	2 points
	petechiae	2 points
	skin rash	2 points
	Listen to lung	2 points
	Listen to heart	2 points
	Tourniquet test	4 points
2.3	Abdominal examination	
	liver	2 points
	spleen	2 points

Ascites	2 points	
3 Laboratory		
Hemoglobin	2 points	
CBC: platelet and WBC	3 points	
4 Diagnosis		
Correct Provisional Diagnosis	3 points	
Appropriate referral to IPD	3 points	
5 Treatment		
5.1 Correct treatment		
Correct drug	3 points	
Correct dose, frequency and duration	3 points	
5.2 Supportive treatment		
iv fluid if needed	3 points	
fever and chills: paracetamol	3 points	
Deworming every 6 months	1 points	
5.3 Health education and prevention		
Hydration advices	2 points	
danger signs: bleeding, abdominal pain, difficulty to breath	3 points	
Give health education on dengue: protection...	4 points	
6 Others		
Name of health care provider	2 point	
Make the next appointment / Follow Up	2 point	
Total score %	100	

Comments:

Instructions:

Select only new cases

If question is Not Applicable (NA), give full mark

PART IV: DIAGNOSIS BASED COMPETENCY CHECKLISTS

VITAL SIGNS

Staff name:	Supervisor name:
Staff position: CHW <input type="checkbox"/> Medic <input type="checkbox"/> Nurse <input type="checkbox"/>	Supervisor position:
Department:	Date:

Evaluation

Satisfactory = Acceptable or good level of patient care

Not satisfactory = Needs improvement and clinical competency should be repeated

Activity	Satisfactory	Not satisfactory	Comment
Wash hands (hand sanitizer or water and soap)			
Prepare materials in tray <ul style="list-style-type: none"> • BP cuff, thermometer • Stethoscope, cotton, spirit 			
Explain to the patient you will check their vital signs			
Measure the temperature -Need to wipe thermometer with spirit before measuring - If glass thermometer shake before use			
Decide: normal/fever/hypothermia Hypothermia: <35.5°C High fever: >38°C			
Take pulse rate - Count for 1 minute - Palpate correctly with 3 fingers			
Decide: normal/tachycardia/bradycardia			
Count the respiratory rate - Count for 1 minute			
Decide: Normal/abnormal Any dyspnea or cyanosis?			
Measure the BP Put BP cuff upper Right/left arm 2/3 position			
Put the BP cuff at the same level with heart.			
Firstly, palpate the pulse			
And then Auscultate			
Decide: hypotension/normal/hypertension			
Measure the body weight	ok		No need today, already done No clinical situation for daily check
Record vital signs correctly			
Explain results to patient			
Wash hands (with hand sanitizer or water and soap)			

Recommendations from supervisor	Comments from staff
Satisfactory <input type="checkbox"/>	
Not satisfactory <input type="checkbox"/>	
Date to repeat if necessary _____	
Comments	
Signature _____	Signature _____
Name _____	Name _____
Date _____	Date _____

FIRST CONSULTATION

Staff name: Staff position: Nurse <input type="checkbox"/> CHW <input type="checkbox"/> Medic <input type="checkbox"/> Department:	Supervisor name: Supervisor position: Date:
--	---

Evaluation

NA: Not Applicable

Satisfactory = Acceptable / good level of patient care

Not satisfactory = Needs improvement and clinical competency should be repeated

Activity	NA	Satisfactory	Not satisfactory	Comment
A- History taking and past medical history				
Staff introduces himself and explain the consultation process – first contact				
Staff performs a full consistent history taking (1): ...history of the disease (incl. investigation already done)				
Staff performs a full consistent history taking (2): ... past medical history of the patient and his family,				
Staff performs a full consistent history taking (3): ... medication already taken (past and current)				
B- Physical exam				
Give information before physical exam; ask permission (do ethically)				
Check vital signs results				
Staff performs exam of the area of the main complain				
Staff performs general exam of all systems and with specific search related to the main problem				

Activity	NA	Satisfactory	Not satisfactory	Comment
Staff performs all his exam with correct technique* , and adapted to the patient condition				
Staff performs the exam with respect and compassion				
C- Diagnosis				
Staff summarizes nicely the patient problem (chart)				
Staff gives conclusion of diagnosis hypothesis and also differential diagnosis (chart)				
Staff thinks to exclude iatrogenic cause of the problem (such as drug side effects, procedure complication...)				
D- Investigation (laboratory, X-ray, ECG, USG....)				
Staff proposes some investigation , and explain why				
Staff explains investigation result				
E- Conclusion				
Staff gives final diagnosis (chart)				
Staff explains the suspected diagnosis to the patient				
F- Treatment				
Staff says if it's an emergency situation or not				
Staff explains the global management plan				
Staff decides the correct medication for his final diagnosis				
Staff explains the medication to the patient				
Staff explains danger signs to return to clinic and gives follow up to patient				
Staff asks patient if everything is clear and if patient has any question .				
TOTAL				

Total items applicable		100 %
Total items applicable scored "Satisfactory"		%

Instructions:

*Technique: the way to examine correctly patient; for example, listening to the lungs when patient not talking

Need to take a random patient for 1st consultation (in OPD or for IPD admission)

Session may last 1 hour.

Supervisor will observe, and can ask question to the medics at the end to understand better his decision

To pass, need 60% of the applicable items to be "Satisfactory"

Recommendations from supervisor	Comments from staff
Satisfactory <input type="checkbox"/> Not satisfactory <input type="checkbox"/>	
Date to repeat if necessary: _____	
Comments:	
Signature: _____	Signature: _____
Name: _____	Name: _____
Date: _____	Date: _____

DISPENSING ORAL MEDICATION

Staff name:	Supervisor name:
Staff position: nurse <input type="checkbox"/> CHW <input type="checkbox"/> Medic <input type="checkbox"/>	Supervisor position:
Department:	Date:

Evaluation

Satisfactory = Acceptable / good level of patient care

Not satisfactory = Needs improvement and clinical competency should be repeated

Activity	satisfactory	Not satisfactory	Comment
Look at the prescription carefully. If the prescription doesn't follow the procedure (capitals, complete name, doses, number of takes and duration) or if it's not clear, ask the medic to correct.			
Check correct patient (name/age/sex)			
Introduce yourself, explain procedure, get consent			
Ask the patient/caregiver if he understands his condition, if patient does not: refer back to medic			
Check correct prescription: BW/drug name, dose, OD/BD/TID/QID/HS, duration			
Wash your hands Prepare medication: check on bottle (name, dose, expired date) Drug, amount			
If possible, double-check			
For baby or patient who cannot swallow very well: crush the tablet with a little of sugar and water.			
Give medicine before breastfeeding and when the baby/child is quiet.			
Never leave the medicine on the chart. Watch the patient swallow it in front of you and check that he doesn't vomit.			

For some drugs, it's better to give the medicine when the patient is eating. (Otherwise, there is risk of gastritis).			
<u>Dispense the drugs to the patient and explain</u>			
- For what			
- How to take swallow or chew			
- Explain side-effects			
Write on the patient chart what and when the patient received it.			
Think about your skill – what was correct, what would you change next time			

Recommendations from supervisor	Comments from staff
Satisfactory <input type="checkbox"/>	
Not satisfactory <input type="checkbox"/>	
Date to repeat if necessary _____	
Comments	
Signature _____	Signature _____
Name _____	Name _____
Date _____	Date _____

ASSESS DEHYDRATION STATUS

Staff name:	Supervisor name:
Staff position: CHW <input type="checkbox"/> Medic <input type="checkbox"/> Nurse <input type="checkbox"/>	Supervisor position:
Department:	Date:

Evaluation

Satisfactory = Acceptable or good level of patient care

Not satisfactory = Needs improvement and clinical competency should be repeated

Activity	Satisfactory	Not satisfactory	Comment
Wash hands (hand sanitizer or water and soap)			
Explain to the patient or caregiver you will check the patient's dehydration status			
Assess general conditions <ul style="list-style-type: none"> • Conscious • Agitated 			

<ul style="list-style-type: none"> • Very tired or unconscious 			
Assess eyes <ul style="list-style-type: none"> • No sunken eyes • Slight sunken eyes • Deeply sunken eyes 			Some people have normally sunken eyes.
Assess tears <ul style="list-style-type: none"> • Present • Absent 			
Assess mouth and tongue <ul style="list-style-type: none"> • Moist • Dry • Very dry 			
Assess drink thirstily <ul style="list-style-type: none"> • No thirsty • Very thirsty • Cannot able to drink/ breast feeding 			
Assess skin pinch <ul style="list-style-type: none"> • Goes back normally • Goes back slowly • Goes back very slowly 			
Check blood pressure (except children) and urine output			
Now you evaluate the patient is <ul style="list-style-type: none"> • No/ some or mild/ severe dehydration 			
Give management plan A / B / C depend on dehydration status			
Write short note on chart			
Explain results to patient			
Wash hands (with hand sanitizer or water and soap)			

Recommendations from supervisor	Comments from staff
Satisfactory <input type="checkbox"/>	
Not satisfactory <input type="checkbox"/>	
Date to repeat if necessary _____	
Comments	
Signature _____	Signature _____
Name _____	Name _____
Date _____	Date _____

LOCAL ANESTHESIA

Staff name:	Supervisor name:
Staff position: In Charge <input type="checkbox"/> Supervisor <input type="checkbox"/> Medic <input type="checkbox"/>	Supervisor position:
Department:	Date:

Evaluation

Satisfactory = Acceptable / good level of patient care

Not satisfactory = Needs improvement and clinical competency should be repeated

Activity	Satisfactory	Not satisfactory	Comment
Wear mask			
Wash Hand with Alcohol			
Introduce your position and to explain about local Anesthesia complication (or) side effect, to get permission, check right patient			
Prepare Medical material; Local Anesthesia, syringe, needle, gauze, povidone, Alcohol, plastic sheets, non-sterile glove			
Checking local anesthesia name, expire date, check local anesthesia percentage			
Check correct patient (name/age/sex/address/R/N)			
Wash your hand with soap and wear non-sterile glove			
Check / ask patient for history of any drug allergy			
First need to clean injection area and make sure aspiration blood come (or) not; if no blood can inject local anesthesia Inject slowly			
Remove needle and throw with syringe in the sharps container			
Wait 3 – 5 minutes and then to make sure checking local anesthesia work (or) do not work			
Clean bed with chlorine water			
Remove gloves and throw in correct waste container			
Wash your hand with soap			
Record dose given in patient records			
Health education to patient; if local anesthesia work duration relax to will be pain, personal hygiene			

<p>Recommendations from supervisor</p> <p>Satisfactory <input type="checkbox"/></p> <p>Not satisfactory <input type="checkbox"/></p> <p>Date to repeat if necessary _____</p> <p>Comment</p>	<p>Comments from staff</p>
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Signature _____ Name _____ Date _____	Signature _____ Name _____ Date _____
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ADMINISTRATION OF IV MEDICATION

Staff name: Staff position: CHW <input type="checkbox"/> Medic <input type="checkbox"/> Nurse <input type="checkbox"/> Department:	Supervisor name: Supervisor position: Date:
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Evaluation

Satisfactory = Acceptable level of patient care

Not satisfactory = Needs improvement and clinical competency should be repeated

Activity	Satisfactory	Not satisfactory	Comment
Wash hands			
Make sure the correct; drug name, dose and expire date/date of opening			
Check correct patient (name/age/sex/address/R/N)			
Check correct time to administer (STAT, OD, BD, TID, QID)			
Calculate correct dose (mg and ml)			
Explain your position/role to the patient, explain the reason for the medicine and get verbal consent			
Check / ask patient for history of any drug allergy			
Prepare medicine			
Dilute with correct amount of sterile water if necessary			
If multi dose vial clean top with alcohol			
Draw up correct dose			
Put on gloves			
Check date of cannula insertion and cannula site is healthy			
Clean end of cannula with alcohol			
Drawback with syringe			
Slowly inject IV medication checking for swelling, redness or pain			
Remove syringe and needle			
Put needle and syringe in sharps bin			
Take off gloves and put in the right waste bin			
Wash hands			
Record in patient notes that you gave medication (tick)			

Recommendations from supervisor	Comments from staff
Satisfactory <input type="checkbox"/>	
Not satisfactory <input type="checkbox"/>	
Date to repeat if necessary _____	
Comments	
Signature _____	Signature _____
Name _____	Name _____
Date _____	Date _____

IV INFUSION

Staff name: Staff position: Nurse <input type="checkbox"/> CHW <input type="checkbox"/> Medic <input type="checkbox"/> Department:	Supervisor name: Supervisor position: Date:
--	---

Evaluation

Satisfactory = Acceptable / good level of patient care

Not satisfactory = Needs improvement and clinical competency should be repeated

Activity	Satisfy	Not satisfy	Comment
Introduce yourself, explain procedure, gain consent			
Check the prescription on patient chart. Check the name of the patient, the name of the infusion, the volume and duration.			
Prepare the material: tray, sterile gauze, cotton, infusion cannula, pipe, bottle of infusion, povidone iodine or alcohol, tourniquet, pieces of plaster, non-sterile gloves, kidney dishes, needles container, tin and splint (if it's a child)			
Check the name of solution, the dosage written and expiry date of the infusion solution			
Wash your hands with soap			
Remove the plastic cover and wipe the top of the bottle/vial with cotton and alcohol.			
Close the clamp, connect a bottle of infusion to the pipe, fill the dropper and purge the system with the fluid. There must not be any air or any bubbles			
Calculate the rate of flow of the infusion per minute			
Write the hour, name and the dosage of the medicine, number of drops per minute and the length of the infusion on the bottle.			

Check the identity of the patient			
Settle the patient and put the arm in a good position. Look for the easier arm (for the patient) to place the injection			
Put the tourniquet and look at the veins.			
Disinfect the skin where you see and feel a straight vein			
Hold the arm with your left hand and stretch the skin. With your right hand, take the infusion cannula. Hold it parallel to the skin. Put the bevel (the oblique hole at the end of the needle) facing upwards. Immobilize the vein and prick the needle into the vein.			
Check the blood is coming and remove the tourniquet			
Throw the needle in the needle container			
Connect the drip set with asepsis			
Open the drip system.			
Attach the cannula catheter with plaster correctly			
Put the date on the plaster			
With your watch, adapt the number of drops of the infusion on one minute			
Throw everything else in the rubbish Wash your hands with soap			
Record the infusion bottle on the patient chart			
Remove the infusion every 3 days			
Think about your skill – what was correct, what would you change next time			

Recommendations from supervisor	Comments from staff
Satisfactory <input type="checkbox"/>	
Not satisfactory <input type="checkbox"/>	
Date to repeat if necessary _____	
Comments	
Signature _____	Signature _____
Name _____	Name _____
Date _____	Date _____

DAILY DRESSING

Staff name:	Supervisor name:
Staff position: CHW <input type="checkbox"/> Medic <input type="checkbox"/> Nurse <input type="checkbox"/>	Supervisor position:
Department:	Date:

Evaluation

Satisfactory = Acceptable / good level of patient care

Not satisfactory = Needs improvement and clinical competency should be repeated

Activity	Satisfactor	Not satisfactory	Comment
Wear a mask			
Explain to the patient you will do the dressing change and get permission			
Check you have the materials you need: <i>e.g: gauze, saline, povidone, hydrogen peroxide, bandage, plaster, scissors, forceps</i>			
Wash hands with water and soap			
Put gloves on			
Put plastic sheet under patient			
Take off the old dressing slowly			
<ul style="list-style-type: none"> • Clean the wound with povidone (if sutures or abscess) • Clean the wound with saline (if clean wound) 			
Cover with dry gauze if necessary			
Tie with bandage or secure with plaster if necessary			
Throw the old gauze and plastic sheet in the right waste container			
Take off gloves and wash hands with water and soap			
Explain condition of wound to patient – eg: getting better Give health education to patient			
Put on gloves and clean the table with chlorine			

Recommendations from supervisor	Comments from staff
Satisfactory <input type="checkbox"/> Not satisfactory <input type="checkbox"/> Date to repeat if necessary _____ Comments _____ Signature _____ Name _____ Date _____	Signature _____ Name _____ Date _____

EXCISION OF LIPOMA, CYSTS, etc.

Staff name:	Supervisor name:
Staff position: In charge <input type="checkbox"/> Supervisor <input type="checkbox"/> Medic <input type="checkbox"/>	Supervisor position:
Department:	Date:

Evaluation

Satisfactory = Acceptable / good level of patient care

Not satisfactory = Needs improvement and clinical competency should be repeated

Activity	Satisfactory	Not satisfactory	Comment
Washing hands			
Make sure it is the right patient			
Explain your position/role to the patient, explain the procedure to the patient and get permission/consent			
Prepare the material and instrument you need: plastic sheet, sterile gauzes, plaster, bandages, blade to shave hairs, suture nylon and Vicryl suture, Syringe, Needles 18g and 24g, Blade (for excision the mass) Blade holder, needle holder, artery forceps, mayo scissor, suture scissor, forceps with tooth, forceps without tooth			
Wash hands with Alcohol			
Put on the non-sterile gloves			
Put plastic sheet under patient			
Clean the area with povidone properly			
Take off the non-sterile gloves Wash your hands with soap again Put the sterile gloves correctly			
Inject local anesthesia as needed			
Wait 3 – 5 minutes and then make sure that local anesthesia works (or) does not work			
Put the surgical blade on the blade handle			
Cut/incise the skin			
Use the mayo scissor/ artery forceps to extend the tissue very gently			
Remove the mass (excise) and wash with saline properly			
Use Vicryl suture if necessary to make the wound smaller and close with Nylon			
Wash with saline Dry with sterile gauze Clean with povidone Cover with sterile gauze Secure by using plaster or bandage			
Put the instruments in the used instrument container			
Throw sharps (needles and blades) in sharps container			
Throw the used gauzes and plastic sheet in the right waste container			
Use non-sterile gloves and wash the table with chlorine			
Take off gloves and throw in correct waste container			
Wash hands with water and soap			
Give health education to patient including: keep dry, take medication on time, personal hygiene and explain about secondary infection.			
Make appointment for the removing or dressing of the sutures			
Write in the chart: procedure done and further management (medicine)			
Signature			

Recommendations from supervisor	Comments from staff
Satisfactory <input type="checkbox"/>	
Not satisfactory <input type="checkbox"/>	
Date to repeat if necessary _____	
Comments	
Signature _____	Signature _____
Name _____	Name _____
Date _____	Date _____

PART V: CONTINUING MEDICAL EDUCATION (CME)

OBJECTIVE

CME is an important tool to improve clinical skill and knowledge of health workers.

Key points:

- Schedule: MTC conducts 2 times/week for 2 hours. VTHC's CME program is developing, currently Once/year.
- Subjects/contents: Top 5 disease, Top 10 disease, Special diseases, case study, workshops
- Library: Hard copies in hand, soft copies in Google Drive/ Facebook Group
- Trainers-Teachers: Mae Sot Based Trainers, Field Based Trainers
- Assessment: Pre-test, Post-test, Examination
- Quality control measurement: 5 competency checklists/year, 1 supervise consultation/year

Top 10 diseases (2017)	Special topics
1. Acute Respiratory Infections	1. HIV/AIDS
2. Anaemia	2. Tuberculosis
3. Arthritis	3. Wound Management
4. Diarrhoea	4. Poisoning
5. Dyspepsia	5. Elephantiasis
6. Hypertension	6. Hepatitis
7. Intestinal Worms	7. Suturing
8. Road Traffic Accident	8. Essential care in mental health
9. Skin Infections	
10. Urinary Tract Infection	

This information based on HISWG 2017

ACUTE RESPIRATORY INFECTIONS

ARIs can be divided into

- **Upper Respiratory Tract Infections (URTIs):** Infections of the upper airways which include the ear, nose, throat, tonsils or sinuses. Most of these infections are caused by viruses (so do not need antibiotics) and last for a short time only. The lungs are not affected. If the symptoms are severe and/or last for more than a week, this may be a sign of a more severe bacterial infection or influenza.
 - ear, nose, throat, tonsils, sinuses
- **Lower Respiratory Tract Infections (LRTIs):** lungs

Upper Respiratory Tract Infections (URTIs)

DEFINITION

Common cold is a mild **URTI** caused by a **virus**. It is very common and not dangerous. In any community, a lot of people will have a cold at the same time.

SYMPTOMS:

Nasal discharge or block, sore throat, cough, mild fever, lacrimation

Sore throat = လည်ချောင်းနာခြင်း၊ Lacrimation = မျက်ရည်ကျခြင်း

TREATMENT

Medical treatment

- Treat fever with **Paracetamol** 0.5 -1 g 6-hourly and Sponging
- **Chlorphenamine** is effective against sneezing and itching of the eyes and palate.
- *Clear the nose with NSS*

Non-medical treatment

- Rest and take regular oral fluids
- Avoid contact with others to prevent spread
- Cover mouth and throat whenever sneezing/coughing
- Antibiotics not necessary if uncomplicated

Sneezing = နှာရည်ယိုခြင်း၊ Itching=ယားယံခြင်း၊ Palate=အာခေါင်၊ Avoid=ရှောင်ကျဉ်ခြင်း၊

SINUSITIS

SYMPTOMS

- Nasal Discharge, obstruction AND
- Facial pain
- Increases when bending over,
- Painful pressure either side of nose or behind forehead.
- Usually no fever or mild fever

Nasal discharge= နှာရည်ထွက်၊ Obstruction=ပိတ်ခြင်း၊ Forehead=နဖူး၊ Pressure=ဖိအား၊ Bending over=ရှေ့သို့ကုန်း

- **Paracetamol** and NSS drop
- **Amoxicillin** Adult: 500mg TID; **Child 25mg/kg** TID for 7-10 days

If no response within 48 hours consider switching to **Co-amoxiclav**

PHARYNGITIS

DEFINITION

Inflammation of the pharynx (throat), it is very common.

SYMPTOMS

- Sore throat
- Painful to swallow.
- Throat > red.
- Worse over 2 to 3 days and gradually relief within a week

Note: if there is a grey membrane on the back of the throat > suspect diphtheria

TREATMENT

- No antibiotics
- Analgesia e.g. **paracetamol**

TONSILLITIS

DEFINITION

Tonsillitis is an infection of the tonsils at the back of the mouth, which is most commonly due to a bacterial or viral infection.

SYMPTOMS:

- Severe URTI
- Fever
- Sore throat is worse on swallowing or turning the head.
- Swollen neck glands
- In severe form, painful and enlarged cervical lymph nodes
- Pus may appear as white spots on the tonsils.
- Viral tonsillitis gradually relief after 3 to 4 days.

Turning the head=ခေါင်းလှည့်ခြင်း၊ neck glands=လည်ပင်းအင်္ဂါများ၊ pus=ပြည်၊ white spots=အဖြူစက်များ

TREATMENT

- Antibiotics if suspect bacterial cause
- Treat the fever
- Drink plenty of fluids.
- If the patient can eat and drink:
 - **Adult:** Penicillin V PO 500mg QID x 10 days
 - **Child:** Penicillin V PO 25mg/kg QID x 10 days

If allergic to penicillin:			
	Erythromycin PO x 10 days	OR	Azithromycin PO x 3 days
Adult:	500 mg QID		500 mg OD
Child:	8- 18 yrs 250 – 500 mg QID		20 mg/kg (max 500mg) OD
	2- 8 yrs 250 mg QID		20 mg/kg (max 500mg) OD
	1 mth - 2 yrs 125 mg QID		20 mg/kg (max 500mg) OD
Double dose in severe infection			

If the patient cannot take tablets and cannot eat or drink

- Admit to IPD
- IV fluids and treat
- Antibiotics as follows:
 - **Adult:** Benzathine Penicillin IM 1.2 Million IU STAT
OR Benzyl Penicillin IV 1.2 g QID
OR Ampicillin* IV 1 g QID
 - **Child:** Benzathine Penicillin IM 50,000 IU/kg STAT (max 1.2 million IU)
OR Benzyl Penicillin IV 25 mg/kg QID
OR Ampicillin 25-50mg/kg QID IV
- Change to Penicillin V PO when the patient can swallow. **Treat for a total of 10 days.**

COMPLICATION

1) Peritonsillar abscess

fever, intense pain, hoarse voice, trismus (cannot open mouth fully), tonsillar swelling on one side which moves uvula to one side

TREATMENT:

- need surgical drainage
- Antibiotics

2) Rheumatic fever

3) Acute glomerulonephritis

Hoarse voice=အသံသြခြင်း, trismus=ပါးစပ်ကျယ်ကျယ်မဟနိုင်ခြင်း, uvula=လျှာခင်

PERTUSSIS

DEFINITION:

Pertussis, also known as whooping cough, is a highly contagious disease that is caused by **the bacterium *Bordetella pertussis***. It is transmitted through inhalation of **droplets spread** by infected individuals e.g. coughing, sneezing. Pneumonia can be a complication.

SYMPTOMS:

- Initially mild ARI symptoms.
- After one to two weeks, an inspiratory 'whooping' sound mostly at night
- Vomiting.
- Fever is absent or mild

After weeks or months, the symptoms gradually relief

Isolate=သီးသန့်ခွဲခြားထားခြင်း, Max=Maximum=အမြင့်ဆုံး, Prophylaxis=ကာကွယ်ခြင်း,

Contact with suspected case=ရောဂါပိုးရှိသူနှင့် ထိစပ်မှုရှိခြင်း

DIPHTHERIA

Diphtheria is an infectious disease caused by the **bacteria *Corynebacterium diphtheriae***. It spreads from person to person by **respiratory droplets** from the throat through **coughing and sneezing**. The diphtheria bacteria produce toxins throughout the body.

- Tonsillitis with grey sticky membranes in the throat
- High fever > 39°C
- Oliguria, cervical edema, enlarged cervical lymph nodes
- Signs of hemorrhage e.g. purpuric rash, epistaxis, bleeding gums

Oliguria=ဆီးနည်းခြင်း, cervical edema=လည်ပင်းဖောရောင်ခြင်း, enlarged cervical lymph nodes=လည်ပင်းကျိတ်ကြီးခြင်း

Signs of hemorrhage=သွေးယိုစီးမှု လက္ခဏာများ၊ purpuric rash=အနီစက်၊

epistaxis=နှာခေါင်းသွေးယိုခြင်း, bleeding gums=သွားဖုံးသွေးယိုခြင်း

COMPLICATIONS:

- Myocarditis (နှလုံးရောင်ရမ်းခြင်း)
- Neuropathies (အာရုံကြောအားနည်းခြင်း)
- Renal failure (ကျောက်ကပ်ပျက်စီးခြင်း)
- Pneumonia (အဆုတ်ရောင်ရောဂါ)

TREATMENT

- Immediate isolation.
 - Refer quickly
 - Start antibiotic
 - **Adult:** **Benzathine penicillin** IM 1.2 Million IU STAT
OR **Benzyl penicillin** IV 2.4 g QID x 7 days
 - **Child:** **Benzathine penicillin** IM 50,000 IU/kg (max 1.2 million IU) STAT
OR **Benzyl penicillin** IV 50mg/kg QID x 7 days
- If allergic to penicillin: **Erythromycin** (Adult: 500 mg PO QID, Child: dose as for tonsillitis)

PREVENTION

- Vaccination
 - Close contacts
 - Quarantine and monitoring for 7 days
 - Check vaccination status
 - If less than 3 vaccines: give to complete course
 - If received 3 injections and had last injection was > 1 year: give a booster dose.
- Quarantine=Isolation=သီးသန့်ခွဲခြားထားခြင်း, Monitoring=စောင့်ကြည့်ခြင်း,
booster dose=ဆေးရှိန်မပျက်အောင်ထပ်မံထိုးပေးခြင်း

INFLUENZA

DEFINITION

Influenza is a viral infection that can be very contagious. Often there is close contact with someone who has similar symptoms. Different strains of influenza occur such as the avian influenza (H5N1) and swine flu (H1N1). Common influenza is self-resolving, but some dangerous strains can become pandemics (epidemic that spreads across countries) and have high morbidity and mortality

Quarantine=Isolation=သီးသန့်ခွဲခြားထားခြင်း, Monitoring=စောင့်ကြည့်ခြင်း,
booster dose=ဆေးရှိန်မပျက်အောင်ထပ်မံထိုးပေးခြင်း

SIGNS AND SYMPTOMS

<ul style="list-style-type: none"> ▪ Fever, muscle pain, headache. 	<ul style="list-style-type: none"> ▪ Diarrhea.
<ul style="list-style-type: none"> ▪ Respiratory symptoms: cough, sore throat and runny nose 	<ul style="list-style-type: none"> ▪ Shortness of breath (dyspnea)
	<ul style="list-style-type: none"> ▪ Clinical pneumonia.

DIAGNOSIS

- Clinical diagnosis

TREATMENT

- Paracetamol
- Antibiotics NOT required
- Oral hydration

PREVENTION

The patient should

- wear a mask and cover his/her mouth with a cloth while coughing or sneezing
- wash their hands
- Hand hygiene

Lower Respiratory Tract Infections (LRTIs)

Pneumonia: Fever AND Cough AND Abnormal chest sounds

SIGNS OF SERIOUS ILLNESS

- Age > 65 years
- Fast breathing (RR > 30/min)
- Cyanosis (ပြာနုမ်းခြင်း)
- confusion (သတိလျော့နည်းခြင်း)
- Low blood pressure (SBP < 90 mmHg or DBP < 60mm Hg)
- High pulse rate (> 120 beats/minute)
- Nasal flaring (နှာခေါင်းပွခြင်း), Chest indrawing (ရင်ဘတ်ချိုင့်ခြင်း)

TREATMENT (NOT SEVERE)

- Oral hydration
- Paracetamol
- Antibiotics; Amoxicillin 500 mg PO TID for 7 to 10 days
- **If patient is allergic to penicillin** - Erythromycin 500 mg PO QID

Note: In case of **repeated attacks** of pneumonia or **persistent pneumonia** (after supervised treatment) consider **atypical pneumonia** (caused by specific bacteria like *Mycoplasma pneumoniae*). Treat with Erythromycin or Doxycycline for 10 days.

In case of repeated attacks of pneumonia or persistent pneumonia (after supervised treatment of amoxicillin and Erythromycin or Doxycycline) consider **tuberculosis**.

ANAEMIA

DEFINITION

Anemia is a condition where the **hematocrit (Hct) or hemoglobin (Hb) is below normal levels** in the circulating blood (taking into account age, sex and pregnancy state). When this happens, the risk is that the red blood cells are not carrying enough oxygen to the tissues of the body.

Anemia can occur from:

- increased red blood cell loss (e.g. hemolysis and hemorrhage)
AND/OR
- decreased red cell production (e.g. nutritional deficiencies and bone marrow depression).

Circulating blood=သွေးလည်ပတ်မှု, Loss=ဆုံးရှုံးမှု, Hemolysis=သွေးနီဥပြိုကွဲခြင်း, Production=ထုတ်လုပ်မှု, Deficiencies=ချို့တဲ့ခြင်း, bone marrow depression=ရိုးတွင်းခြင်ဆီအားနည်းခြင်း

Anemia is a common health problem in the tropics.

Normal Hct/Hb levels:

	<u>Hb</u> (g/dl)	<u>Hct</u> %
Adult males	< 13.5	< 41
Adult females (non-pregnant)	< 12	< 36
Adult females (pregnant)*	< 10	< 30

Note: some fall in Hb is physiological in pregnancy

Prevention:

- Give nutritional advice
- Iron and Folate tablets (NOT in Thalassemia)
- Deworming the population regularly

CAUSES

ACUTE

- Malaria (acute destruction of RBCs)
- Acute bleeding (GI tract, genital tract, artery damage in accident, pregnancy-related hemorrhage e.g. PPH)
- G6PD deficiency

Tropics=အပူပိုင်းဒေသ, destruction=ပျက်စီးခြင်း, damage=ထိခိုက်ပျက်စီးခြင်း, accident=မတော်တဆမှု, genital tract=မျိုးပွားအင်္ဂါလမ်းကြောင်း, population=လူများစု, regularly=ပုံမှန်

CHRONIC

- Nutritional deficiencies (lack of iron (ferrous), folate or vitamin B12 in diet)
- Worm infestation
- Repeated pregnancies (mother anemia) မကြာခဏကိုယ်ဝန်ဆောင်ခြင်း
- Prolonged breastfeeding without weaning foods (infant anemia) ဖြည့်စွက်စာမကျွေးပဲ နို့တစ်မျိုးတည်းသာ ကြာရှည်စွာ တိုက်ကျွေးနေခြင်း
- Peptic ulcer
- Alcohol excess အရက်အလွန်အကျွံသောက်သုံးခြင်း
- Thalassaemia
- Chronic bleeding, heavy menstruation ရာသီသွေးပုံမှန်ထက်များနေခြင်း
- Cancers
- Chronic infections (HIV, TB)
- Liver and kidney disease
- Tropical splenomegaly အပူပိုင်းဒေသများတွင်သာတွေ့ရသော ဘောလုံးကြီးရောဂါ
- Aplastic anemia (bone marrow failure) ရိုးတွင်းခြင်ဆီအားနည်းပြီး သွေးအားနည်းရောဂါရခြင်း

Very often anemia has **more than one cause**. Supplementing Ferrous Sulphate (FS), Folic Acid (FA) and deworming can help many people feel better.

'Microcytic'	<ul style="list-style-type: none"> ▪ Iron deficiency anemia ▪ <u>Thalassaemia</u> ▪ Hookworm/<u>ascaris</u> infection ▪ Chronic bleeding, heavy menstruation
'Normocytic'	<ul style="list-style-type: none"> ▪ Hemolytic anemia ▪ Acute blood loss e.g. peptic ulcer ▪ Aplastic anemia ▪ Anemia of chronic disease/infections ▪ Tropical splenomegaly
'Macrocytic'	<ul style="list-style-type: none"> ▪ B12/folate deficiency ▪ Hypothyroidism ▪ Alcohol excess

Microcytic=သွေးနီဥအရွယ်အစားသေးငယ်ခြင်း, Normocytic=သွေးနီဥအရွယ်အစားပုံမှန်, Macrocytic=သွေးနီဥအရွယ်အစားကြီးမားခြင်း, Hypothyroidism=သိုင်းရွိုက်ဟော်မုန်းအားနည်းသောရောဂါ

CHRONIC ANAEMIA

Tiredness

- Affects ability to work
- In children: reduced growth, delayed development
- Difficulty breathing and palpitations when working or walking
- Normal heart rate and respiratory rate at rest
- Pallor (conjunctivae, palm of hands, nail beds)

SEVERE CHRONIC ANAEMIA

- Hb < 6
- Extreme tiredness and weakness အလွန်အမင်းမောပန်းပြီး အားနည်းခြင်း
- Difficult breathing
- Palpitations ရင်တုန်ခြင်း
- Very pale အလွန်အမင်းဖြူဖပ်ဖြူလျော်ဖြစ်ခြင်း
- Often heart murmur
- Normal heart rate and respiratory rate at rest

ACUTE SYMPTOMATIC ANAEMIA – RAPID FALL IN Hb အလျင်အမြန် Hb ကျခြင်း (e.g. acute bleeding, severe malaria, PPH)

- Fatigue, tiredness နှိုးခွဲခြင်း
- Difficulty breathing at rest
- Palpitations at rest
- Pallor (conjunctivae, palm of hands, nail beds)
- Fast heart rate at rest (adult >120/min)
- Fast respiratory rate at rest (adult >40/min)
- Low BP (systolic <100 mmHg)
- Often you can hear a heart murmur.

ANAEMIC HEART FAILURE

- Severe difficulty breathing at rest
- Extreme weakness
- Chest pain
- Very pale
- Acute pulmonary edema အဆုတ်ရေဝင်ခြင်း
- Enlarged liver (hepatomegaly)
- Increased jugular veins
- Peripheral edema ခြေလက်ဖောရောင်ခြင်း
- Ascites ရေဖျဉ်းစွဲခြင်း

DIAGNOSIS

Clinical and Lab: Hb or Hct, CBC

TREATMENT

- **EMERGENCY TREATMENT**
- If signs of acute symptomatic anemia/ hypovolemic shock follow DR-ABCDE:

	ASSESS FOR	TREAT
DR	<ul style="list-style-type: none"> ▪ Danger ▪ Response – does patient respond? 	<ul style="list-style-type: none"> ▪ Gloves for you ▪ Safe place for patient ▪ Call for help
Airway	<ul style="list-style-type: none"> ▪ Any airway obstruction ▪ Speaking ▪ Stridor ▪ Secretions ▪ Swelling 	<ul style="list-style-type: none"> ▪ Oxygen
Breathing	<ul style="list-style-type: none"> ▪ Respiratory rate ▪ Oxygen saturations (SpO₂) ▪ Pattern of breathing ▪ Cyanosis ▪ Accessory muscle use/tracheal tug/chest in-drawing ▪ Listen to chest 	
Circulation	<ul style="list-style-type: none"> ▪ Pulse rate ▪ Blood pressure ▪ Capillary refill time ▪ Urine output ▪ Temperature 	<ul style="list-style-type: none"> ▪ Put IV cannula (16G or 18G) – take bloods e.g. Hct, CBC, MS, blood sugar etc. ▪ Fluid bolus NSS 1L (DO NOT GIVE if suspect heart failure) ▪ Crossmatch and transfuse blood ▪ If very low BP raise legs to level above head ▪ Try to stop the bleeding e.g. compression of artery
Drugs/Dextrose	<ul style="list-style-type: none"> ▪ Check dextrose ▪ Any drugs needed e.g. antibiotics, paracetamol 	<ul style="list-style-type: none"> ▪ Give dextrose if low ▪ Give medications according to cause
Everything Else	<ul style="list-style-type: none"> ▪ GCS ▪ Expose and examine all over body 	<ul style="list-style-type: none"> ▪ Review notes and charts ▪ History, further investigations, treatment plan ▪ Transfer to maternity facilities e.g. if miscarriage/abortion.

NON-EMERGENCY TREATMENT

Treat the anemia:

- **Ferrous Sulphate (FS) and folic acid (FA).**
- FS should be continued for 3-6 months after the Hb level has returned to normal
- **Vitamin C** may help the body to absorb iron.
- If Hb < 6 /Hct < 18, discuss with doctor about transfusion.
- Anemic heart failure is very difficult to treat successfully. Prevention is essential.
- **All patients with anemia should be dewormed.**

TREATMENT DOSE

- **Ferrous sulphate** Adult: 200 mg TID **Folic acid** Adult: 5 mg OD
- After 6 weeks treatment dose
 - Change to prophylactic dose for a total of 3 months (if Hb/Hct normalized).
- **PROPHYLACTIC DOSE**
- **Ferrous sulphate** Adult: 200 mg OD **Folic Acid** Adult: 5mg/ week

TREAT THE CAUSE

Severe bleeding with signs of shock

- **DRABCDE** and refer
- Ferrous sulphate and folic acid treatment dose after transfusion.

Malaria

- Treat malaria
- Give FS
- Admit to IPD if there are signs of acute anemia / anemic heart failure, and if severe or hyper.

PF Malaria,

- Severe anemia is very rapid, especially in children.
- First cause of death in young children
- If patient has severe or hyperparasitaemic malaria, give blood transfusion
 - if Hb < 7 or Hct < 20 (WHO recommended)

Worms or anemia of unknown cause

- De-worm
- Give FS and FA treatment dose

Poor nutrition, pregnancy and breastfeeding

- Give nutrition advice
- Give FS and FA prophylaxis dose during pregnancy.
- When Hct < 30%
 - look for sign of thalassemia or worms and give treatment dose FS and FA.

If patient doesn't response to anemia treatment, consider Vit B12 deficiency.

Alcohol

advise them to stop/decrease if it is high.

Hemolytic anemia

It is caused by hemolysis (destruction of red blood cells).

- Thalassemia and G6PD deficiency are common

PREVENTION

- Provide FS and FA to all pregnant women in prophylaxis doses
- Advice nutrition
- Prevent infections and treat early (especially malaria)
- Deworm all pregnant women (after the 1st trimester)
- Deworm in children

THALASSEMIA

DEFINITION

Thalassemia is a **genetic disease** caused by **abnormal or decreased hemoglobin production**. Hemoglobin is found in the red blood cells, and is the part of the cell that carries the oxygen needed for the tissues to work. On the Thailand-Myanmar border, thalassemia occurs in approximately 10% of people.

Types of thalassemia

- BETA THALASSAEMIA
- ALPHA THALASSAEMIA

SEPTIC ARTHRITIS

DEFINITION

- Acute bacterial infection of the joints
- Commonly affects a single joint but can also affect more than one joint (usually asymmetrical).
- Spread from the blood into the joint.
- The most common organism causing septic arthritis is *Staphylococcus Aureus*.
- However, *Gonococcus* can also cause infection in sexually active young adults and *Hemophilus influenza* infection can occur in unvaccinated children.
- Patients with other joint problems such as rheumatoid arthritis have a higher chance of getting septic arthritis.

Asymmetrical=တစ်ဖက်တည်းဖြစ်, Organism=ပိုးမွှားကောင်,

Unvaccinated=ကာကွယ်ဆေးမထိုးထားသော,

SIGNS AND SYMPTOMS

Adult:

- Intense joint pain
- Joint swelling and redness
- Voluntary immobility of the limb with the infected joint (pseudo paralysis)
- Limping/ non-weight bearing (lower limbs)
- Fever

Voluntary immobility=မလှုပ်ရှားပဲနေနေခြင်း, Pseudo paralysis=အောက်ပိုင်းသေသည့်ပုံစံဖြစ်နေ

Limping=ပျော့ခွေးနေခြင်း

Children > 5 years/Adults:

- Admit to clinic
- IV **cloxacillin** for 2 weeks, followed by P.O **cloxacillin** for a minimum of 2 weeks.
- If not improvement after 3 day, add IV **gentamicin** for 5 days +/- **ceftriaxone**.
- Drainage as soon as possible (may need multiple drainage)
- Splint and rest the joint

Gonococcal arthritis:

- Migrating joint pain
- Fever
- Skin rash (papular, pustular or vesicular with red base)
- Pain in the back of hands/wrists and ankles (due to tendon inflammation).
- Consider especially in patients with symptoms of STI

○ e.g. urethral or vaginal discharge, lower abdominal pain

Migrating joint pain=ရွှေ့ပြောင်း၍အဆစ်နာခြင်း, Tendon=အရွတ်

DIAGNOSIS

Clinical

CBC, WBC usually raised in septic arthritis

TREATMENT

Successful treatment of septic arthritis requires

- **early drainage** of infected joint fluid
- **resting** of affected joint
- **antibiotics**

TREATMENT

- IV **Ceftriaxone** until 2 days followed by P.O **Ciprofloxacin** for 2 weeks.
- Add **Azithromycin** P.O 1g STAT dose

OR

- **Doxycycline** P.O 100mg BID for 7 days

PREVENTION

Preventive antibiotics may be helpful for high-risk people

- e.g. recent land mine injury

OSTEOMYELITIS

DEFINITION

- Osteomyelitis is an infection of the bone which occurs most commonly in children.
- *Bacteria spread through the blood stream to the bone from an infection in another location, such as the lungs (pneumonia). Bacteria can also come from local areas of infection, such as cellulitis, ulcers or penetrating wounds. The most common bacteria in osteomyelitis is Staphylococcus aureus. When an acute infection has not been treated well, osteomyelitis can become chronic leading to bone sclerosis and deformity. Common sites of infection are the tibia, femur, humerus, and the vertebral bodies.*

Osteomyelitis involving the vertebral bodies can also be caused by tuberculosis.

SIGNS AND SYMPTOMS

- Pain in the bone
- Local swelling, redness, and warmth
- Fever
- Back pain
- General discomfort and malaise
- Fracture without trauma
- Drainage of pus through the skin (in chronic osteomyelitis)

DIAGNOSIS

- CBC > Increased WBC.
- Blood cultures to identify the organism.
- Collect pus for culture from the area around infected bones by needle aspiration.
- **X-ray does NOT give diagnosis** in the acute stage but may help in the diagnosis in later stages.

TREATMENT

- Prolonged antibiotic therapy
- May require surgical debridement (refer to hospital)

PREVENTION

- Early diagnosis and treatment can reduce transmission
- Good appropriate wound management
- Prophylactic antibiotic use in time of injury

Debridement=ပုတ်နေသောအသားစများကို ခွဲစိတ်ဖယ်ထုတ်ခြင်း, Prophylactic=ကြိုတင်ကာကွယ်သော

NON-INFECTIOUS ARTHRITIS

There are many causes of non-infectious arthritis. The most common are

- Osteoarthritis
- rheumatoid arthritis
- gout.

Note: It can be very difficult to decide if the joint is infected or inflamed. It is very important to get a clear history. If in doubt, treat for both infection and inflammation

Doubt= သံသယဖြစ်ခြင်း

OSTEOARTHRITIS

DEFINITION

Osteoarthritis is chronic inflammation of the joints. This is caused by damage to the cartilage. Once this cushion is damaged, the bony surfaces rub together and cause the patient pain when the joint is used. Osteoarthritis is caused by overuse of joints and so it is more common in older people. Most common joints affected are the hips, knees, spine, feet and hands.

Cartilage=အရိုးနု, Cushion=အရိုးအကာ, Bony surface rub=အရိုးမျက်နှာပြင်ချင်း ပွတ်တိုက်ခြင်း

SIGNS AND SYMPTOMS

- Chronic joint pain and stiffness
- Joint swelling and deformity
- Crackling noise on joint movement
- Muscle wasting
- Joint pain gets worse the more they are used throughout the day

Stiffness=တောင့်တင်း, Deformity=ပုံစံပျက်, Muscle wasting=ကြွက်သားသိမ်သွားခြင်း

Crackling noise=တဖျစ်ဖျစ်တဖျောက်ဖျောက်မြည်သံ (အရိုးပွတ်တိုက်သံ)

DIAGNOSIS

- Clinical diagnosis.
- X-ray (refer to hospital)

TREATMENT

Medication treatments:

- Paracetamol
- Anti-inflammatory medication
 - e.g. **ibuprofen, aspirin**

Often pain relief is needed long-term

be careful of side-effects, especially in older people.

Non-medication treatments

- Regular gentle exercise
 - To reduce stiffness and strengthening muscles and joints
- Weight loss
- Applying
 - local heat before, and cold packs after exercise

RHEUMATOID ARTHRITIS

DEFINITION

- In rheumatoid arthritis, the body's immune system attacks the lining of the joint and this causes chronic inflammation of the joints.
 - This often leads to severe destruction and deformity
 - Frequently more than one joint is affected in a symmetrical fashion
 - Common sites: Hands, feet, wrists, elbows, knees and ankles
 - Risky after 40 years of age.
 - rheumatoid can begin in childhood
- Lining=အရိုးအနားကွပ်, Symmetrical Fashion=နှစ်ဖက်ပြိုင်တူဖြစ်ခြင်း, Destruction=ပျက်စီး

SIGNS AND SYMPTOMS

- Joint stiffness
 - worst in the morning,
 - gets better the more they are used throughout the day.
 - Swollen and warm joints
 - Joint deformity (usually obvious in hands)
 - Active and passive movements are painful and restricted.
 - Other features
 - Anemia, skin nodules, pericarditis, lung fibrosis, inflammation of the eye (which can lead quickly to blindness).
 - Still's disease; joint inflammation together with skin changes and spleen enlargement.
- Active/passive movements=လှုပ်လှုပ်မလှုပ်လှုပ် (နာခြင်း), restricted=ကန့်သတ်ထားသော, Pericarditis=နှလုံးကြွက်သားရောင်ရမ်းခြင်း, lung fibrosis=အဆုတ်တွင်းဖိုင်ဘာအသားမျှင်များခြင်း

DIAGNOSIS

- Clinical diagnosis.
- X-ray (refer to hospital)
- Check Hb/Hct to rule out associated anemia.

TREATMENT

The aims of treatment are to:

- Relieve pain
 - Slow down/ stop joint destruction
- Rule out=ဖယ်ထုတ်ရန်

Non-medication treatment:

- Regular gentle exercise
- Splints
- Applying heat and cold packs

GOUT

DEFINITION

Inflammation of the joints caused by formation of crystals within the joint.

These crystals are made of a substance called urate. People with gout often have high levels of urate in their blood which can be caused or made worse by certain risk factors (see below). Patients often complain of very severe pain, redness and swelling; commonly affecting the big toe. Gout is often misdiagnosed as septic arthritis or cellulitis because attacks occur suddenly. The knees and other joints in the feet are also commonly affected. Some people get only one attack whilst others might get many attacks throughout their life. Most people are older than 30 years at the time of their first attack.



RISK FACTORS

The following risk factors cause levels of urate in the body to be high:

1. Alcohol
2. Obesity
3. Certain foods e.g. red meat, seafood
4. Medications e.g. hydrochlorothiazide, low dose aspirin

SIGNS AND SYMPTOMS

- Severe acute joint pain
- Red, hot and swollen joint
- Fever
- Nodules on fingers, toes and elbows (called tophi) - these happen late in gout and can cause pain, press on nerves and damage joints

COMPLICATIONS

Deformity of the affected joints, kidney stones (common), renal failure.

DIAGNOSIS

Clinical

Serum uric acid (UA) often high (Can still have gout even if UA is low).

TREATMENT

Medication treatment

Anti-inflammatory drugs

- **Ibuprofen** (Note: do NOT use aspirin)
- If no response, give **Prednisolone**

Recurrent attacks, tophi or renal stones:

- **Allopurinol** 100-300mg OD (can be increased slowly to a max of 900mg OD) (aim to reduce blood uric acid levels to < 6mg/dl (0.36mmol/L).

Note: Do NOT use Allopurinol during an acute attack. Only start 3 weeks after attack.

- Important to take NSAIDs e.g. ibuprofen + allopurinol for first 3 months

If on hydrochlorothiazide for high BP change to other medication as this can be a cause of gout

Non-medication treatment:

- Rest and elevate joint, ice pack may be useful
- Drink lots of water

PREVENTION

- Weight loss
- Avoid alcohol.
- Reduce amount of red meat and seafood in diet.
- Eat lots of vegetables.

DIARRHOEA

DEFINITION

Diarrhea is a symptom and not a disease.

Acute diarrhea = an increase in the number (>3 times/day) AND loose or **watery stools** passed over a period of **less than 14 days**.

- Acute diarrhea can have many different causes (gastrointestinal infection, food poisoning, surgical problems, or other diseases).

Chronic diarrhea = diarrhea duration more than 2 weeks

Period=ကြာချိန်, Food poisoning=အစာအဆိပ်သင့်ခြင်း

DIARRHOEA WITHOUT BLOOD

- Stools are very liquid (watery diarrhea), many stools, and clear color (brown, yellowish).
- Fever and abdominal pain can exist but there is no blood or mucus in stools.
- The clinical signs are mostly caused by dehydration.
- The cause can be viral, bacterial (e.g. Cholera, *E. Coli*) or parasitic (e.g. *Giardia*). **Note:** acute diarrhea without blood can also be seen in malaria.

Exist=တည်ရှိ၊ ဖြစ်ပွား, Mucus=အခွဲ, Dehydration=ရေဓာတ်ခမ်းခြောက်ခြင်း၊ Parasitic=ကပ်ပါးပိုး

History taking

- How many days has the patient had diarrhea?
- How many times per day?
- Is it watery or with blood?
- Is there abdominal pain, rectal pain, feeling that haven't completely emptied bowels (tenesmus), fever or vomiting?

Rectal pain=ဝမ်းသွားပြီးစအိုနာ, tenesmus=ဗိုက်ရစ်နာ

Acute diarrhea

	DIARRHOEA WITHOUT BLOOD	DIARRHOEA WITH BLOOD (DYSENTRY)
Signs	<ul style="list-style-type: none"> ▪ Sometimes fever ▪ Slight abdominal pain ▪ Vomiting 	<ul style="list-style-type: none"> ▪ High fever ▪ Moderate to severe abdominal pain ▪ Vomiting
Stools	<ul style="list-style-type: none"> ▪ Watery 	<ul style="list-style-type: none"> ▪ Blood
Life-threatening	<ul style="list-style-type: none"> ▪ Dehydration 	<ul style="list-style-type: none"> ▪ Sepsis

Life-threatening=အသက်အန္တရာယ်ရှိခြင်း, Slight=အနည်းငယ်, Moderate=အလယ်အလတ်, Sepsis=သွေးဆိပ်သင့်ခြင်း (သွေးထဲရောဂါပိုးပျံနှံ့ပြီး အဆိပ်သင့်ခြင်း)

DIAGNOSIS

- Important to evaluate and treat **dehydration**.
- **stool-test** can know virological, bacterial and amoebic causes
- **Fever** > exclude malaria, otitis media, pneumonia, meningitis or UTI
- **Abdominal signs** (painful and distension) > exclude obstruction or perforation
- **Chronic diarrhea** (>2 weeks) > malnutrition and chronic diseases e.g. HIV

Evaluate=စမ်းစစ်, Exclude= စဉ်းစားပြီးပယ်ထုတ်ပါ, Distension=ဖောင်းတင်းခြင်း,

Obstruction=ပိတ်ဆို့ခြင်း, Perforation=ပေါက်ကွဲခြင်း

TREATMENT OF DIARRHOEA:

Follow these steps to diagnose and treat diarrhea:

- Assess **acute or chronic**
- Assess **dehydration** and choose a **treatment** according to the WHO criteria.
- Think of **syndrome**: diarrhea without blood or with blood (dysentery).
- Think the **cause** of diarrhea and decide antibiotics are needed or not.

Assess=စစ်ဆေးပါ, Criteria=သတ်မှတ်ချက်, Syndrome=ရောဂါလက္ခဏာစု, Decide=ဆုံးဖြတ်ပါ

Assess Dehydration

	Plan A: No Dehydration	Plan B: Mild Dehydration 2 or more of:	Plan C: Severe Dehydration 2 or more of:
General conditions	Normal	Agitated	Very tired or unconscious
Eyes	Normal	Slightly sunken	Deeply sunken
Tears	Present	Absent	Absent
Mouth and Tongue	Moist	Dry	Very Dry
Thirsty	None	Yes	Not able to drink (too weak to express the need)
Skin pinch	Goes back normally (quickly)	Goes back slowly	Goes back very slowly

Treatment Plan A

- To treat diarrhea at home and prevent dehydration
- The patient has **no signs of dehydration. Do not need to admit** to clinic.
- Oral Rehydration Solution (ORS) for at least 2L.
- Extra fluids
- ADVISE WHEN TO COME BACK
 - You should tell the family/patient that they should return if:
 - Passes many watery stools
 - Is very thirsty
 - Blood in stool
 - Vomits a lot
 - Seems not to be getting better after 3 days
 - Has a fever
 - Does not eat or drink normally.

Treatment Plan B

- The patient has **signs of dehydration. Needs to be admitted** to clinic.
- Give ORS in the first 4 hours according to the table below.
- Vomiting is very common especially in the first 1-2 hours

Weight	16-29.9 kg	30 kg or more
Age*	5 - 14 years	15 years +
ORS	1200 - 2200 ml	2200 - 4000 ml

REASSESS (ပြန်လည်စစ်ဆေးခြင်း)

- Assess dehydration and vital signs **every 1 hour**.
- After **4 hours** reassess, decide what treatment plan to continue:
 - No signs of dehydration > plan A
 - Some dehydration > plan B
 - Worsening dehydration > plan C

Notes

Patients with watery diarrhea do NOT need antibiotics. They only need REHYDRATION. Some condition may need antibiotics. E.g. Cholera, Giardia and dysentery

Cholera

DEFINITION

Cholera is an intestinal infection caused by the bacterium *Vibrio cholerae*. This bacterium produces Cholera Toxin (CT), an enterotoxin which causes a massive outpouring of fluid and salts (electrolytes) into the bowel. **Cholera infection is transmitted through contaminated water or food.**

Cholera should be suspected

- A child older than 5 years, or an adult,
- Severe dehydration usually with vomiting
- any patient >2 years has acute watery diarrhea when cholera is outbreak.

Massive outpouring=အရည်များစွာထွက်ခြင်း, Enterotoxin=အူလမ်းကြောင်းတွင်း အဆိပ်ပြန့်ခြင်း,

Contaminated=မသန့်ရှင်းသော, Suspected=သံသယဖြစ်ဖွယ်, Outbreak=အစုလိုက်အပြုံလိုက်ဖြစ်ပွားခြင်း

SIGNS AND SYMPTOMS

- rice-water stools
- In severe cases
 - loss of 10% or more of the body's weight
 - **hypovolemic shock, metabolic acidosis and potassium loss (causing death)**
- Vomiting starts after the onset of (always painless) diarrhea.
- 75% or more of initial infections with *V.cholerae* may be asymptomatic

Rice-water stools=ဆန်ဆေးရည်ကဲ့သို့ ဝမ်းသွားခြင်း, initial infection=ရောဂါစဖြစ်ချိန်,

Asymptomatic=လက္ခဏာမပြ

DIAGNOSIS, TREATMENT AND PREVENTION

Clinical diagnosis

if suspect a case, refer for stool-sample test for *V. cholera*, to define outbreak.

TREATMENT

- put in IV line, give Ringers Lactate 1L stat and refer to hospital immediately

PREVENTION

- Clean water for hand-washing and for cooking.
- Avoid uncooked seafood.
- Avoid eating leftovers food as this is high *V.cholera* growth

VACCINE

Vaccines for short-term protection (6 months). These vaccines should be given in case of an outbreak situation.

Immediately=ချက်ခြင်း, uncooked seafood=မချက်ပြုတ်ထားသော ပင်လယ်စာများ, leftovers food =

အစာဟောင်းများ၊ စားကြွင်းစားကျန်များ

DYSENTERY - DIARRHOEA WITH BLOOD

Two types of dysentery:

Bacterial	Amoebic
Several types of bacteria cause dysentery, the most severe form is <i>Shigella</i> . Symptoms: fever, abdominal pain, tenesmus, unwell patient	Often not acute illness, less than 30% of sufferers have fever. Amoebae > the blood > peripheral (e.g. liver) abscesses

not possible to differentiate between amoebic and bacterial diarrhea without laboratory stool investigation.

Several=အမျိုးမျိုးသော, Unwell=နေမကောင်း, Sufferers=ခံစားရသူ၊ဖြစ်ပွားသူလူနာ၊ Abscess=ပြည်တည်နာ၊

Peripheral=အစွန်အဖျားဖြစ်သော, Investigation=ရောဂါရှာဖွေခြင်း

ADULT PATIENTS AT RISK

- Patient over 65 years old with no support at home to help them.
- Malnourished
- High fever >39°C
- Signs of severe dehydration
- Signs of confusion, seizures or coma

Support=အထောက်အပံ့, Malnourished=အာဟာရမပြည့်, Confusion=ဂယောင်ဂတမ်း, Seizures=တက်ခြင်း,

Coma=သတိလစ်ခြင်း

TREATMENT

No FEVER

- **Admit to clinic** if the patient is **at risk**.
- **Metronidazole PO x 5 days** (5 - 10 days if liver amoebiasis)
 - Adult: 750 mg TID

With FEVER

- **Admit to clinic** if patient is **at risk**.
- Treat the fever with Paracetamol.
- **Ciprofloxacin PO x 3 days:**
 - Adults: 500 mg BID
 - If not better add **Metronidazole**

Note: if pregnant (ciprofloxacin contraindicated) give Ceftriaxone IM 1g OD for 3-5 days. Watch for complications abdominal distension, perforation, sepsis

PREVENTION (Health education)

- Wash hands with soap and water
 - Before eating, preparing food and
 - After visiting the toilet.
- Breastfeed babies (exclusive breast feeding if <6 months).
- Boil drinking water
- Cook food well and keep it covered.
- Use toilets. Clean carefully after passing stools
- Do not use chronic antacid (like aluminum);
 - gastric acidity helps to fight bacteria

Gastric acidity=အစာအိမ်အတွင်းရှိ အစာချေအက်ဆစ်

COMPLICATIONS

- Septicemia,
- Acute abdomen,
- Amoebic liver abscess and
- Hemolytic uremic syndrome (HUS)
 - anemia, low platelets and acute renal failure



DYSPEPSIA

Dyspepsia describes a number of upper abdominal symptoms such as heartburn, acidity, pain or discomfort, nausea, vomiting, bloating, wind, fullness, early satiety or belching.

Conditions associated with dyspepsia-

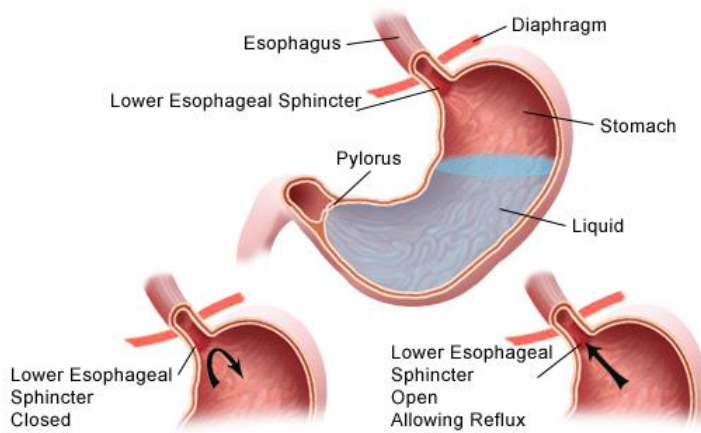
- *Gastro esophageal reflux disease (GORD)*
- *Peptic ulcer disease (PUD)*
- *Gastritis, esophagitis, pancreatic*
- *GI cancer*
- *inflammatory bowel diseases*
- *Hepatitis, Liver cirrhosis and biliary disease*
- *Systemic diseases- chronic renal failure*
- *Drug - Non-steroidal anti-inflammatory drugs (NSAIDs), Iron and potassium supplements, Corticosteroids, Digoxin*
- *Others – Alcohol, anxiety, etc.*

GASTRO-OESOPHAGEAL REFLUX DISEASE

DEFINITION

Gastro-esophageal reflux disease (GORD) is caused by a **weak sphincter (muscle)** between the esophagus and the stomach which means that the contents from the stomach reflux into the esophagus causing a burning pain.

Gastroesophageal Reflux



RISK FACTORS

1. High Alcohol intake	5. Heavy Smoking
2. Obesity	6. Pregnancy
3. Eating Spicy Food	7. Drugs eg. NSAID, Steroid, Aspirin
4. High Caffeine Intake	8. Doxycycline

SIGNS AND SYMPTOMS

- Heartburn aggravated by lying down, bending over or eating a high fat meal
- Water brash (Hypersalivation)
- Bleaching
- Regurgitation

DIAGNOSIS

Clinical diagnosis

GASTRITIS

DEFINITION

Gastritis is an inflammation of the stomach

CAUSES

- High alcohol intake
- Heavy smoking
- Eating spicy food အစပ်များသောအစားအစာများ
- **H. pylori bacteria** in the stomach
- Prolonged use of some medicines
 - E.g. Aspirin, Indomethacin, Ibuprofen, high dose Ferrous Sulphate

SIGNS AND SYMPTOMS

- Burning pain in the epigastric area
- Nausea
- Vomiting
- Bulging
- Feeling of fullness

DIAGNOSIS

- . Clinical diagnosis
- . If vomiting with blood: see gastro-intestinal bleeding

PEPTIC ULCER DISEASE

DEFINITION

- In peptic ulcer disease, epigastric pain can be very severe. Ulcers are often found in the stomach (gastric ulcer) or in the duodenum (duodenal ulcer).
- Often peptic ulcers are caused by infection with bacteria called *H. pylori*.
- Medicines that reduce stomach acid like aluminum hydroxide may make you feel better, but the ulcer may come back.

SIGNS AND SYMPTOMS

- Burning pain in the epigastric area:
- **Gastric ulcer:** pain worse with food (အစားရင်ပိုနာ)
- **Duodenal ulcer:** worse before meals and in the morning (empty stomach). Pain may reduce with eating, but comes back 1-2 hours after a meal. (အစားမရှိရင် ပိုနာ)
- Nausea, vomiting, loss of appetite.
- Weakness and fatigue due to chronic bleeding.

COMPLICATIONS

- **Acute bleeding**
 - vomit brown liquid (like coffee)
 - fresh blood
 - melena (black sticky smelly stools).
- **Chronic bleeding**
 - Prolonged small amount of bleeding > anemia
- **Perforation (EMERGENCY)**
 - Can lead to peritonitis (hard, very tender abdomen), sepsis and death.

Perforation Treatment

- **DR-ABCDE**
- Nothing by mouth (NPO – Nothing per oral)
- IV **Ampicillin** + IV **Gentamicin** + IV **Metronidazole**
- IV fluids – NSS

REFER THE PATIENT TO HOSPITAL IMMEDIATELY

Diagnosis: It is a clinical diagnosis. Examine abdomen to check for any pain/masses. Look for anemia. Ideally all patients who suffer from peptic ulcer disease should be tested for *H. pylori*.

TREATMENT

- Lifestyle advice
- Stop any exacerbating medications
- Medication
- De-worm

Lifestyle advice:

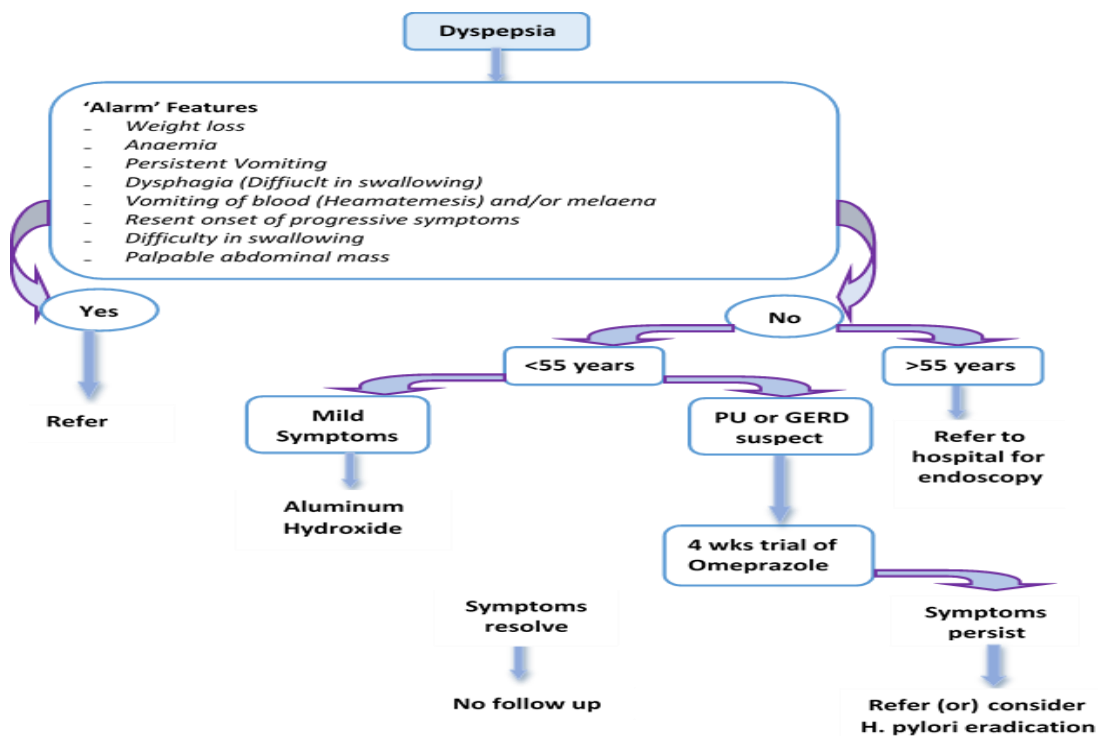
- Try to reduce or stop: alcohol, smoking, spicy food, hot drinks, tea and coffee.
- Avoid unnecessary prolonged use of analgesics such as Aspirin, Ibuprofen,
- If long term medication absolutely necessary
 - e.g. steroids for nephrotic syndrome > **Omeprazole** 20mg OD prophylaxis to prevent gastritis.
- Stress relief

If GERD is suspected.

- Avoid eating for 3 hours before bedtime, eat more but smaller meals, and do not lie down after meals
- Advise overweight patients to lose weight, reduce fatty foods.
- Elevation of the head of the bed is beneficial in GERD suspected patients

Medications: (See detail in algorism)

- Mild symptoms
 - Aluminium hydroxide 500 mg TID between meals at bedtime as required.
- If the patients have sign and symptoms of GORD and Peptic ulcers
 - Omeprazole 20mg OD (more preferable) for 4-8 wks
 - *Cimetidine 400mg BD* (or) Ranitidine 150mg BD for 4-8 wks
- Refer for investigation (if needed)



- *H. pylori* is a bacteria found in stomachs. It resistant to acid and survive in high acidic environment. Mostly doesn't know the patient is infected and asymptomatic. It can cause gastritis or ulcers. It has also been linked to stomach cancer.
- Since the source of *H. pylori* is unknown. It can be prevented by washing hands, well prepared food, and drink safe water.

H. Pylori Treatment

Triple Therapy (AMO – Amoxil, Metro, Omeprazole)

- **Omeprazole** 20mg BID for 10 days AND
- **Metronidazole** 500mg TID for 10 days AND
- **Amoxicillin** 500mg TID for 10 days
- Follow by **Omeprazole** 20mg OD for 2 weeks

HYPERTENSION

DEFINITION

- **HYPERTENSION, OR HIGH BLOOD PRESSURE (HBP)**
 - $\geq 140/90\text{mmHg}$
- The cardiovascular risk
 - >60 years
 - males $>$ females
 - poor diet
 - Smoking
 - high blood cholesterol
 - diabetes mellitus
 - if the patient already has heart disease or kidney disease.

MALIGNANT HYPERTENSION

SBP >180 OR DBP >120 this is an EMERGENCY

CAUSES

95% is unknown cause, called 'Essential Hypertension'.

5% is known cause, called 'Secondary Hypertension'

Secondary Hypertension

1.	High alcohol intake and smoking	6.	Medicines and drugs: prednisolone,
2.	Obesity		Contraceptive pill, amphetamines
3.	Pregnancy (pre-eclampsia)		NSAIDs, salbutamol
4.	Kidney diseases	7.	Pain and anxiety
5.	Diseases of the adrenal gland	8.	Congenital heart disease

Note: Think of secondary hypertension especially if: young, have another disease or on regular medication

SIGNS AND SYMPTOMS

- Asymptomatic
- Some patients
 - headache,
 - dizziness or fatigue

COMPLICATIONS

Complications of ACUTE high BP (EMERGENCY)

MALIGNANT HYPERTENSION

- **General symptoms:** nausea, vomiting
- **Brain:** neurological changes
 - e.g. temporary loss of speech or vision, numbness, confusion, restlessness, convulsion, coma or stroke
- **Retina:** acute visual problems
- **Kidneys:** acute kidney failure
- **Heart:** acute heart failure

Complications of **CHRONIC** high BP:

- **Peripheral blood vessels**
 - Damage blood vessels $>$ pain in the legs when walking (claudication).
- **Central Nervous System:**
 - Stroke (Transient ischemic attacks)
 - subarachnoid hemorrhage

- **Eyes:**
 - Damage to the retina > bad eyesight but blindness is rare.
- **Heart:**
 - Ischemic heart disease
 - left ventricular hypertrophy
 - left heart failure
 - Atrial fibrillation (irregular heart rhythm)
- **Kidneys**
 - chronic kidney failure

DIAGNOSIS

Higher BP values -**once a week for 3 weeks**

Assessment

1. Accurate BP every week for 3 weeks
2. History taking and physical examination
3. identify risk factors
4. underlying cause
5. Urine dipstick for blood/protein/glucose
6. Check a fasting blood sugar (FBS) on all patients

TREATMENT

Explanation to patient

Hypertension is asymptomatic

Higher risk for problems

- Stroke and heart attack.

This risk can be reduced by

- lifestyle changes
- Medication.

The medication will not cure the problem but will decrease the risk. They will have to take medication and follow up for the rest of their life.

Lifestyle treatment

- Reduce salt use
- Healthy diet
 - e.g. avoid fatty foods / eat more vegetables and fruit
- Reduce weight if overweight or obese.
- Stop or reduce alcohol
- Stop or reduce smoking
- Exercise at least 30 minutes

Medication treatment

- Confirm diagnosis
- Take medication regularly
- if not regularly, more dangerous for the patient (especially with beta blockers).

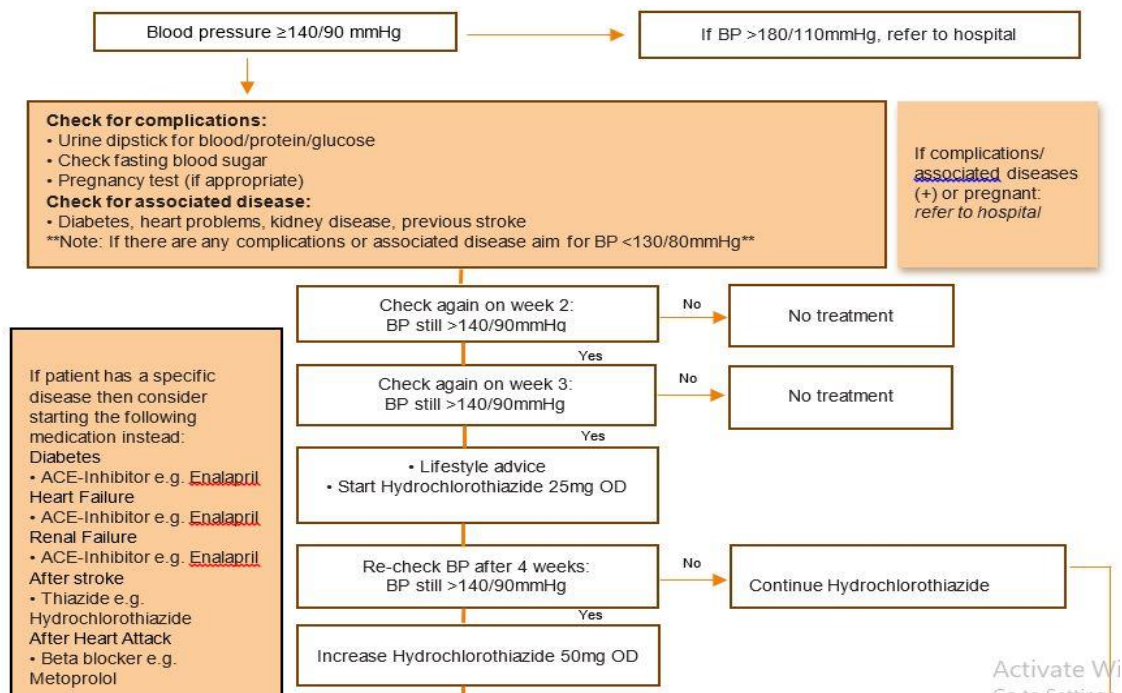
Follow up

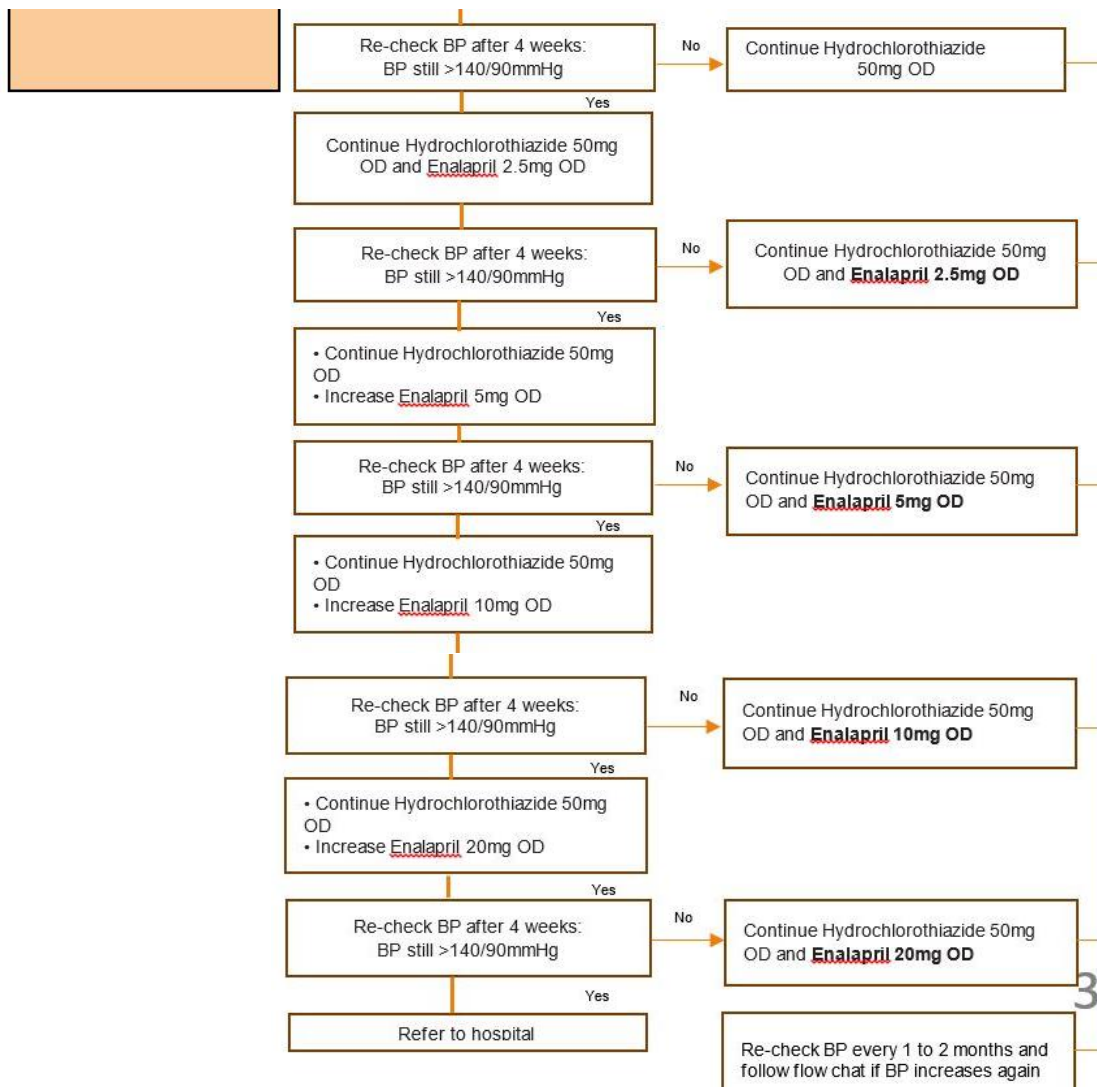
- Not regular follow up > STOP the medication
- Before increasing the dose or changing the medication, check the patient has been taking the drug regularly.
- Before starting **Enalapril**, do a **pregnancy test** for females.
- If BP too low with > reduce dose
 - e.g. Enalapril **5mg** OD reduce **to 2.5mg** OD.

Treatment Options According to BP Measurement

SBP	DBP	Treatment
130-139	80-89	Only monitor +/- treat if have associated disease e.g. diabetes, heart problems, kidney disease, Previous stroke. See algorithm
140-179	90-109	See algorithm
180-200	110-120	Refer to hospital If anxious try to calm patient.

Treatment of chronic HBP in adult





MALIGNANT HYPERTENSION

- BP >180 OR DBP >120

THIS IS AN EMERGENCY – NEED TO REFER PATIENT

Treatment:

- furosemide 20 mg PO before referral.
- Aim at 25% BP reduction in first few hours then cautious reduction afterwards.

Note: if suspect patient has had a stroke do not attempt to lower blood pressure, this would be dangerous



INTESTINAL WORM

Intestinal worms are very common (ascaris / hookworm).

- Infected by eating with dirty hands, walking without shoes or eating uncooked meat or vegetables.
- Worms should be treated to
 - Prevent anemia and malnutrition.
 - Prevent the following complications:
 - Intestinal obstruction/obstructive jaundice
 - Cysticercosis (*Taenia solium*) – lesions in brain and skin

Cysticercosis (စစ်စတီဆာကို့စ်) lesions in brain=ဦးနှောက်တွင် အနာတည်ခြင်း

If a patient needs steroid treatment (e.g. Prednisolone) for another disease, ALWAYS deworm as the steroids decrease the immune system so the worm infections get worse.

SOIL-TRANSMITTED HELMINTHS

DEFINITION

- E.g. *ascaris*, *hookworm* and *trichuris*.
- Lifecycle is outside the human body,
- Infection is direct: eggs are transmitted from anus to mouth by eating or cooking with dirty hands (*ascaris*, *trichuris*), or through penetration of the skin by walking with bare feet (*hookworm*, *strongyloides*).
- The worms live in the intestines > migrate through the body.
- Children > impaired growth and intellectual development.

Penetration=ဖောက်ထွင်းဝင်ရောက်ခြင်း၊ Bare feet=ခြေဖလား၊ impaired growth=ကြီးထွားမှုနှောင့်နှေးခြင်း၊

Intellectual development = ဉာဏ်ရည်ဖွံ့ဖြိုးမှု

SIGNS AND SYMPTOMS

- Worm Can be seen in the stool or vomit
- Abdominal pain
- Malnutrition
- Chronic Anemia
- Epigastric pain especially hook worm infection
- Complications: ascaris pneumonitis; intestinal obstruction, jaundice
- Rash from migrating worm: Cutaneous larva migrans (hookworm), larva currens (*strongyloides*)
- Itching anus

Pneumonitis=အဆုတ်ရောင်ခြင်း, Cutaneous=အရေပြားအောက်

- Patients with worms have no fever.
- If fever is present, look for another associated disease

DIAGNOSIS

- Stool microscopy test for worms and/or eggs.
- CBC shows eosinophilia.

TREATMENT

Note: for pregnant women NOT in first trimester

	Mebendazole		Albendazole (If strongyloides give 3 days)
Adult	100mg BID x 3 days	OR	400 mg STAT

First trimester=ကိုယ်ဝန် ပထမ (၃)လ၊ (ကလေးအတွက် Dose များကို Child Health Curriculum တွင် ဖတ်ရန်)

PREVENTION

- Use latrines,
- wear shoes.
- Wash hands
 - after passing stools and
 - before eating/cooking,

If suspect worms but do not have a stool sample result

- Use **Albendazole**
- **Treat anemia** (especially hookworm)

Mass deworming projects are recommended in endemic areas

- for all schoolchildren and
- pregnant women in the second and third trimester

Mass deworming projects=လူအားလုံးအတွက် သန်ချဆေးတိုက်ကျွေးသော စီမံကိန်းများ

TAENIA (TAPE WORM)

DEFINITION

- This worm is long, flat, made up of many short segments and can be up to 10 meters long.
- Patients get infected by eating undercooked meat.
- Parasites leave the eggs in the human stool and can infect animals.

SIGNS AND SYMPTOMS

- Worm in stools or vomit.
- Abdominal discomfort, epigastric pain, nausea.
- Patient eats a lot, but loses weight.
- Taenia. *Solium* (*get from pork*)– nodules under the skin or muscles.
- In neuro cysticercosis, cysts in the brain cause seizures and epilepsy.

Pork=ဝက်သား, Nodules=အဖုအကျိတ်များ

DIAGNOSIS

- Stool microscopy test
- CBC shows eosinophilia

TREATMENT

- **Praziquantel** Child > 2yrs/ Adult:20 mg/kg STAT

Note: tablets need to be chewed before swallowing. သန်ချဆေးများသည် ဝါးပြီးမှ မျိုချရမည်။

PREVENTION

- Avoid eating raw or undercooked pork and other meats.
- Wash hands with soap and water
 - after using the toilet and
 - before handling food,
 - use latrines

BACTERIA SKIN INFECTION

Any skin lesion can become infected

- If skin lesions are wet with pus, red, warm/hot

Or

- If the patient has fever suspect a bacterial infection
- Treat with the following antibiotics:

Cloxacillin	<i>Mild Infections</i>	<i>Moderate Infections</i>	<i>Severe Infections</i>
<i>Adult:</i>	500 mg QID	PO 1g QID	PO 1g QID IV
Erythromycin (If allergic to penicillin)	<i>Mild Infections</i>	<i>Moderate Infections</i>	<i>Severe Infections</i>
<i>Adult:</i>	500 mg QID PO	1g QID PO	12.5mg/kg QID IV

IMPETIGO

DEFINITION

- Caused by *Staphylococcus aureus*.
- Transmission is by direct contact.
- Rash can increase over days to weeks. The lesions are red, round, flattish, with golden colored crust that are usually 0.5 to 3cm in size. They are sometimes wet.
- Treat also any other skin disease (scabies, ringworm, eczema etc.).

For all patients:

- Keep away from school until crusts are dry.
- Treat any other skin disease e.g. scabies, eczema
- Treat contacts.
- Wash clothing and towels daily until infection is resolved.

Lesion=အနာ, Flattish=ပြားချပ်, Crust=အနာဖေး, Wet=စိုစွတ်, Contacts=ထိစပ်သူများ, Resolved=ပျောက်ကင်း

LOCALISED IMPETIGO

- If the child is a neonate go directly to Extensive Impetigo.

SIGNS AND SYMPTOMS

- Less than 3 spots with pus and red skin on only one part of the body, often around the mouth, behind the ears, on the hands or feet.
- No fever.



TREATMENT

- Clean with water and soap or antiseptic (for example Gentian violet, Povidone, Savlon, or Chlorhexidine) 2 times per day and dry.
- Use gentian violet if impetigo is near mucous membranes (eyes, mouth).
- Gently remove the crust after softening them with Vaseline
- Keep dry (if on the buttocks of children, leave them uncovered).
- Cut the fingernails
- Shave the head if necessary (if a lot of lesions on the head).

Antiseptic=ပိုးသတ်ဆေးရည်, Buttocks=တင်ပါး, Fingernails=လက်သည်း, Shave the head=ခေါင်းတုံးတုံး

TENSIVE EMPETIGO

SIGNS AND SYMPTOMS

Neonates, or more than 3 lesions or impetigo on more than one part of the body

TREATMENT

Give the same local treatment as for mild infections.

- Give PO Cloxacillin, if allergic to penicillin: Erythromycin.
- Incise abscesses.

Incise = ခွဲထုတ်ခြင်း

ABSCESS

DEFINITION

This is a collection of pus in the soft tissues, most commonly due to Staphylococcus aureus.

- There is a red, painful, hot, localized swelling. There may be fever and enlarged lymph nodes.
- Antibiotics cannot reach the abscess cavity very well so the treatment is to cut open the abscess to allow the pus to drain out (incision and drainage).
- Some abscesses are not hot and not painful ('COLD' ABSCESS).
- If you find this, think of TB.

TREATMENT

FIRST STAGE: the skin is hard.

- Apply warm compresses QID.
- Treat the pain with paracetamol or ibuprofen
- **No antibiotic** is needed for this stage

Give **Cloxacillin** for 7 days (or **Erythromycin** if allergic to **Penicillin**) if the patient also has:

- Cellulitis (see below).
- General symptoms (fever, chills)
- Children < 1 year
- Abscess on the head/neck or hand, multiple abscesses.
- Abscess on the breast and mastitis; give 10days **Cloxacillin** (500 mg QID).

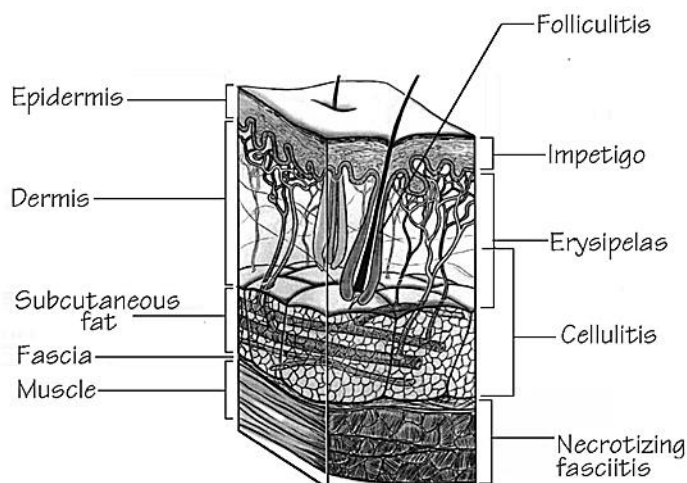
If the wound is very unclean e.g. contaminated with soil then consider adding **Metronidazole**

SECOND STAGE: very painful. One point on the skin (exactly above the pus collection) is soft and should be opened.

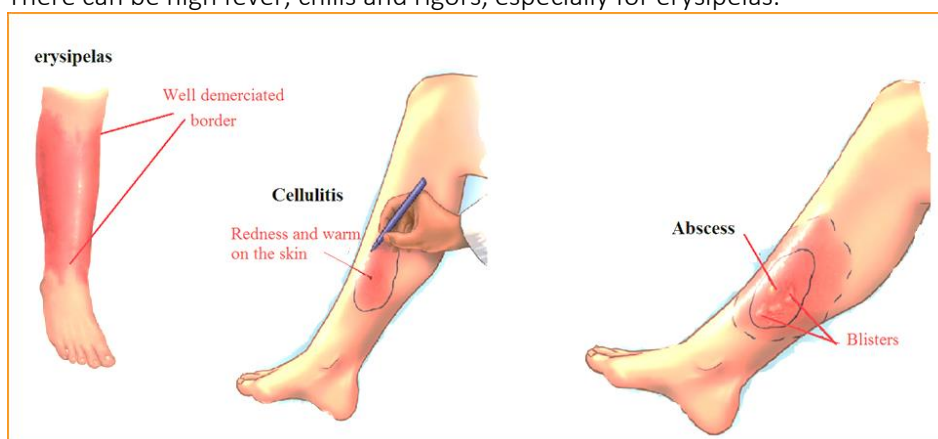
1. Wash hands, use gloves and sterile materials.
2. Use local Lidocaine injection for pain relief.
3. Cut with a sterile blade.
4. Remove the pus. Clean inside the cavity. Break down all lobes of the abscess.
5. Wash with normal saline.
6. Insert a gauze dressing soaked with normal saline into the hole as a 'wick'.
7. Change dressing daily until the hole begins to close. Do not clean with gauze and iodine: you will destroy all the new tissue. Only flush gently with normal saline until clean water comes out.
8. Be careful when using gauze packing. If small pieces are left inside the abscess (foreign body), the abscess cannot heal and will become chronic.
9. Abscesses in the buttocks are at risk to develop fistula with the anus. Follow these cases carefully with daily normal saline flush.
 - Avoid manipulating an abscess in the face due to the risk of cavernous sinus thrombosis (blood clot in the base of the brain) – treat such cases as severe, with high dose IV antibiotics.

CELLULITIS AND ERYSIPELAS

- This is a spreading acute bacterial infection under the skin, with redness, swelling (not localized like an abscess) and pain, with local lymph gland enlargement.
- *Streptococcus pyogenes* and *Staphylococcus aureus* are the most common causes.



Not well define margin cellulitis, but for erysipelas there may be clear borders. There can be high fever, chills and rigors, especially for erysipelas.



- If the cellulitis causes deep ulcers very quickly (within a week),
 - “necrotizing fasciitis”, caused by many organisms including group A Streptococcus (group A strep), Klebsiella, Clostridium, E. coli, Staphylococcus aureus.
- The risk of cellulitis is septicemia (when the bacteria spread into the blood) - to prevent septicemia it is important to diagnose early and start antibiotic treatment

TREATMENT

- Immobilization and elevation of the limb (higher than the heart).
- Cool and wet dressing.
- **Do not cut open.**
- Give ibuprofen for pain and inflammation
- Give antibiotics:

Mild cases

- **Cloxacillin** PO x 7 days and follow up regularly
- If penicillin allergic use **erythromycin** PO
- If **no improvement** after 3 days or the patient is getting worse: admit to IPD, and change to severe case.

Severe cases: high fever, patient unwell.

- Admit to **IPD**, do blood culture
- Start intravenous antibiotics:
 - **Cloxacillin** IV Adult: 1g QID
 - AND**
 - **Benzyl penicillin** IV Adult: 1.2g QID
- If no improvement after 48 hours
 - **Gentamicin** OD (5-7 mg/kg in children and adults) for 3-5 days.

Suspect necrotizing fasciitis

- Referral
- Remove all necrotic tissue and clean with normal saline 1-2 times daily.
- Cover with wet gauze (use normal saline) and then wrap around with dry gauze
- Treat
 - IV Cloxacillin as per severe cellulitis

DRESSING

Material

Sterile instruments

- one Kocher or Pean forceps
- one dissecting forceps
- one pair of surgical scissors or one scalpel to excise necrotic tissue and to cut gauze or sutures

Instruments for one dressing for one patient must be wrapped together in paper or fabric (or can be placed in a metallic box) and sterilized together to limit handling and breaks in asepsis. 5 to 10 compresses may be included in this set.

If there are no sterile instruments, a dressing can be done using sterile gloves. – Renewable supplies

- sterile compresses
- non-sterile disposable gloves
- adhesive tape and/or crepe or gauze bandage
- sterile 0.9% sodium chloride or sterile water
- depending on the wound: antiseptic (polyvidone iodine scrub solution, polyvidone iodine dermal solution), paraffin compresses, analgesics

Organization of care

Proper organization of care helps maintain the rules of asepsis and decreases the risk of contamination of the wound or transmission of organisms from one patient to another:

- Assign one room for dressings. It must be cleaned and the waste removed every day. The dressing table must be disinfected after each patient.
- Dressings may be applied at the bedside if the patient's condition requires. Use a clean, disinfected dressing trolley with: on the upper tray, sterile and/or clean material (dressing set, extra compresses, etc.) and on the lower tray, septic material (container for contaminated instruments, sharps disposal container and a container or garbage bag for waste).
- Prepare all the necessary material in a well-lit area. If necessary, arrange for an assistant to be present.
- Wear protective glasses if there is a risk of projection from an oozing wound.
- Always proceed from clean to dirty: start with patients with uninfected wounds. If there are multiple dressings for one patient, start with the cleanest wound.

Technique

- If the procedure may be painful, give an analgesic and wait the necessary time for the drug to take effect before starting the procedure.
- Settle the patient comfortably in an area where his privacy is respected throughout the procedure.
- Explain the procedure to the patient and obtain his co-operation.
- Instruments (or sterile gloves) must be changed between patients.
- To prevent drug interactions, use the same antiseptic for all care of one patient.

Removal of an old dressing

- Wash hands (ordinary soap) or disinfect them with an alcohol-based hand rub.
- Put on non-sterile gloves and remove the adhesive tape, bandage and superficial compresses.
- Proceed gently with the last compresses. If they stick to the wound, loosen them with 0.9% sodium chloride or sterile water before removal.
- Observe the soiled compresses. If there is significant discharge, a greenish color or a foul odor, a wound infection is likely.
- Discard the dressing and the non-sterile gloves in the waste container.

Observe the wound

In the case of an open wound, loss of cutaneous tissue or ulcer, the color is an indicator of the stage in the healing process:

- black area = necrosis, wet or dry infected eschar
- yellow or greenish area = infected tissue and presence of pus
- red area = granulation, usually a sign of healing (unless there is hypertrophy), however, red edges indicate inflammation or infection
- pink area = process of epithelization, the final stage of healing that begins at the edges of the wound

In the case of a sutured wound, the existence of local signs of suppuration and pain requires the removal of one or more sutures to avoid the infection spreading. Local signs include:

- red, indurated and painful edges
- drainage of pus between the sutures, either spontaneously or when pressure is applied on either side of the wound

Technique for cleaning and dressing of the wound

- Wash hands again or disinfect them with an alcohol-based hand rub.
- Open the dressing set or box after checking the date of sterilization and that the wrapping is intact.
- Pick up one of the sterile forceps being careful not to touch anything else.
- Pick up the second forceps with the help of the first one.
- Make a swab by folding a compress in 4 using the forceps.
- Clean sutured wound or clean open wound with red granulation:
 - clean with 0.9% sodium chloride or sterile water to remove any organic residue; work from the cleanest to the dirtiest area (use a clean swab for each stroke);
 - dab dry with a sterile compress;
 - re-cover a sutured wound with sterile compresses or an open wound with paraffin compresses; the dressing should extend a few cm beyond the edges of the wound;
 - keep the dressing in place with adhesive tape or a bandage.
 - Necrotic or infected open wounds:
 - clean with polyvidone iodine (7.5% scrub solution, 1 part of solution + 4 parts of sterile 0.9% sodium chloride or sterile water). Rinse thoroughly then dab dry with a sterile compress; or if not available, sterile 0.9% sodium chloride or sterile water and apply an antiseptic (10% polyvidone iodine dermal solution).
 - apply sterile Vaseline and remove all necrotic tissue at each dressing change until the wound is clean.
- Discard any sharp materials used in an appropriate sharps container and the rest of the waste in a waste container.
- As quickly as possible, soak the instruments in disinfectant.
- Wash hands again or disinfect them with an alcohol-based hand rub.
- The principles remain the same if the dressing is done using instruments or sterile gloves.

Subsequent dressings

- Clean, sutured wound: remove the initial dressing after 5 days if the wound remains painless and odorless, and if the dressing remains clean. The decision to re-cover or to leave the wound uncovered (if it is dry) often depends on the context and local practices.
- Infected, sutured wound: remove one or more sutures and evacuate the pus. Change the dressing at least once daily.
- Open, dirty wound: daily cleaning and dressing change.
- Open granulating wound: change the dressing every 2 to 3 days, except if the granulation is hypertrophic (in this case, apply local corticosteroids).

TREATMENT OF SIMPLE WOUND

- A simple wound is a break in the continuity of the skin limited in depth at the sub-cutaneous fatty tissue, that does not affect the underlying structures (muscle, bone, joints, major arteries, nerves, tendons) and without significant loss of tissue.
- The goal of treatment is to assure rapid healing of the wound without complications or sequelae. Several basic rules apply:
 - rapidly treat wounds, while maintaining the rules of asepsis and the order of the initial procedures: cleaning exploration-excision;
 - identify wounds that need to be sutured and those for which suturing would be harmful or dangerous;
 - immediately suture recent, clean, simple wounds (less than 6 hours old) and delay suturing contaminated wounds and/or those more than 6 hours old;
 - prevent local (abscess) or general (gas gangrene; tetanus) infections.

Material

Instruments

- One dissecting forceps, one needle-holder, one pair of surgical scissors and one Pean or Kocher forceps are usually enough.
- One or two other artery forceps, a pair of Farabeuf retractors and a scalpel may be useful for a contused or deep wound.

Instruments to suture one wound for one patient must be packaged and sterilized together (suture box or set) to limit handling and breaks in asepsis.

Renewable supplies

- For local anesthesia: sterile syringe and needle; 1% lidocaine (without epinephrine)
- Sterile gloves, fenestrated sterile towel
- Sterile absorbable and non-absorbable sutures
- Antiseptic and supplies for dressings
- For drainage: corrugated rubber drains or equivalent, nylon suture

Technique

- Settle the patient comfortably in an area with good lighting and ensure all the necessary material is prepared.
- Explain the procedure to the patient and ensure his co-operation.
- If the patient is a young child, arrange to have an assistant hold the child if necessary.
- Initial cleaning
- Wear suitable clothing: sterile gloves for all wounds and a gown and protective glasses if there is a risk of projection from a bleeding wound.
- Start by washing the wound, prolong the cleaning if the wound is particularly soiled. Use ordinary soap or polyvidone iodine scrub solution and water and rinse.
- If necessary, use a sterile brush. Cleaning with running water is preferable to cleaning by immersion.
- If the wound is infected and the patient has general signs of infection (fever, chills, changes in the overall condition) systemic antibiotic therapy may be required. Administer antibiotics at least one hour prior to starting care.

Exploration

- Wash hands and put on sterile gloves.
- Disinfect the wound and surrounding area with 10% polyvidone iodine. – Cover the wound with a fenestrated sterile towel.
- Local anesthetic: infiltrate 1% lidocaine into the edges of the wound and wait at least 2 minutes for the anesthetic to take effect.
- Proceed carefully from the superficial to the deepest parts of the wound to explore the extent of the wound, if necessary, aided by an assistant.
- Consider the anatomical location of the wound and look for injury to any underlying structures (the clinical examination of a limb must include evaluation of sensitivity and motor functioning, as well as that of tendons in order to orient surgical exploration):
 - a wound that communicates with a fracture is an open fracture,
 - a wound close to a joint may be a joint wound,
 - a wound on the hands or feet may affect the nerves and/or tendons.
- Look for and remove any foreign bodies.
- In the event of significant pain or bleeding, the exploration must be completed in an operating room.

Wound excision

- The goal of the excision is to remove non-viable tissue, which favors the proliferation of bacteria and infection.
- The wound may require little or no excision if it is clean. The excision is more extensive if the wound is bruised, irregular or extensive.
- Limit excision of the skin around the wound, particularly in facial wounds.
- Sub-cutaneous fat and tissue of doubtful viability should be generously excised in order to leave only well vascularized tissue.

Immediate suturing of a simple wound

- Immediate suturing may have serious consequences for the patient if precautions to prevent infection and promote healing are not taken.
- The decision to suture immediately can only be taken after the cleaning, exploration and satisfactory excision, and if the following conditions are met: simple wound, no more than 6 hours old with no devitalized or contused tissue (the wound may be as long as 24 hours old if on the face, scalp, upper limbs or hands).
- Bites and bullet, shell or mine shrapnel wounds should not be immediately sutured.

Delayed suturing of a simple wound

- Wounds that do not fill the above conditions should not be immediately sutured.
- After cleaning, exploration and excision a simple dressing is applied to the open wound.
- Further cleaning and removal of any remaining necrotic tissue is completed with daily dressing changes.
- If after 72 hours there are no signs of local infection, the wound may be sutured.

Healing by second intention of infected wounds

If the wound does not meet the conditions of cleanliness described above, the wound cannot be sutured. It will heal either spontaneously (healing by secondary intention), or will require a skin graft (once the wound is clean) if there is significant loss of tissue.

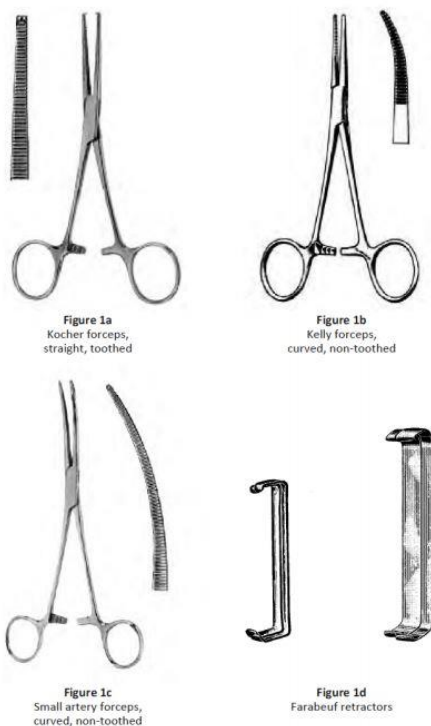


Figure 1 Basic materials



Figure 3a

Debridement of a contused, ragged wound: straightening of the wound edges with a scalpel. Be conservative in facial wounds.

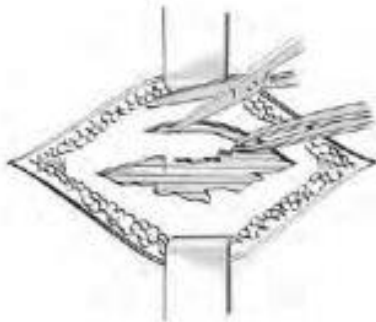


Figure 3b

Excision of edges of the aponeurosis to prevent necrosis.



Figure 3c

Excision of contused muscle.

Figure 2 Wound debridement

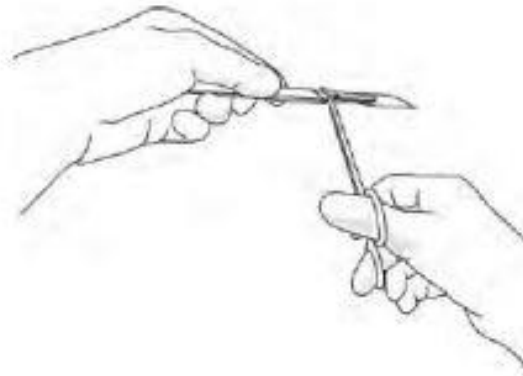


Figure 2a

Always mount a surgical blade using a needle holder.
Change the blade for each new procedure.

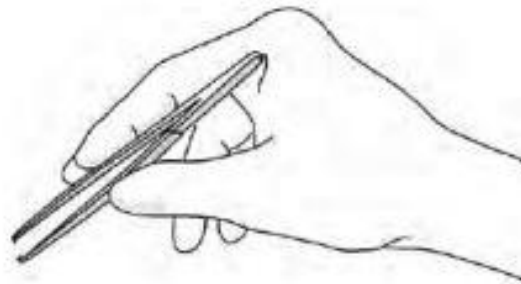


Figure 2b

Dissecting forceps should not be held in the palm of the hand, but rather between the thumb and index finger. Toothed dissecting forceps should only be used on skin.

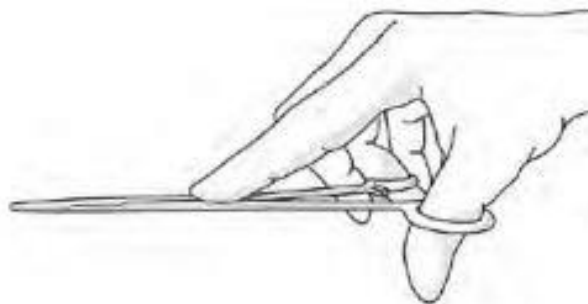


Figure 2c

Insert the thumb and the ring finger into the handle of a needle holder (or scissors), and stabilize the instrument using the index finger.

Figure 3 Suturing techniques

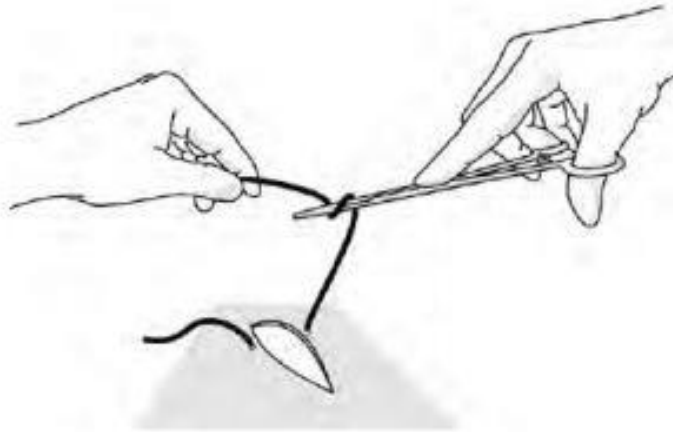


Figure 4a

Loop the suture around the needle holder in one direction and remember the direction of the loop. Grasp the loose end with the needle holder and pull it through the loop to make the first knot. Lower the knot so that it closes the wound.

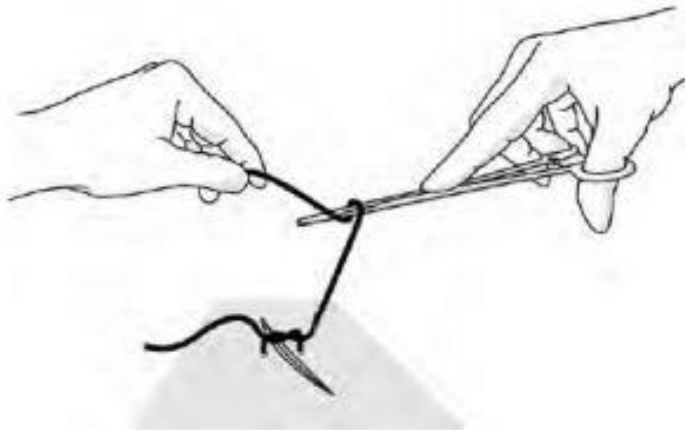


Figure 4b

The second loop should be in the opposite direction. At least 3 knots are needed to make a suture, alternating from one direction to the other.



Figure 4c

In principle the first knot lies flat.



Figure 4d

Second knot in the opposite direction.



Figure 4e



Figure 4f

Grasp the loose end with the needle holder.

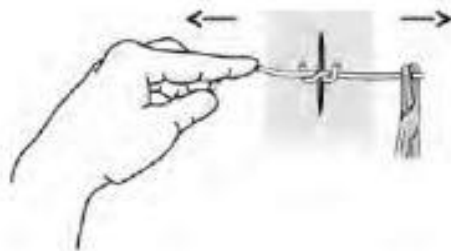


Figure 4g

First flat knot.

Slide the knot towards the wound using the hand holding the loose end while holding the other end with the needle holder. Tighten the knot without causing tissue ischaemia.

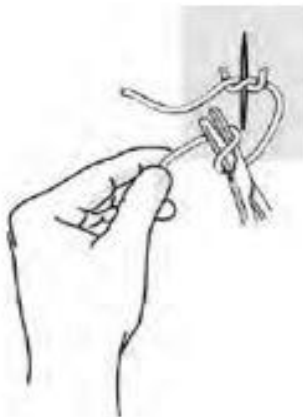


Figure 4h

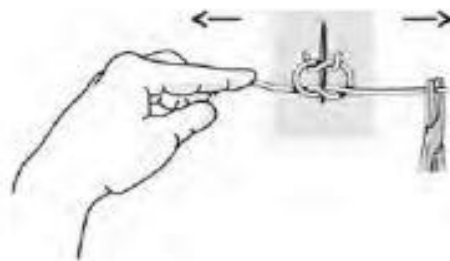


Figure 4i

Second knot in the opposite direction.

Figure 4 Practicing knots using forceps

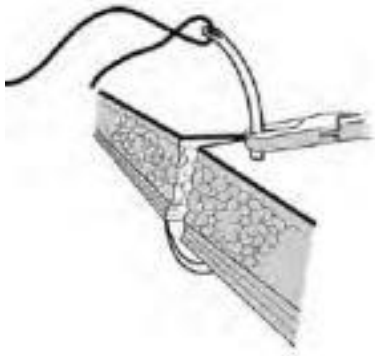


Figure 5a

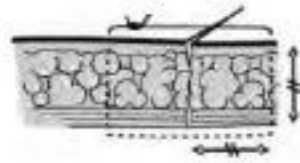


Figure 5b

The suture should be as deep as it is wide.

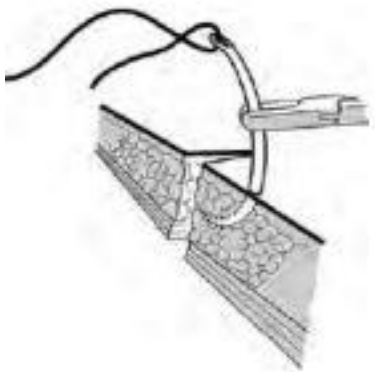


Figure 5c



Figure 5d

The suture is too shallow, the edges are invaginated.

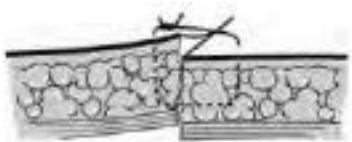


Figure 5e

Poor lining of the edges.

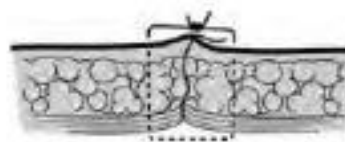


Figure 5f

Do not make the knot directly over the wound.

Figure 5 Technical errors of suturing technique

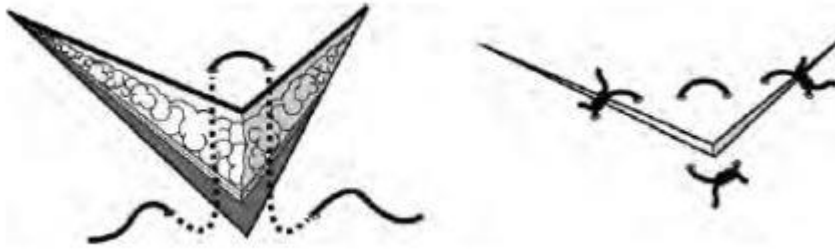


Figure 6 suturing the corners



Figure 7 Closure of the skin, simple interrupted sutures with non-absorbable sutures

INFUSION

An infusion is a plastic cannula (with different sizes) placed in a vein, that we connect to a giving set and a bottle of hydration. Usually the infusion is placed in the arm or on the hand. For babies, sometimes, veins are found on the foot or on the head.

When do you place an infusion?

- When a patient cannot drink or eat (e.g. coma)
- When a patient loses a lot of liquid (e.g. loss of water caused by diarrhea/vomiting, loss of blood caused by hemorrhage)
- When an IV treatment is needed
- When a faster effect from medicine is needed.

Which kind of hydration exists?

1. D5W / D5 ½ S / D10W

D = Dextrose (or sugar)

5 or 10 = 5% or 10% (= 5 g or 10 g of dextrose for 100 ml of sterile water)

W = Water

S = NaCl



Indication: - Vehicle for the administration of medicines

2. NSS (Normal Saline 0,9%)

Indication: - Vehicle for administration of drugs
- Correction of hypovolemia

3. Ringer lactate

Indication: Severe dehydration, hypovolemia

4. Plasma

Indication: Severe dehydration, hypovolemia

Figure 8 Examples of infusion bottles

How do you place an infusion?

Preparation

1. Read carefully the prescription to check the name of the patient, the name of the solution or medicine, the dosage, the transparency of the liquid and check the way to give it.
2. Wash your hands with soap
3. Prepare the material: tray, sterile gauze or cotton, infusion cannula (20 or 22G for adult, 22 or 24G for child), giving set, bottle of infusion, povidone iodine or alcohol 70%, tourniquet, pieces of plaster, non-sterile gloves, kidney dishes, needles container, tin and splint (if it's a child).
4. Check the name of solution, the dosage written and expiry date
5. Remove the plastic cover and wipe the top of the bottle/vial with cotton and antiseptic.
6. Close the clamp, connect a bottle of infusion to the giving set, fill the dropper and purge the system with the fluid. There must not be any air or any bubbles
7. Calculate the rate of flow of the infusion per minute
8. Write the hour, name and the dosage of the medicine, number of drops per minute and the length of the infusion on the bottle.
9. Put the infusion on a tray with all the material or directly on the stand

Place the infusion

Inform the patient and check that it is the right patient

Settle the patient and put the arm in a good position. Look for the easier arm (for the patient) to place the injection

Wash your hands with soap

Put the tourniquet and look at the veins.

Always find a place from the hands to the elbow. Try first closed to the hand where the veins are good. If they are damaged, you go back up to the elbow. Try to avoid the elbow because the infusion does not work when the patient bends the arm.

Put your gloves

Disinfect the skin where you see and feel a straight vein

Hold the arm with your left hand and stretch the skin. With your right hand, take the IV cannula. Hold it parallel to the skin. Put the bevel (the oblique hole at the end of the needle) facing upwards. Immobilize the vein and prick the needle into the vein.

Check the blood is coming take out needle put it in the needle container and remove the tourniquet
Connect the drip set with asepsis

NB: In some situations, there is no need to pass liquid but the infusion has to be kept in case of needs. Nurse should insert an heparin cap in the infusion cannula, then rinse (with about 2 ml of NSS), and closed the bandage.

Throw the needle in the needle container
Open the drip system.

At this moment, if there is a swelling closed to the cannula, if it's painful or if the solution doesn't flow, you have to change the cannula.

Attach the cannula catheter with plaster correctly
With your watch, adapt the number of drops of the infusion on one minute (Cf. Calculation of usual flows in Appendix)

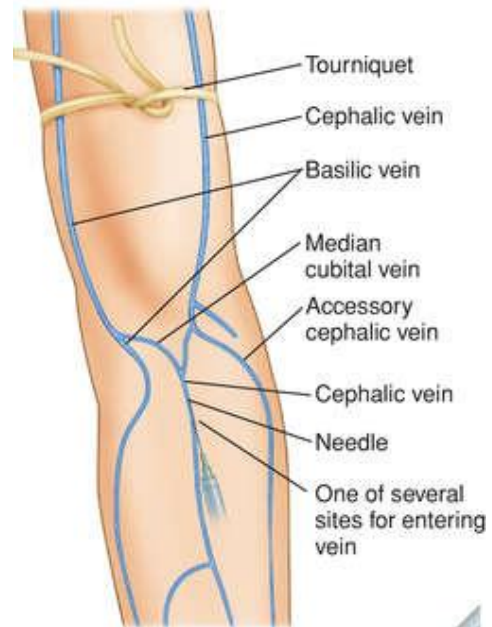
Fix the splint under the arm (if a child)

Throw everything else in the rubbish with your gloves

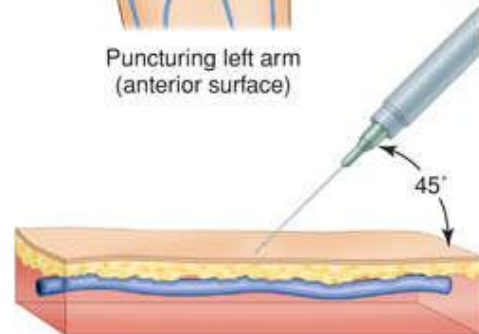
Wash your hands with soap

Record the infusion bottle on the IPD chart or on the lema

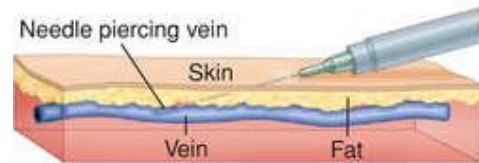
The patient must inform the nurse if there is any incident with the infusion.



Puncturing left arm (anterior surface)



Technique in puncturing vein:
1. Pierce skin at a 45° angle



2. Decrease angle to 15° to puncture vein



Puncturing vein of hand

Figure 9 Body place of infusion

The infusion set must be changed every 7 days. Write the date on a plaster and stick it on the set.

HOW TO ADD A MEDICINE IN THE BOTTLE:

- Disinfect the top of the bottle
 - Clamp on the giving set
 - Inject the medicine in the top of the bottle
- You always rinse the giving set first, and then inject the medicine.

HOW TO DO A DIRECT INJECTION:

- Check if the blood is coming to know if you are really in the vein
- Disinfect the plastic part of the tube
- Close the tube
- Prick in the plastic part and inject slowly
- Check the patient is well
- Quickly removes the needle
- Disinfect the plastic part again.

HOW TO CALCULATE THE RATE OF FLOW OF INFUSION?

The prescription of an infusion will be always being in:

a volume per a time

in milliliter per hour usually

100, 250, 500, 1 000, 1 500, 2 000 ... ml per 4, 8, 12, 24 hours ... for instance

The nurse should precisely respect the prescription of a volume in a strict time. The nurse should know the flow of the infusion. The dropper on the giving set could precisely calculate the flow. The number of drops per minute will be the reference for the respect of the time prescribed. Thus, from a prescription in millilitre per hour, the nurse follows the infusion flow in drop per minute. The number of drop per minute has to be calculated.

Prescription of number of milliliter per hour

→ Calculation of how many drops per minute

First, REMEMBER AND BE CAREFUL

→ With an adult infusion set, 1 ml = **20** drops

→ With the pediatric infusion set, 1 ml = **60** drops

If the prescription is: '500 ml to pass in 4 hours'

You need to know:

A. How many drops in the volume prescribed?

1 ml = 20 drops

500 ml = ? drops ↔ 500 ml x 20 drops = 10 000 drops

So: 500 ml = **10 000 drops**

B. How many minutes in the time allowed?

1 hour = 60 minutes

4 hours = ? minutes ↔ 4 hours x 60 minutes = 240 minutes

So: 4 hours = **240 minutes**

C. How many drops per minute?

$10\,000 / 240 = 41.66 = \mathbf{42\ drops}$

In summary, remember:

Quantity needed (ml) x 20 drops

————— = number of drops / 1 minute

Time request (hours) x 60 minutes

RISK OF INJECTION

Infection

It could be particularly severe if a patient gets a septicemia (infection of blood): Risk of shock and death. If a patient has fever, low BP, or shivering, after an IV drip, always think that it could be an aseptic mistake due to IV drip.

Overdose

Too much liquid per day in too short time or too high dose of medicine may be dangerous for the patient, especially for children.

Too much liquid in too short time

If the flow is higher than required, there is a risk of acute pulmonary edema due to hypervolemia (too much liquid).

Signs of pulmonary edema:

- High blood pressure
- Difficulties to breathe: RR increases
- Creps in the lungs
- Noisy breathing
- Cyanosis
- Flaring nose
- Foam from the mouth

Too much medicine in too short time

Ex: the medic prescribes Quinine in 500ml of D10W for 4 hours. The drip passes too quickly and the patient receives more quinine than prescribed. The risk of quinine in high dosage is hypoglycemia. Patient is thus at risk of quinine-overdosage and risk of hypoglycemia. It can be dangerous.

Too low flow

The patient may need an important quantity of liquid in a short time (e.g. dehydration or shock). If the flow is too slow, the patient does not receive enough liquid and it may be very dangerous. Some medicines are as well no more effective after a certain number of hours.

Air in the vein

There is a risk of death by air embolism if air goes into the blood.

Allergy

Hereunder are the signs of an allergy:

- Rash
 - Swelling of the throat
 - Difficulties to breathe
 - Low BP
- ➔ Stop the infusion immediately and call the medic: It's an emergency.

Recommendations

- *Asepsis*
You must work aseptically because of infection risk.
➔ That's why the whole system of infusion is completely changed every 3 days and the bandage every day.
- *Never let air go inside the vein*
As soon as the bottle is empty, clamp the giving set and put on another bottle, which you prepare just before. Then open the giving set and count again the number of drops necessary.

- *Daily check*
 - The position of the needle inside the vein
 - The liquid is dripping into the vein
 - There isn't swelling, pain or inflammation around the cannula catheter. Otherwise, that means the infusion is not working and that the liquid is going outside of the vein.
 - In this last case, remove the infusion and put it on the other arm. Put a dressing with warm water and alcohol on the swollen part.
 - Check that the patient has no edema on the face and legs.

FUNGAL SKIN INFECTIONS

DEFINITION

- 'thrush'
- Patients with previous use of antibiotics, diabetes mellitus, decreased immunity or pregnancy.
- Common types
 - candidiasis and vaginal candidiasis.
- Oral candidiasis is common in neonates
- Oral candidiasis in adult >? immunosuppression e.g. HIV, cancer.

SIGNS AND SYMPTOMS

- Oral Candidiasis: removable white spots in the mouth, painful and difficult swallowing.
- Vaginal Candidiasis:

TREATMENT

- Oral Thrush ----- nystatin 400,000 IU/day – give 1tab QID for 7 days
(Or) 1 ml of oral suspension (100,000 IU) QID for 7 days.
(swilled around oral cavity and swallowed)



RINGWORM

SIGNS AND SYMPTOMS

- Round dry lesions that grow slowly (taking weeks to months).
- Dry white scales on the edges with a clearing in the center, they are very itchy, not painful
- No fever.
- Sometimes > pustules.
- On the scalp > localized loss of hair.



TREATMENT

- Local treatment:
 - 2 times per day clean with soap and water, dry
 - Apply Ketoconazole 2% cream BID for 2 weeks (longer if necessary)

Other topical antifungals can also be used, such as Clotrimazole, Miconazole, or Whitfield ointment.

Scalp ringworm:

- Shave head or cut hair short
- Treat secondary infection first
- If scalp ringworm: Oral antifungals
 - E.g. **Griseofulvin** PO for 6 weeks (can give up to 12 weeks)
 - Children > 12 yrs./ Adults: 500 mg OD (1g OD if severe infection)
 - Contraindicated in pregnant women
- Men should not make their wives pregnant within 6 months of the Griseofulvin treatment, women should wait until 1 month after treatment before getting pregnant.
- For adults over 35 years,
 - Test liver function tests before treatment, and again at 4 weeks if available.
- If there is no improvement >? leprosy

VIRAL SKIN INFECTIONS

HERPES SIMPLEX

DEFINITION

- It is the **recurrent** infection of skin and mucous membranes due to infection with *Herpes Simplex Virus*.
 - Recurrent infection is risked by stressed or exposed to cold or sunlight.
 - Common places: lips, mouth, eyes and genital area.
 - Herpes is spread by direct contact with lesions.
 - Self-limited within 10 days
- Recurrent=ပြန်ဖြစ်သည်, stressed=သောက၊ ဖိစီးမှု, Exposed=ထိတွေ့
Self-limited=အလိုလိုပျောက်ကင်း, Genital=မျိုးပွားအင်္ဂါဆိုင်ရာ, Lesion=အနာ

SIGNS AND SYMPTOMS

- Group of small vesicles
 - filled with clear fluid on the skin or the mucosa (mouth or genital area).
- Often the vesicles have broken and become
- Very painful, tingling and itching **before** the lesions appear.
- In the mouth:
 - Pain and difficulty eating.
 - Ulcers in the mouth and on the lips.
 - The gums are swollen.

COMPLICATIONS

- Severe infection in eyes
 - Keratitis (မျက်ကြည်လွှာရောင်ရမ်းခြင်း)
 - blindness.
- If a pregnant woman has a genital lesion,
 - very dangerous for the newborn baby
 - **the baby can become infected** during delivery.

TREATMENT

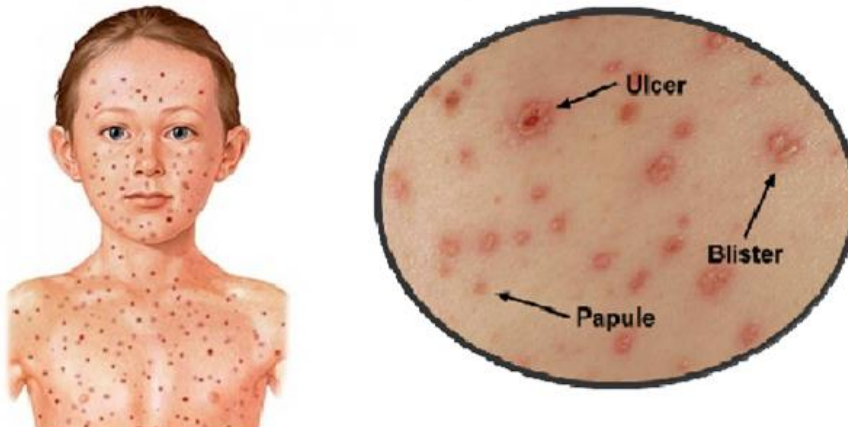
- **Mild/moderate infections:**
 - No antiviral treatment
 - supportive care
 - **Severe cases with necrotic lesions or extensive lesions or in the face spreading to the eye:**
 - Acyclovir P.O 200 mg 5 times per day for minimum 5 days (Within 48 hours of first symptom appeared.)
 - **On the skin**
 - Clean lesions with **Salon** (antiseptic cream) and let dry.
 - Apply **Gentian Violet** (can be used on mucous membranes)
 - **In the mouth:**
 - Wash the mouth with warm salty water.
 - **Gentian Violet**, if secondary infection, treat with **amoxicillin**.
- Supportive care=အထောက်အကူဖြစ်စေသော ကုသမှု၊ Necrotic=အသားပုပ်သော၊
Extensive=ကျယ်ပြန့်လာသော၊ Appeared=ပေါ်ပေါက်လာသော၊ Secondary
infection=ဆင့်ပွားရောဂါပိုးဝင်ခြင်း
- **In the eyes**
 - Wash the eyes with cool boiled water.
 - **Apply TEO**
 - Refer to doctor for consultation.
 - **On the genitals**
 - Wash with soap and water.
 - Give Paracetamol for pain.
 - Give condoms to prevent the spread of herpes.
 - Patients with difficulty passing urine > give oral Acyclovir.
- Cool boiled water=ရေကျက်အေး၊ consultation=ကြည့်ရှုကုသခြင်း

CHICKENPOX

DEFINITION

This is a very common disease caused by the **Varicella Zoster virus**, and spreads easily.

Varicella or Chickenpox



The characteristic feature is the rash, blisters and bumps all form at the same time

SIGNS AND SYMPTOMS

- Slight fever, headache, feeling unwell.
- Round spots
 - Itchy
 - different sizes
 - with clear liquid inside,
 - some may be crusty.
- Sites
 - Whole body
 - more on the trunk
 - less on the arms and legs.

Slight fever=တငွေ့ငွေ့ဖျား, Round spots=အဝိုင်းဖု, Crusty=ကြပ်ဆတ်သော, Trunk=ကိုယ်ခန္ဓာ

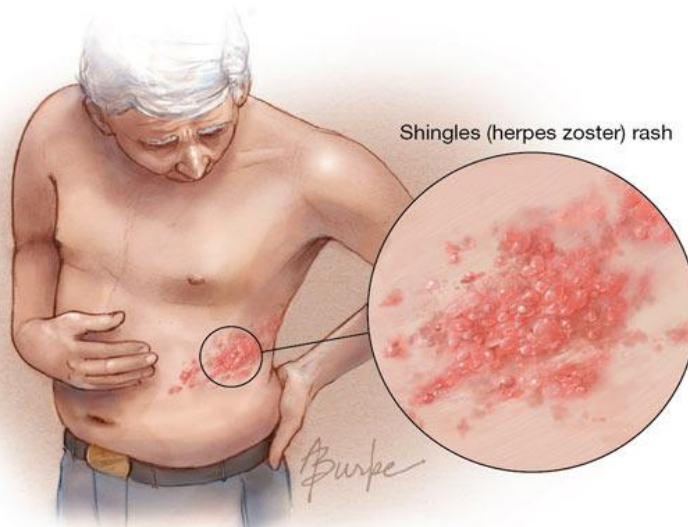
TREATMENT

- Clean with water and soap.
- Cut the fingernails
- Apply **GV** only on infected spots.
- Secondary infections
 - antibiotic treatment
- Give Paracetamol for fever
- Severe itching
 - PO **Chlorpheniramine** 1-3 days.
- Lesions in the eye
 - **Tetracycline Eye Ointment (TEO)**

HERPES ZOSTER (SHINGLES)

A rash caused by the **reactivation of the chickenpox virus**. It occurs to people that have previously had chickenpox.

After you recover from chickenpox, some of the virus (varicella zoster) stays in the body in an inactivated form in the spinal cord. Sometimes the virus becomes active again and causes shingles. It may happen at any age, but frequently in patients with low immunity. It is more common in adults than children



Reactivation=ပြန်လည်ထကြွ, previously=ယခင်က, Inactivated=ငြိမ်သက်နေသော,
Spinal cord=အာရုံကြောမကြီး, Low immunity=ကိုယ်ခံအားကျ

SIGNS AND SYMPTOMS

- Fever and chills
 - a few days before the rash develops.
 - Unwell.
- Moderate to severe pain
 - Before the rash.
- Vesicles appear on a red base
 - 4-5 days after
 - Similar to herpes simplex but over a **larger area**
- The vesicles become pustules, then crusts.
- **it is usually on one side of the body only because infection extends along with nerves (Right side/ Left side)**

TREATMENT

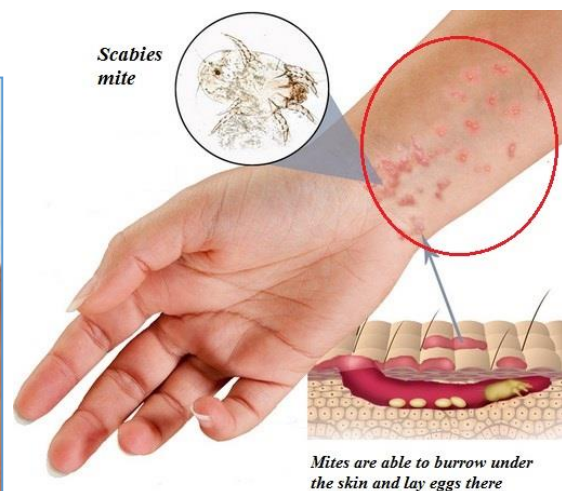
- Treatment same as Herpes Simplex.
- Apply cold compresses (ရေအေးအိတ်ကပ်ခြင်း)
- Pain treatment
- Give **Amitriptyline** if pain is not relieved by painkillers
- Eye is affected or severe disease,
 - discuss with the doctor and consider referral.

PARASITIC SKIN INFECTIONS

SCABIES – Definition:

Scabies is a **parasitic infection** of the skin. It is common in this region and spreads easily. Transmission is by close direct contact.

The mite invades into the skin causing an inflammatory reaction.



Mite=ကမုဉ်းနီကောင်, Invades=ထိုးဖောက်ဝင်ရောက်, Inflammatory reaction=တုံ့ပြန်ခြင်းကြောင့်ရောင်ရမ်းခြင်း

SIGNS AND SYMPTOMS

- Itching (especially at night).
- Small sores, scratch marks and burrows
 - between the fingers and toes,
 - around the wrists, axilla or groin and other places.
- The back and face are not affected.
- Scabies lasts for weeks to months.
Sores=အနာ, Scratch mark=ကုတ်ခြစ်ရာ, Burrows=လှိုက်ခေါင်း,
Wrists=လက်ကောက်ဝတ်, Axilla=ဂျိုင်း, Groin=ပေါင်ခြံ, Lasts=တည်ရှိသည်

TREATMENT

- Treat secondary infection first.
- Wash the whole body with water and soap
- Treat all people in the family and close contacts at the same time.

Medication

- **1. 5% Permethrin lotion** for child > 2 months and adults (does not need dilution)
- **One application**, apply to whole body except face/mucous membranes, Allow to dry and then put on clean clothes. **Do not wash for at least 8 hours.** (It may be easier to apply Permethrin in the evening to avoid washing.)
- **2. 25% Benzyl benzoate** Use if <2m or permethrin not available (needs diluted)
 - Child > 12 yrs/adults – undiluted 25% lotion, apply for 24 hrs then rinse off
- REPEAT application after 24 hrs.
- Cut fingernails and apply lotion under the nails.

Health Education

- Wash the clothes and bedding
- Educate patients that the itching may continue for several weeks. This is a reaction to the dead parasite. Calamine lotion may be needed.
- For severe cases (Norwegian scabies) refer to hospital as the patient needs isolation
- If no response after treatment, make sure that the treatment has been applied properly and that all members of the family have been treated.

CUTANEOUS LARVA MIGRANS (HOOKWORM INFECTION)

DEFINITION

- The disease is caused by the larvae of animal hookworms.
- Eggs are found in dog or cat feces on the ground.
- Humans walking bare foot or lying on the sand can become infected by larval invasion through intact skin.
- The larvae travel under the skin leaving a red irregular tract, most often on the feet.
Larvae=သားလောင်း, feces=မစင်, bare foot=ခြေဖလာ, Invasion=ဝင်ရောက်ခြင်း, intact skin=အကာအကွယ်မရှိသောအရေပြား, irregular=ပုံမှန်မဟုတ်သော

SIGNS AND SYMPTOMS

- Very itchy red tracks on the skin.
- Foot and ankle are the most common sites.
- The larvae can survive for weeks
Tracks=လမ်းကြောင်း, Survive=အသက်ရှင်သန်



DIAGNOSIS

Hookworm eggs may be found in stool examination.

TREATMENT

Albendazole: 400mg STAT

PREVENTION

Wearing shoes or sandals

Sandals=ကြိုးသိုင်းဖိနပ်

LARVA CURRENTS (STRONGYLOIDES INFECTION)

DEFINITION

The disease is caused by migrating *Strongyloidiasis stercoralis* larvae. The worm enters the body by making a hole in the skin and then moves around the body causing a rash.

SIGNS AND SYMPTOMS

ACUTE STRONGYLOIDES

- Redness and itching
- Last for up to a few weeks.
- Pulmonary symptoms (dry cough, dyspnea, wheeze) if the worm travels to the lungs.
- GI symptoms e.g. bloating လေပွခြင်း, abdominal/ epigastric pain, vomiting, diarrhea.

CHRONIC STRONGYLOIDES

- Intestinal larvae may re-infect their host (auto-infection)
 - by penetrating through the intestinal wall
 - or from the skin around the anus.
- Recurrent pulmonary and GI symptoms.

*When the worm moves around the body it causes itchy red tracks on the skin between the neck and knees that last for several hours to days. The worm/rash moves 5-10cm per hour and the rash comes and goes. This rash is called **larva currents**.*

DIAGNOSIS

Larvae may be detected in a stool examination.

TREATMENT

Albendazole 400 mg OD for 3 days.

PREVENTION

Wearing shoes or sandals

NON-INFECTIVE SKIN RASH

URTICARIA (ALLERGIC RASH)

DEFINITION

- Allergic skin reaction, often it is impossible to find the cause of the allergy but common causes are:
 - Medication
 - Insect bites, cat hair, worms, coloring in drinks, contact with plants/metals, food
- Allergic=ဓာတ်မတည့်ခြင်း, Insect bites=ပိုးမွှားကိုက်, cat hair=ကြောင်မွှေး,
coloring in drinks=ဆိုးဆေးသုံးထားသောအချိုရည်များ, plants=အပင်, metals=သတ္တု

SIGNS AND SYMPTOMS

- A raised, edematous, red rash
 - changes quickly in size and shape (within minutes) on the whole body
- Swellings are transient
 - persist only for minutes - maximum 24 hours
 - very itchy.

TREATMENT

- Cool down with water.
- Remove the cause: stop new medication, stop contact with plants, metals, foods etc.
- Cut fingernails
- If severe itching
 - give **Chlorpheniramine** until itching stops.**In case of edema of the face or difficulty breathing/wheeze follow DR-ABCDE anaphylactic shock protocol.**

ECZEMA

DEFINITION

Non-specific inflammatory skin reaction to special factors

SIGNS AND SYMPTOMS

- Red, scaly/dry, itchy lesions
- Anywhere on the body
- usually on both sides of the body
 - the front of the elbows
 - behind the knees where the joint bends (flexure areas)
- localized or widespread, dry or wet but usually long lasting.
- The dry lesions are very itchy and there is serous (like water) exudation, there may be vesicles.
- It can appear and disappear many times at the same place.
- Chronic eczema can cause thickening of the skin (lathensification)
- Secondary infections are common.
- Eczema can look very similar to ringworm, especially on the face.
- If infected, treat the infection with antibiotics first and then the eczema



TREATMENT

- Do not scratch
 - cut nails, try socks over the hands at night to prevent unconscious scratching.
- Wash only with water
 - do not use soap on affected areas.
 - Do not scrub with water
- Advise cotton clothing.
- Treat any other skin disease
 - e.g. scabies, secondary bacterial infection
- Rinse clothes very well, so that no soap stays on.

Scratch=ကုတ်ခြင်း, Socks=ခြေအိတ်, Unconscious scratching=သတိမမူမိပဲ ကုတ်မိခြင်း,
Scrub=တိုက်ချွတ်, Rinse=ရေဖြင့်ဆေးကြောသည်

Mild: areas of dry skin sometimes itchy, may have small areas of redness

- **Vaseline/** white soft paraffin applies QID (advise to protect skin from sun when using Vaseline)
- +/- **Chlorpheniramine** if very itchy

Moderate: dry skin, red patches with scratch marks, may have small areas of skin thickening

- **Vaseline/** white soft paraffin applies QID (advise to protect skin from sun when using Vaseline)
- +/- **Chlorpheniramine** if very itchy
- **Hydrocortisone 1% cream (mild steroid) Note:** treat bacterial infection first
 - Apply small amount at night for 1 week, increase to BID if not improved
 - Always use for shortest time possible, once improved stop or decrease
 - Avoid face and any areas of broken skin
 - If really need to use for long time then consider alternate days or weekly.

Patches=အဖတ်, shortest=အတိုဆုံး, alternate=ရက်ခြား

Severe: large areas of dry skin, constant itching, red, may be bleeding/ weeping/ infected, large areas of thickened skin.

- **As for moderate eczema**
- **PO Prednisolone** 0.5 mg/kg/day.
- Steroid creams are of different strengths
 - **Hydrocortisone** is mild, **Betamethasone** is high strength.
 - Strong steroid creams for a long time can damage the skin.
 - Use the weakest cream that you can for the shortest time possible.

Constant itching=အဆက်မပြတ် ယားယံ, weeping=အရည်တစ်စုံစုံဖြစ်နေခြင်း,

Strength=ပြင်းအား, damage=ပျက်စီး, weakest=အားအပျော့ဆုံး, shortest=အတိုဆုံး

COMPLICATIONS

Eczema herpetic

- Is a serious infection with herpes virus when the virus affects the body?
- It is mostly seen as a complication of eczema
- Localized eruption of blisters with crusting. Systemically unwell with fever.
- Treat with **acyclovir** PO 200mg 5 times per day for 10 days.
- If immunocompromised, e.g. HIV, give double dose.

PSORIASIS

DEFINITION

A chronic inflammatory skin condition that produces thick scaly skin

SIGNS AND SYMPTOMS

- Skin: chronic scaly pink lesions on extensor surfaces e.g. front of knees, elbows, scalp, trunk, sometimes itchy.
- Nails: pits in nails, yellow color.
- Joints: can get swollen joints, especially hands and feet (psoriatic arthritis).

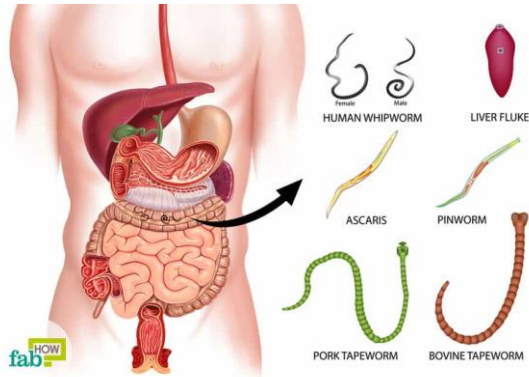
Two most common types are:

- **Plaque psoriasis:** lesions on extensor surfaces.
- **Guttate psoriasis:** multiple 1-10mm lesions small scaly lesions (like tear drops) mainly on trunk, upper arms and thighs.

TREATMENT

- Stop smoking, avoid alcohol and decrease weight if overweight
- Expose skin to sunlight
- Apply **Vaseline** QID
- Consider **Hydrocortisone** cream if not improving or if acute flare up (see information above about steroid cream).
- Give **NSAIDs +/- Omeprazole** for stomach protection in cases of arthritis.
- For very thickened skin lesions try **Whitfield ointment** twice a week – but stop if getting worse.

Flare up=ပြန်လည်ထကြွသည်



URINARY TRACT INFECTION (UTI)

DEFINITION

- **Urinary Tract Infection (UTI):** symptoms and bacteria in the urine from an infection somewhere between the kidneys and the bladder.
- **Lower UTI (cystitis):** infection in the **bladder**
- **Upper UTI (pyelonephritis):** infection in the **kidney**
- **Prostatitis:** infection of the **prostate**

RISK

- Diabetes Mellitus
 - is a risk factor for UTI?
- **UTIs in men are not common**, so think about other diagnosis e.g. prostatitis, STIs, renal stones or enlarged prostate (if older age).
- Urinary tract infections in children require treatment as soon as possible in order to prevent kidney damage.
- Recurrent UTIs can lead to urinary tract stones, urinary tract obstruction from scarring or chronic renal failure.

Enlarged=ကြီးမားသော, Require=လိုအပ်သည်, Damage=ပျက်စီးခြင်း, Recurrent=ပြန်ဖြစ်ခြင်း, lead to=ဖြစ်စေနိုင်သည်, scarring=အမာရွတ်တက်ခြင်း

CAUSES

1. Ordinary bacteria, usually <i>E.Coli</i> , can cause acute or chronic UTI
2. Tuberculosis bacteria causes chronic UTI
3. Sexually Transmitted Infections (STI)
4. Urethral catheter
5. Obstruction of urinary tract with stones or mass or congenital abnormality
6. Intercourse
7. Pregnancy
8. No special cause in some females

- All children < 5 years old
 - If >1 time of UTI should be referred
 - Unexplained recurrent UTIs in adults
 - may be caused by urinary tract stones, tumors or STIs. Think for referral
 - If you suspect a UTI
 - lower UTI/cystitis (infection of the bladder)
 - upper UTI/pyelonephritis (infection of the kidney.)
- Note: Cystitis NEVER has fever

Unexplained=မရှင်းပြနိုင်သော, Tumors=အကျိတ်

SYMPTOMS

Lower UTI Cystitis	Dysuria (pain or burning when pass urine) <ul style="list-style-type: none"> • Cloudy urine • Blood in urine (hematuria) • Frequent urination • Pain and tenderness lower abdomen 	NO FEVER
Upper UTI Pyelonephritis	Symptoms of lower UTI AND/OR <ul style="list-style-type: none"> • Flank pain (kidney area) • Chills and rigors • Sepsis or shock 	FEVER

Dysuria=ဆီးကျပ်ခြင်း, Burning=ဆီးပူခြင်း, Cloudy=ဆီးနောက်ခြင်း, Frequent=မကြာခဏ, Flank=နံပါး၊ ခါးပန်း၊

Ask about:

- Vaginal itchiness: ? **candida**
- Vaginal or penile discharge: ? **STI**
- If suprapubic pain:
 - is it similar to menstrual pain?: ? **menstrual cramps**

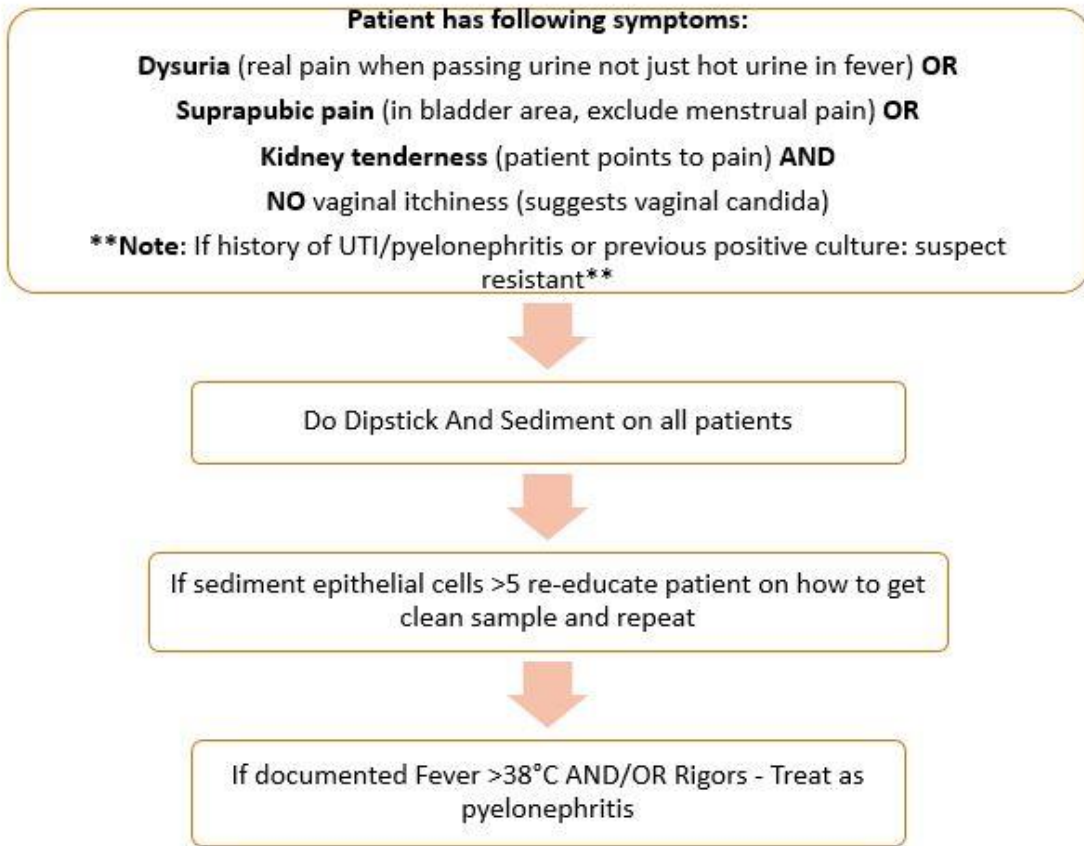
Itchiness=ယားယံခြင်း, Penile (Penis), Discharge=အရည်ကျခြင်း, Suprapubic (SPA) pain=ဆီးခုံနာခြင်း, Menstrual cramps=ရာသီဆင်းချိန်နာကျင်ခြင်း

DIAGNOSIS

- Dipstick and sediment > diagnose to UTI is not accurate.
- Urine culture is the best test (Do not have in clinic)
- Follow the protocol

Accurate=မှန်ကန်မှု, Urine Culture=ဆီးထဲမှ ရောဂါပိုးကိုရှာဖွေခြင်း, Protocol=လုပ်ထုံးလုပ်နည်း လမ်းညွှန်

ALGORITHM FOR INVESTIGATION AND DIAGNOSIS OF URINARY TRACT INFECTION (UTI) OR PYELONEPHRITIS IN >3 YRS:



Algorithm=လိုက်နာရန်အချက်များ, Pyelonephritis=ကျောက်ကပ်ပြည်တည်ပြီးရောင်ရမ်းခြင်း,
 Previous=ယခင်က၊ Resistant=ဆေးယဉ်ပါးခြင်း၊ Documented=မှတ်တမ်းမှတ်ရာ

INTERPRETATION OF URINE DIPSTICK AND URINE SEDIMENT RESULTS:		
Urine Dipstick	Urine Sediment	Action
Any Positive (WBC > 1 OR nitrite positive)	Positive (WBC > 10 AND Epithelial cells < 5)	Treat as UTI (Box 1)
Negative (WBC 0 AND nitrite negative)	Negative (WBC <10)	UTI unlikely (Box 2)
Strong Positive (WBC 3 AND/OR nitrite positive)	Negative (WBC <10)	Treat as UTI (Box 1)
Weak Positive (WBC 1 OR WBC 2 only (nitrite negative))	Negative (WBC <10)	Maybe UTI (Box 3)
Negative (WBC 0 AND nitrite negative)	Positive (WBC > 10 AND Epithelial cells < 5)	Maybe UTI (Box 3)

<p>BOX 1: UTI Likely</p> <ol style="list-style-type: none"> 1. Advise to drink lots of Water 2. Give antibiotics: Nitrofurantoin 50mg QDS FEMALES: for 3 days MALES: for 7 days <p>**Note: do not give nitro in G6PD deficiency or in late stage of pregnancy**</p>	<p>BOX 2: UTI Unlikely</p> <ol style="list-style-type: none"> 1. Consider other diagnoses e.g. STI, renal stone 2. Advise patients to come back if symptoms continue
<p>BOX 3: Maybe UTI Temperature 37.5-37.9°C or complain of fever:</p> <ul style="list-style-type: none"> • Admit to clinic • Do not give paracetamol • Rehydrate with water • Repeat urine sediment and stick in next day 	<p>IF DOCUMENTED FEVER >38°C, TREAT AS PYELO</p> <p>Temperature <37.5°C: Advise to drink a lot of water</p> <ol style="list-style-type: none"> 1. Follow up 3-4 days (telephone no.) with culture result 2. Rehydrate with water 3. If worse, come back <p>**Note: If patient really cannot be admitted or come for follow up then follow box 1**</p>

Note: Nitrofurantoin and ciprofloxacin can cause hemolysis in G6PD deficiency. If G6PD deficient **do not use nitrofurantoin.**

- If symptoms of **jaundice** or **dark urine** occur > stop drugs
- *In cases of recurrent cystitis > ? bladder stone, kidney stone or STIs.*
- *Cystitis in men > ? STIs or prostatitis*
- *Recurrent UTIs in children > refer*

PREVENTION

- Drink > 2 liters of water per day.
- Urinate at least 3 times per day
- Good hygiene.
- Avoid constipation (ဝမ်းချုပ်လျှင် ဆီးကျန်ခြင်းဖြစ်စေနိုင်သည်)

PROSTATITIS

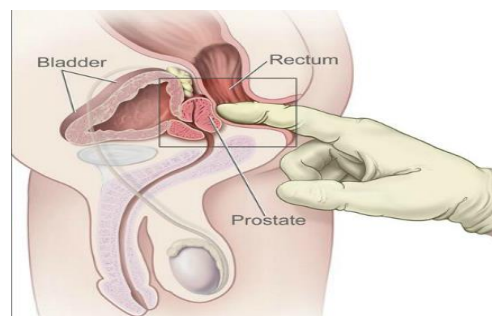
Inflammation of the prostate.

SYMPTOMS & SIGNS

- Fever
- Pain and tenderness in the rectum or when pass stool
- very painful rectal examination
- Cloudy urine
- Blood in urine (hematuria)
- Pain or burning when passing urine (dysuria)
- Frequent urination

DIAGNOSIS

- **Rectal examination** (tenderness present)
- **Examine urine:** cloudy or bloody urine.
- **Urine dipstick** and **urine sediment** positive



TREATMENT

1. DR-ABCDE if unwell
2. Treat in IPD
3. Drink plenty of water (3-4 liters/day for adults).
4. If the patient cannot drink, give IV fluids
5. Monitor urine output.
6. Treat pain and fever
7. Avoid constipation – advise high fiber diet
8. Antibiotics - **Ciprofloxacin** 500 mg BID oral for **4 weeks**.

If the patient cannot take oral medication: **ceftriaxone** 1-gram OD IV/IM until the patient can tolerate oral medication.

SPECIAL TOPICS

1.HIV/AIDS

HIV

- Human Immunodeficiency Virus
 - Kill CD4 (Helper T-cells)
 - CD4 T cells are a type of lymphocyte (WBC)
 - CD4 T cells involves in immune system to response infection
 - HIV destroys CD4 T-cells and person doesn't have enough cells to fight against other infections.

AIDS

- Acquired Immune Deficiency Syndrome
 - collection of signs and symptoms of opportunistic infections due to damaged immune system

Opportunistic Infections (OI)

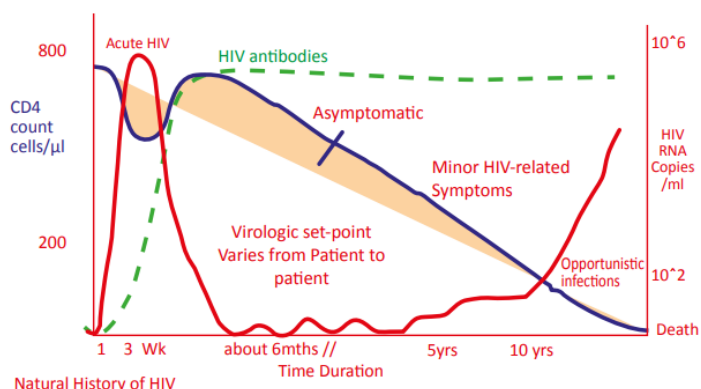
- OI is used for HIV staging (severity)
- AIDS is an advanced stage of HIV infection when the infected person develops
 - severe opportunistic infections and some types of cancer.

Natural history of HIV infection

Three phases (10 to 13 years duration):

- Primary infection (1 to 3 months)
- Clinical latency (Average 8 to 10 years)
- AIDS (Acquired Immune Deficiency Syndrome) (Average 2 to 3 years)

Figure 5. Typical Course of Untreated HIV Infection



၇.၃ အေအိုင်ဒီအက်စ်ရောဂါ (ခုခံအားကျဆင်းမှုကူးစက်ရောဂါ)

- လူခန္ဓာကိုယ်၏ ခုခံအားကျဆင်းစေသော ဝိုင်ရပ်စ်ပိုးကို အိပ်(ချ်)အိုင်စွီပိုးဟုခေါ်သည်။
- လူ၏ကိုယ်ခံအားစနစ်ကို အိပ်ချ်အိုင်စွီပိုးက ဖျက်ဆီးပစ်သဖြင့် ဖြစ်ပေါ်လာသော ရောဂါလက္ခဏာပေါင်းစုကို အေအိုင်ဒီအက်စ်ရောဂါ (ခုခံအားကျဆင်းမှု ကူးစက်ရောဂါ) ဟုခေါ်သည်။

အေအိုင်ဒီအက်စ်ရောဂါ အဓိကလက္ခဏာများ

- အကြောင်းအရင်းမသိ ကိုယ်အလေးချိန် သိသိသာသာ ကျဆင်းခြင်း
 - အကြောင်းအရင်းမသိ ကြာရှည်ဖျားခြင်း (အဖျားဆက်တိုက် (သို့မဟုတ်)အတက်အကျရှိခြင်း၊ တစ်လထက်ပိုကြာခြင်း)
 - အကြောင်းအရင်းမသိ တစ်လထက်ပိုကြာအောင် ဝမ်းလျှော့ခြင်း/ဝမ်းပျက်ခြင်း
 - ပါးစပ်တွင်း မှကွရု ကြာရှည်ဖြစ်ခြင်း
 - ဆင်ရေယုန်ပေါက်ခြင်း တို့ဖြစ်ပါသည်။
- အိပ်ချ်အိုင်စွီပိုး ကူးစက်ခံရသည်နှင့် ရောဂါလက္ခဏာချက်ချင်းမပြတတ်ပါ။ (၅)နှစ် / (၁၀)နှစ် ကြာမှ လက္ခဏာပြတတ်ပါသည်။ ရောဂါလက္ခဏာ မပြသေးသော်လည်း အခြားသူများသို့ ကူးစက်နိုင်ပါသည်။

ကူးစက်နိုင်သည့် နည်းလမ်းများ

- ၁။ ပိုးရှိသူနှင့် အကာအကွယ်မပါဘဲ လိင်ဆက်ဆံရာ(လိင်တူ / လိင်ကွဲ) မှတစ်ဆင့် ကူးစက်ခြင်း
- ၂။ ပိုးရှိသူ အသုံးပြုပြီးသော မသန့်ရှင်းသောဆေးထိုးအိမ်၊ ဆေးထိုးကိရိယာများနှင့် မူးယစ်ဆေးထိုးသွင်းခြင်း၊ ဆေးထိုးအိမ်များ မျှဝေသုံးစွဲခြင်း
- ၃။ ပိုးရှိသော သွေးသွင်းမိရာမှ ကူးစက်ခြင်း
- ၄။ ပိုးရှိသော ကိုယ်ဝန်ဆောင်မိခင်မှ သန္ဓေသားသို့ ကူးစက်ခြင်း

ပိုးကူးစက်ခံရနိုင်ခြေရှိသူများ

- လိင်လုပ်သားများနှင့် ၎င်းတို့၏ လိင်ဆက်ဆံဖက်များ
- အမျိုးသားချင်း လိင်တူဆက်ဆံသူများ
- မူးယစ်ဆေး သွေးကြောထဲထိုးသွင်းသုံးစွဲသူများ

လိင်တူလိင်ကွဲဆက်ဆံသူများတွင် လိင်အင်္ဂါလမ်းကြောင်း၌ အဖြူဆင်းညောင်းကျခြင်း၊ အနာပေါက်ခြင်းများရှိနေပါက အိပ်(ချ်)အိုင်စွီပိုး ကူးစက်ခံနိုင်မှုသည် အဆ (၉)ဆခန့်အထိ ဖြစ်နိုင်ပါသည်။

မကူးစက်နိုင်သော နည်းလမ်းများ

- ချောင်းဆိုးနှာချေခြင်း၊
- လက်ဆွဲနှုတ်ဆက်ခြင်း၊
- ဖက်ခြင်း၊
- သာမန်နမ်းရှုံ့ခြင်း၊
- ပန်းကန်၊ ခွက်၊ ဇွန်း အတူတူသုံးစွဲခြင်း၊ အတူစားသောက်ခြင်း၊
- တယ်လီဖုန်း၊ အိမ်သာ၊ တံခါးလက်ကိုင်၊ ထိုင်ခုံ စသဖြင့် အသုံးဆောင်ပစ္စည်းတို့ကို အတူတူ ကိုင်တွယ်သုံးစွဲခြင်း၊
- တစ်ခန်းတည်းအတူနေခြင်း၊ အတူတူအလုပ်လုပ်ခြင်း
- မြင်ကွဲသို့သော ပိုးမွှားများ ကိုက်ခံရခြင်းတို့ကြောင့် မကူးစက်နိုင်ပါ။

သာမန်ထိတွေ့ဆက်ဆံမှုများမှ မကူးစက်နိုင်ပါ။

ကာကွယ်နိုင်မည့် နည်းလမ်းများ

ကူးစက်မည့်အန္တရာယ်ရှိနိုင်သော အပြုအမူများကို ရှောင်ကြဉ်ရန် အလွန်အရေးကြီးပါသည်။

- လိင်ကိစ္စ အပျော်အပါးလိုက်စားခြင်းကို ရှောင်ကြဉ်ရန်
- မူးယစ်ဆေးဝါးရှောင်ကြဉ်ရန်
- တစ်ခါသုံးဆေးထိုးအပ်၊ ဆေးထိုးပြန်များသုံးစွဲခြင်း၊ လုံခြုံစိတ်ချရသော သွေးသွင်းခြင်း
- လိင်ဆက်ဆံရာတွင် အကာအကွယ်ပစ္စည်း(ကွန်ဒုံး) စနစ်တကျသုံးစွဲရန်

သွေးစစ်ဆေးခြင်း

- အိမ်ချိုအိုင်ဗွီပဋိပစ္စည်း ရှိ/မရှိ သိရှိလိုပါက နီးစပ်ရာဆေးရုံ၊ ဆေးခန်းများတွင် အိမ်ချိုအိုင်ဗွီပဋိပစ္စည်းရှိ/မရှိ သွေးစစ်ဆေးခြင်းဖြင့် သိရှိနိုင်ပါသည်။
- အိမ်ချိုအိုင်ဗွီပဋိပစ္စည်းရှိ/မရှိ သွေးစစ်ဆေးမည်ဆိုပါက မိမိဆန္ဒအလျောက် နှစ်သိမ့်ဆွေးနွေးမှုခံယူပြီးမှ နီးစပ်ရာဆေးရုံ/ ဆေးခန်းများနှင့် ကျန်းမာရေးဌာနများတွင် ပြုလုပ်သင့်ပါသည်။
- သွေးစစ်ဆေးသည့်အခြေတွင် ပဋိပစ္စည်းမတွေ့ဟုဆိုလျှင် ပြီးခဲ့သော (၆)ပတ်အတွင်း အိမ်ချိုအိုင်ဗွီပဋိပစ္စည်းကူးစက်နိုင်သော အခြေအနေ တစ်ရပ်ရပ်နှင့် ထိတွေ့မှုရှိခဲ့သောသူသည် နောက်ထပ်(၄)ပတ်မှ (၆)ပတ်အတွင်း ပြန်လည်စစ်ဆေးရန်၊ ဦးတည်အုပ်စုဝင်များနှင့် အိမ်ချိုအိုင်ဗွီပဋိပစ္စည်းကူးစက်နိုင်မှု အခြေအနေနှင့် ဆက်လက်၍ ထိတွေ့နေသောသူ (မိမိ၏ လိင်ဆက်ဆံဖက်တွင် အိမ်ချိုအိုင်ဗွီပဋိပစ္စည်း) များတွင် (၆)လ တစ်ကြိမ် စစ်ဆေးရန် ဖြစ်ပါသည်။
- အိမ်ချိုအိုင်ဗွီပဋိပစ္စည်း ရှိ/မရှိကို ကိုယ်ဝန်ဆောင်မိခင်နှင့် ခင်ပွန်းတို့သည် နီးစပ်ရာ ဆေးရုံ/ဆေးခန်း၊ ကျန်းမာရေးဌာနများတွင် သွေးစစ်ဆေးသင့်ပါသည်။ အကယ်၍ ကိုယ်ဝန်ဆောင်မိခင်တွင် အိမ်ချိုအိုင်ဗွီပဋိပစ္စည်းရှိပါက မိခင်မှကလေးသို့ ကူးစက်မှုကို ကာကွယ်ခြင်းနှင့် လိုအပ်သော ကျန်းမာရေးစောင့်ရှောက်မှုများကို လျင်မြန်စွာရရှိနိုင်မည်။
- အိမ်ချိုအိုင်ဗွီပဋိပစ္စည်း ရှိ/မရှိ သိရှိရန် မိခင်မှမွေးဖွားလာသည့် ကလေးငယ်များကို အသက်(၄)ပတ်မှ (၆)ပတ်အတွင်း ဝိုင်းရပ်(၆)ပိုးကို စစ်ဆေးခြင်း နည်းဖြင့် အိမ်ချိုအိုင်ဗွီပဋိပစ္စည်း ရှိ/မရှိ စစ်ဆေးနိုင်ပါသည်။ ဝိုင်းရပ်(၆)ပိုးစစ်ဆေးခြင်းနည်းဖြင့် အိမ်ချိုအိုင်ဗွီပဋိပစ္စည်းမရှိဟု အဖြေထွက်သော ကလေးများကို အသက်(၉)လနှင့် (၁၈)လတို့တွင် အိမ်ချိုအိုင်ဗွီပဋိပစ္စည်း ရှိ/မရှိ စစ်ဆေးရန် (သို့မဟုတ်) မိခင်နို့ဖြတ်ပြီး (၃)လ အကြာတွင် ပြန်လည်စစ်ဆေးရန် လိုအပ်ပါသည်။

ဆေးကုသမှုခံယူခြင်း

- စနစ်တကျဆေးကုသမှု ခံယူ၍ သက်တမ်းစေ့နေနိုင်ပါသည်။
- အိမ်ချိုအိုင်ဗွီပဋိပစ္စည်းရှိသူများသည် ဘဝတစ်သက်တာသောက်သုံးရမည့် အေအာတီဆေးဖြင့် ဆေးကုသမှု ခံယူနိုင်ပါသည်။
- အေအာတီဆေးဝါး သောက်သုံးနေသူများသည် ဆေးကိုမပျက်မကွက် နေစဉ်အချိန်မှန် ညွှန်ကြားထားသည့်အတိုင်း သောက်သုံးရမည်။
- အိမ်ချိုအိုင်ဗွီပဋိပစ္စည်းရှိသူများတွင် လတ်တလော ချောင်းဆိုးခြင်း၊ ညဘက်ရွှေးပြန်ခြင်း (သို့မဟုတ်) ပြန်ရည်ကြိတ်များ ကြီးလာခြင်း စသော တီဘီလက္ခဏာများ မရှိပါက Isoniazid Preventive Therapy (IPT) ကို (၆)လတိုက်ကျွေးခြင်းဖြင့် တီဘီရောဂါဖြစ်ပွားမှုကို လျော့ချပေးနိုင်ပါသည်။
- အိမ်ချိုအိုင်ဗွီပဋိပစ္စည်းရှိ ကိုယ်ဝန်ဆောင်မိခင်များအတွက် အေအာတီဆေးနှင့် ၎င်းတို့မွေးဖွားလာသော ကလေးများအတွက် အေအာတီ ကာကွယ်ဆေးများကို သက်ဆိုင်ရာမြို့နယ်များတွင် ရရှိနိုင်ပါသည်။
- အိမ်ချိုအိုင်ဗွီပဋိပစ္စည်းကလေးများအား အေအာတီဆေးရရှိရန် အေအာတီဆေးကုသမှုများသို့ ညွှန်ပို့ပေးရပါမည်။
- အိမ်ချိုအိုင်ဗွီပဋိပစ္စည်း ကူးစက်ခံရသော အမျိုးသမီးများသည် သင့်လျော်သော သားဆက်ခြားနည်းလမ်းများကို နီးစပ်ရာ ဆေးရုံ၊ ဆေးခန်း၊ ကျန်းမာရေးဌာနများတွင် ကျန်းမာရေးဝန်ထမ်းများထံမှ လက်လှမ်းမီစွာ ရရှိနိုင်ပါသည်။
- အိမ်ချိုအိုင်ဗွီပဋိပစ္စည်းကူးစက်ခံရသော မွေးကင်းစကလေးများအား ပုံမှန်ကာကွယ်ဆေးထိုး ဆေးတိုက်ခြင်း ပြုလုပ်သင့်/မသင့်ကို သက်ဆိုင်ရာ ကျန်းမာရေးဝန်ထမ်းများနှင့် ဆွေးနွေး တိုင်ပင်သင့်ပါသည်။

အေအာတီအက်စ်ဂျေဂါနှင့် ခွဲခြားနိမ့်ချဆက်ဆံခြင်း

- ခွဲခြားနိမ့်ချဆက်ဆံခြင်းသည် အိမ်ချိုအိုင်ဗွီပဋိပစ္စည်း ကူးစက်ခံရသောသူများကို မှန်ကန်သော ဆေးကုသမှုနှင့် ပြုစောစောင့်ရှောက်မှုများရရှိရန် နှောင့်နှေးစေနိုင်သောကြောင့် ခွဲခြားနိမ့်ချဆက်ဆံခြင်း မပြုလုပ်သင့်ပါ။



Asymptomatic (Stage 1) – lymphadenopathy



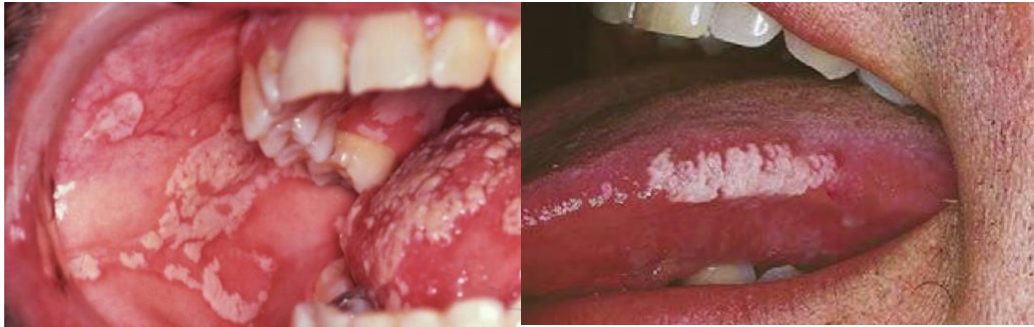
Oral ulcers and angular cheilitis (Stage 2)



Herpes Zoster and PPE (Stage)



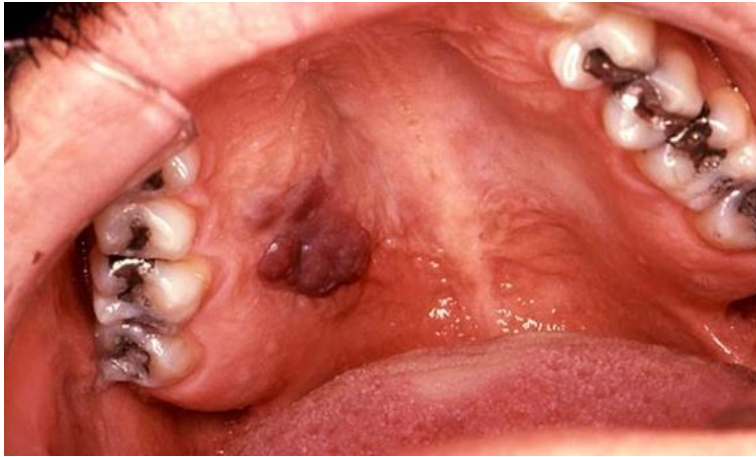
Fungal nail and Seborrheic dermatitis (Stage 2)



Acute severe necrotizing gingivitis (Stage 3)



Chronic herpes simplex (Oral and genital) Stage 4



Kaposi sarcoma (Stage 4)



Herpes Zoster and PPE (Stage)

Management

- Psychosocial support
- Treat symptoms and infection (available)
- Consider TB (Co-infection with HIV)
- Nutrition counseling, Safe water, Hygiene
- STI screening and syndromic management
- Counseling risk of transmission
- Check HIV staging, Past Medical History, Physical Examination > REFER

Table 1. WHO clinical staging of established HIV infection

HIV-associated symptoms	WHO clinical stage
Asymptomatic	1
Mild symptoms	2
Advanced symptoms	3
Severe symptoms	4

Poisoning

Types of poisoning Primary health care

- Avicide – substance which can be used to kill birds [1]
- Biocide – a chemical substance capable of killing living organisms, usually in a selective way
- Fungicide – a chemical compound or biological organism used to kill or inhibit fungi or fungal spores
- Microbicide – any compound or substance whose purpose is to reduce the infectivity of microbes
- Germicide – a disinfectant
- Bactericide – a substance that kills bacteria

Viricide – a chemical agent which "kills" viruses outside the body

- Herbicide – a substance used to kill unwanted plants
- Parasiticide – any substance used to kill parasites
- Pesticide – a substance or mixture of substances used to kill a pest
- Acaricide – pesticides that kill mites
- Insecticide – a pesticide used against insects
- Molluscicide – pesticides against molluscs
- Nematocide – a type of chemical pesticide used to kill parasitic nematodes (roundworms)
- Rodenticide – a category of pest control chemicals intended to kill rodents
- Spermicide – a substance that kills sperm

General Management - History

- WHAT
- HOW MUCH
- WHEN
- WHAT ELSE
- WHY
- With WHO

General Management -1

- A (Airway)
- B (Breathing)
- C (Circulation)
- D (Disability-AVPU/ Glasgow Coma Scale)
- DEFG (Don't ever forget the Glucose)
- GET A SET OF BASIC OBSERVATIONS

General Management -2

LOOK

- Head to toe

FEEL

- Temperature, Sweating

SMELL

- Alcohol, any smell

Specific Management Options - 1

DECREASING ABSORPTION

- Gastric Lavage (NGT > Lavage with purified water > up to clear)
- Absorbents (Activated Charcoal)

Overview of Poison

- Can enter body by being:
 - Swallowed
 - Injected
 - Inhaled
 - Absorbed
- Almost anything can be poisonous in doses larger than intended

Preventing Poisoning in Children: Household and Chemical Products

- Use safety locks on cabinets
- Store potential poisons out of reach and out of sight
- Store products in original containers

Teach children about poison

- Store food and products in different areas
- Put back after use
- Keep away from areas sprayed with pesticide
- Discard old or outdated products

Preventing Poisoning in Children: Medicine

- Keep out of sight, locked up and out of reach
- Use child-resistant containers
- Store in original containers
- Keep purses/diaper bags out of reach
- Do not take medication in front of children
- Do not call medicine candy
- Keep vitamins locked up and out of reach
- Be aware of medicines visitors may bring

Preventing Poisoning in Adults

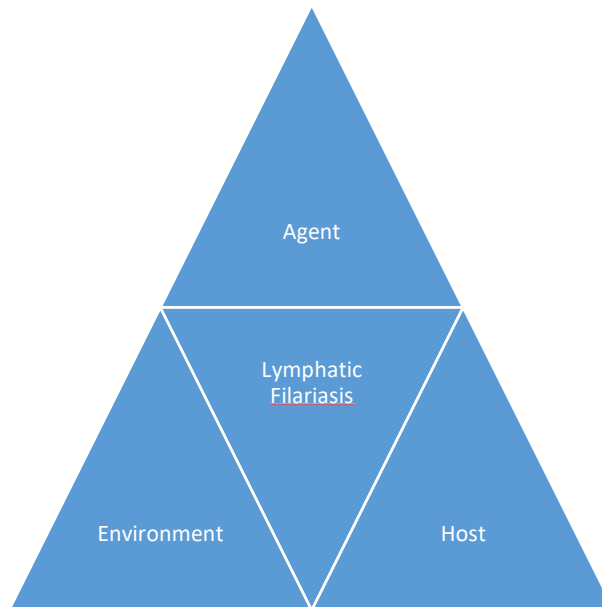
- Keep in original containers
- Store food and products separately
- Read directions and caution labels
- Never mix products together
- Turn on fans, open windows when using household products
- When spraying turn nozzle away and wear protective clothing and masks
- Stay away from areas sprayed with pesticides
- Never sniff containers
- Discard old products
- READ AND FOLLOW THE LABEL DIRECTIONS!!
- Don't Forget the ABC

Lymphatic Filariasis: Elephantiasis

Infection with 3 closely related Nematodes

- *Wuchereria bancrofti*
- *Brugia malayi*
- *Brugia timori*

- * Transmitted by the bite of infected “Culex mosquito”
- * All the parasites have similar life cycle in man
- * Adults seen in Lymphatic vessels
- * Offsprings seen in peripheral blood during night



Agent Factors

S.no	Parasite	Mosquito	Disease
1.	<i>W.bancrofti</i>	Culex	Lymphatic Filariasis

There are 8 different species to get filariasis around the world. According to geographical distribution, *W. Bancrofti* is most common parasite in South-East Asia.

Host Factors

- Man – Natural Host
- Age – All age (6 months) Max: 20-30 years
- Sex – Higher in men
- Migration – leading to extension of infection to non-endemic areas

Social & Environmental Factors

- Associated with Urbanization, Poverty, Industrialization, Illiteracy and Poor sanitation.
 - **Climate:** is an important factor which influences:
 1. The breeding of mosquito
 2. Life: Optimum temperature 20-30 & Humidity 70%
 3. The development of parasite in the vector (Culux mosquito)
- Sanitation, Town planning, Sewage & Drainage.

Stages in Lymphatic Filariasis

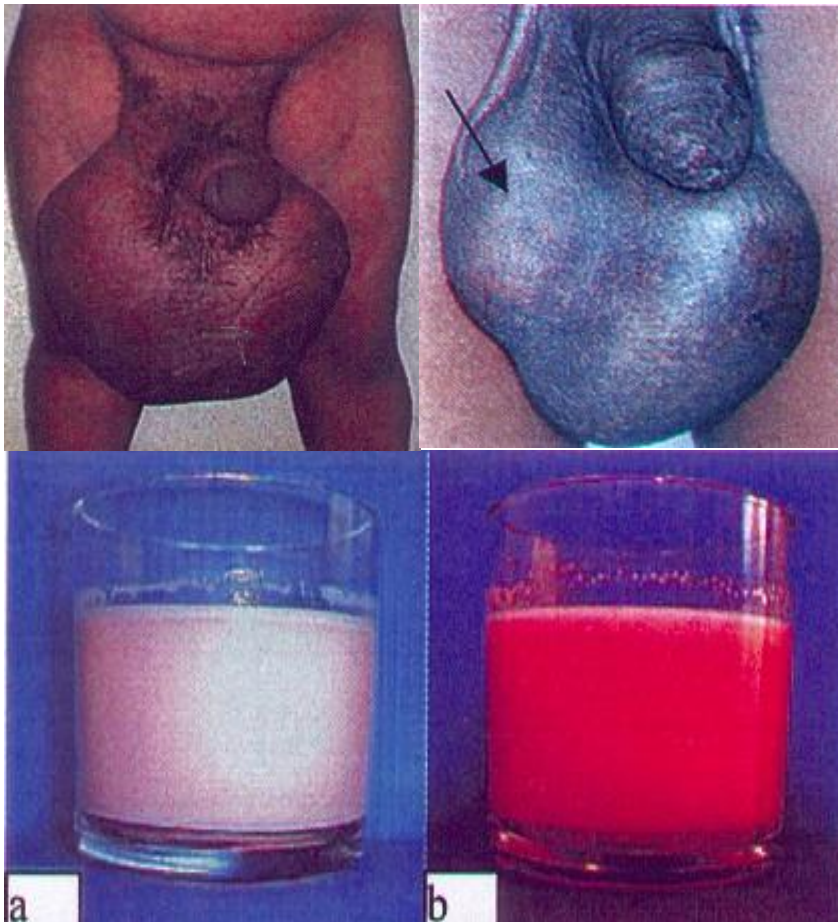
There are 4 stages:

1. Asymptomatic amicrofilariaemic stage
2. Asymptomatic microfilariaemic stage
3. Stage of Acute manifestation
4. Stage of Obstructive (Chronic) lesions

Stage 3 of Acute Manifestation

- Acute inflammation in the lymph vessel/node of the limb & scrotum
- Clinical manifestations are consisting of:
 1. Filarial fever
 2. Lymphadenopathy
 3. Orchitis

Stage 4: Chronic



Stages of Lymphoedema of the Leg (Stage I)

- Swelling reverses at night
- Skin folds-Absent
- Appearance of Skin Smooth, Normal



Stages of Lymphoedema of the Leg (Stage II)

- Swelling not reversible at night
- Skin folds-Absent
- Appearance of skin-Smooth, Normal



Stages of Lymphoedema of the Leg (Stage III)

- Swelling not reversible at night
- Skin folds-Shallow
- Appearance of skin-Smooth, Normal

Stages of Lymphoedema of the Leg (Stage IV)

- Swelling not reversible at night
- Skin folds-Shallow

Appearance of skin - Irregular, * Knobs, Nodules



Stages of Lymphoedema of the Leg (Stage V)

- Swelling not reversible at night
- Skin folds-Deep

Appearance of skin – Smooth or Irregular



Stages of Lymphoedema of the Leg (Stage VI)

- Swelling not reversible at night
- Skin folds-Absent, Shallow, Deep
- Appearance of skin *Wart-like lesions on foot or top of the toes





Stages of Lymphoedema of the Leg (Stage VII)

- Swelling not reversible at night
- Skin folds-Deep
- Appearance of skin-Irregular
- Needs help for daily activities - Walking, bathing, using bathrooms, dependent on family or health care systems

DIAGNOSIS

- Clinical sign and symptom
- There are several investigation methods for diagnosis
- Commonly "Thick Blood Smear and microscopy" is used.
- Thick Blood Smear is collected in night time (Between 10:00 PM to 2:00 AM)

TREATMENT

1. Diethyl Carbomazine citrate (DEC)
2. Ivermectin
3. Albendazole

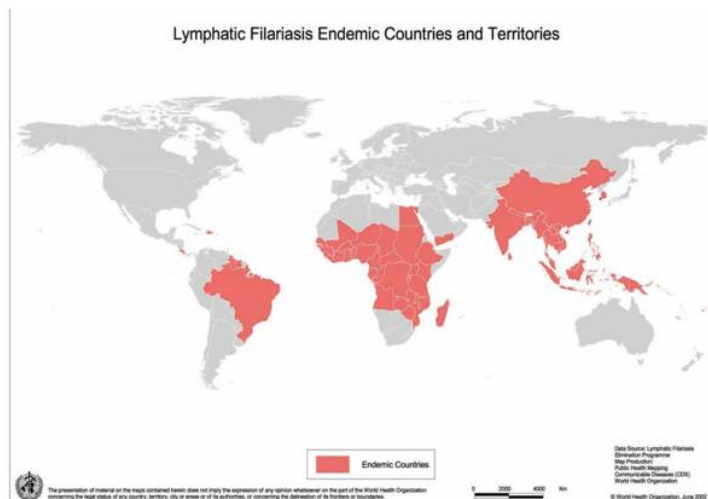
Basic principles

- Wash the affected parts twice daily with soap and clean, cool water, and dry them carefully.
- Raise the affected limb at night.
- Exercise the limb regularly.
- Keep the nails clean.
- Wear comfortable shoes.
- Treat wounds or abrasions

PREVENTION

Prevent mosquito bites: use mosquito nets and repellents.

- Seasonal mass treatment with diethylcarbamazine (DEC) and albendazole are recommended in areas where filariasis is common.
- Vector control.



HEPATITIS

DEFINITION

- Hepatitis is an inflammation of the liver.
- **Acute** e.g. hepatitis A, most drug reactions
- **Chronic** e.g. autoimmune hepatitis (AIH), **risk** in Type I DM, SLE and Rheumatoid Arthritis
 - ❖ Acute or chronic
 - e.g. hepatitis B: may be acute if the body's immune system manages to fight the virus, or may become chronic and lead to liver cirrhosis.

CAUSES

1. Viral Infections: Hepatitis A, B, C, D and E
2. Drugs: Anti TB, HIV, Leprosy and other liver toxic chemicals
3. Alcohol
4. 4.Autoimmune

SIGNS AND SYMPTOMS

- Jaundice
- Sign of infection
- Nausea and vomiting
- Right upper quadrant pain
- Smooth, tender and slightly enlarged liver
- Dark urine

DIAGNOSIS

- Liver Function Test (AST/ALT raised)
- Hepatitis B testing (Rapid test)
- USG (Ultrasound)

TREATMENT

- Supportive treatment: Glucose, ORS, Vitamin B1
- Admit to IPD
 - Hydration (Oral, IV)
 - Avoid alcohol and liver toxic drugs
 - Refer to doctor

PREVENTION

- Sanitation
- Universal precautions for health workers
- Vaccination (Hep B)

PART VI: PRIMARY HEALTH CARE

Primary Health Care is essential health care based on practical, scientifically sound and socially acceptable methods and technology made universally accessible to individuals and families in the community. It promotes community participation in the spirit of self-reliance. PHC is health care that is essential, ethical, accessible, equitable, affordable, and accountable to the community.

AIMS

1. reducing exclusion and social disparities in health (universal coverage reforms);
2. organizing health services around people's needs and expectations (service delivery reforms);
3. integrating health into all sectors (public policy reforms);
4. pursuing collaborative models of policy dialogue (leadership reforms); and
5. Increasing stakeholder participation.

VALUES

The PHC values to achieve health for all require health systems that “Put people at the center of health care” following the principles of:

- Equity
- Social justice
- Right to access health

PRIMARY HEALTH CARE PROVIDER

- Have a working knowledge of the whole breadth of medicine
- Maintain on-going relationships with their patients they are the only practitioners to remain with their patients through sickness and health
- Focus on patients' response to illness rather than the illness itself taking into account personality, family patterns, and the effect of these on the presentation of symptoms
- Be interested in ecology of health and illness within communities and in the cultural determinants of health beliefs
- Be able to draw on a far wider range of resources than are taught in the training, including intuition, knowledge of medicine, communication skills and our own humanity

PRIMARY HEALTH CARE (PHC)

Teaching hours: 9 hours

Objectives

At the end of this module, the learner should be able to know about:

- Definition and philosophy of PHC
- Backbone function of PHC
- Dimension and principles of PHC
- Eight core components of PHC
- Community level PHC
- Rights & responsibilities of PHC
- Practice of PHC
- Expanded program of immunization
- Curative & rehabilitative care
- Reasons for unsuccessful implementation of PHC
- PHC reform
- Universal Health Coverage and PHC relationship

Teaching Methods: Lecture and Discussion

ALMA-ATA DECLARATION

Primary health care became a core policy for WHO in 1978, with the adoption of the Declaration of Alma-Ata and the strategy of "Health for all by the year 2000".

International Conference on Primary Health Care, Alma-Ata, USSR, 6-12 September 1978

The International Conference on Primary Health Care, meeting in Alma-Ata this 12 of September in the year 1978, expressing the need for urgent action by all governments, all health and development workers, and the world community to protect and promote the health of all the people of the world.

The Alma-Ata conference included the governments of 134 countries and many voluntary agencies called for a *revolutionary approach to health care*.

The Alma-Ata conference called for acceptance of the WHO goal for Health for All (HFA-2000) by the year 2000 and proclaimed primary health care as a way to achieving Health for all.

The essence of Alma-Ata is

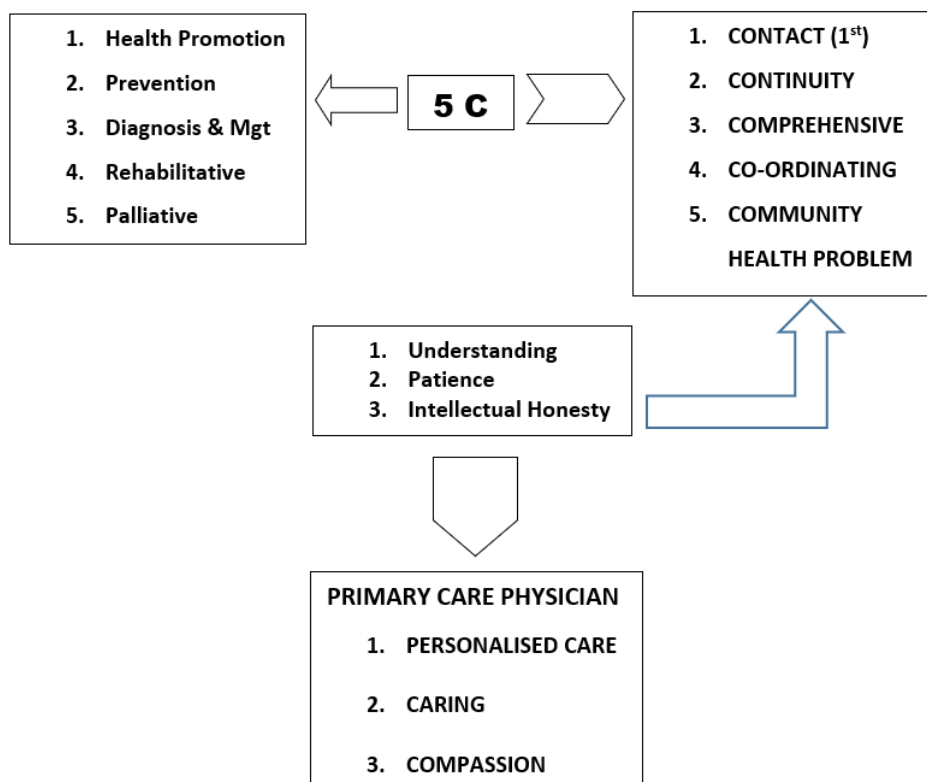
- Mobilized a "Primary Health Care movement" of professionals and institutions, governments and civil society organizations, researchers and grassroots organizations
- Undertook to tackle the "politically, socially and economically unacceptable" health inequalities in all countries.
- Pursued values of social justice and the right to better health for all, participation and solidarity

Twenty-five years later, international support for the values of primary health care remains strong. Preliminary results of a major review suggest that many in the global health community consider a primary health care orientation to be crucial for equitable progress in health (2).

PHC Philosophy

Primary Health Care is based on a philosophy emphasizing *social justice, equity, community participation, and use of socially acceptable technology on the basis of the needs of the population*. It is usually the first level of contact for individuals and community with the health system. The philosophy of Primary Health Care emphasizes working to improve the root causes of ill-health and working with people to enable them to make decisions about their needs and how best to address them.

Backbone Functions of PHC



PHC Definition (“Alma Ata WHO, 1978”)

“Essential health care based on practical, scientifically sound and socially acceptable methods and technology made universally accessible to individuals and families in the community through their full participation and at a cost that the community and the country can afford to maintain at every stage of their development in the spirit of self-determination.”

DIMENSIONS OF PHC

The structure of a primary care system consists of three dimensions:

- 1) Governance
- 2) Economic conditions
- 3) Workforce development.

The primary care process is determined by four dimensions:

- 4) Access
- 5) Continuity of care
- 6) Coordination of care
- 7) Comprehensiveness of care.

The outcome of a primary care system includes three dimensions:

- 8) Quality care
- 9) Efficiency of care
- 10) Equity in health.

PRINCIPLES OF PHC

1. Equitable distribution

It means services to all and more services to needy & vulnerable group.

The first key principle in the PHC strategy is equity or equitable distribution of health services.

- i. Health services must be shared equally by all people irrespective of their ability to pay.
PHC aims to re-address this imbalance by:
 - Shifting the center of gravity of the health care system from cities (where three-quarters of the health budget is spent) to → rural areas (where three-quarters of the people live).
 - Bring these services as near people’s home as possible.
- ii. For ensuring equity: The population to be served must be known. The vulnerable groups are to be identified & reached.
- iii. The health services (not necessarily health centers) have to be dispersed into:
 - The farthest remote rural areas.
 - The deepest parts of the underserved urban population.
 - The failure to reach the needy & the majority is usually due to limited geographical access.
- iv. Thus, to ensure equity, accessibility has to be improved by:
 - Increasing the number of health facilities.
 - Improving transport conditions.
 - Organizing outreach services, thus substituting one when the other is not available.
- v. To achieve this, PHC is supported by higher level of health care to which patients can be referred for extended care.

2. Community participation

- i. Involvement of individuals, families, & communities in promotion of their own health & welfare.
- ii. There must be: A continuing effort to secure meaningful involvement of the community in: Planning, Implementation, Maintenance of health services, Evaluation of health services.

- iii. Maximum reliance on local resources such as: Manpower, Money, Materials
- iv. Universal coverage by PHC cannot be achieved without the involvement of the local community.

In short, PHC must be built on the principle of community participation and /or involvement.

3. Appropriate technology

- i. Technology that is scientifically sound, adaptable to local needs, & acceptable to those who apply it & those for whom it is used, & that can be maintained by the people themselves in keeping with the principle of self-reliance with the resources the community & country can afford.
- ii. Health technologies are required not only for: Diagnostic and therapeutic maneuvers. But also, for: Disease prevention, Disease control, Health promotion.
- iii. Though it is commonly perceived that person who is going to apply it is a trained health professional, in PHC practice there are instance where technology may have to be applied by: Individual, family and community. E.g. use of tooth brush, eye glasses, domestic water filters, domestic pest control, etc.
- iv. The simplicity of the technology is always desirable; examples of such are: ORS in diarrheal disease control, Breast feeding in spacing, Weighing for growth monitoring etc.

4. Intersectoral (multisectorial) coordination

There should be increased realization of the fact that the components of PHC cannot be provided by the health sector alone. The Declaration of Alma-Ata states that “PHC involves in addition to the health sector, all related sectors & aspects of national & community development, in particular agriculture, animal husbandry, food, industry, education, housing, public works, communication & others sectors”.

The above-mentioned four principles should be in line with Acceptable, Accessible and Affordable services.

The following eight services indicated as elements / components, are to be organized & delivered on basis of the principles of the PHC.

EIGHT CORE COMPONENTS (ELEMENTS) OF PHC (3+3+2)

1. Health education: Concerning prevailing health problems & the methods of preventing & controlling them.
2. Promotion of food supply and proper nutrition
3. Adequate safe drinking water and sanitation
4. Maternal and child health including family planning
5. Expanded Program on Immunization (EPI) (against major infectious diseases)
6. Prevention and control of local endemic diseases
7. Appropriate treatment of common diseases, injuries and accidents
8. Provision of essential drugs

The first three elements are promotive services. The middle three are preventive services and the last two services are curative care services.

Community level PHC

Community involvement: Village health workers (VHWs) / Community health workers (CHWs), traditional birth attendants (TBAs)

Basic health services: -Nurses/MWs, Assistant nurses, Pharmacist, Assistant doctors, +/-Clinic doctors

Selective PHC: GOBI-FFF

Major programs (GOBI): Growth monitoring, oral rehydration therapy, Breastfeeding, Immunization

Added (FFF): Family planning, Female education, Food supplementation

COMMUNITY HEALTH CARE SYSTEM

- Health facility accessible to all
- Clear responsibility – individuals, family and community
- Linkage – community and community health workers
- Community involvement in
 - Realizing needs/priorities
 - Implementation and management
- Active women groups, nongovernmental organizations
- Community organizations
- Intersectoral coordination

RIGHTS AND RESPONSIBILITIES IN PHC

Individual

- Personal hygiene
- Healthy lifestyles
- Vaccination and preventing diseases
- Medical examination/treatment
- Healthy environment
- Safe water, sanitation
- Family planning and population management

Community

- Utilizing health facilities
- Supporting and strengthening health centers
- Activist for health promotion and protection
- Community health workers training
- Improving sanitation and environment
- Food safety, adequate water
- Promoting family planning, breastfeeding, healthy life styles
- Restricting causative factors of ill health like poverty

Government

- Policies and plans
- Resources
- Accessibility
- Awareness-building
- Human resources development
- Monitoring/support
- Outbreak control
- Exchanging of experiences

The concept of PHC involves an effort to provide the rural population in developing countries with at least the basic minimum of health services. The list can be modified to fit local circumstances. (I.e. For example, some countries have specifically included, mental health, Physical handicaps, Health and social care of the elderly)

THE PRACTICE OF PRIMARY HEALTH CARE (In General)

1 CURATIVE CARE

- 1.1 Treatment of common diseases & injuries
- 1.2 Provision of essential drugs
- 1.3 Reproductive health and mother & child health (MCH)

2 STATIC PHC PROGRAMMES

- 2.1 Expanded programme of immunization (EPI)
- 2.2 Ante-, peri-, & postnatal care
- 2.3 Family planning, including abortions & help for couples

3 INTERVENTIONS TO IMPROVE NUTRITIONAL STATUS

- 3.1 Protein-calorie malnutrition
- 3.2 Micro-nutrients

4 HEALTH PROMOTIONS

5 PREVENTION & CONTROL OF COMMON LOCAL DISEASES

- 5.1 Malaria
- 5.2 Sexually transmitted diseases including aids
- 5.3 Diarrhea
- 5.4 Tuberculosis
- 5.5 Leprosy
- 5.6 Common local diseases related to water
- 5.7 Other significant vector-borne diseases
- 5.8 Infections prevented by better water & sanitation
- 5.9 HIV

6. WATER, SANITATION & WASTE DISPOSAL

7 PALLIATIVE CARE

8. REHABILITATION SERVICES

- 8.1 Physiotherapy
- 8.2 Occupational Therapy
- 8.3 Speech & Audiology
- 8.4 Podiatry

9. CHRONIC DISEASES & PSYCHIATRY

10. DENTAL CARE

11. EYE CARE

12. SOCIAL SERVICES

CURATIVE CARE

Objectives of curative care

- i. Life sustainability
- ii. Restoration of health
- iii. Prevention of deterioration in health
- iv. Reduce suffering. (i.e. pain)

Principles in curative care

- Respect every patient as a human being and in line with human rights especially respect for dignity and right to life.
- Respect four principles of medical ethics: autonomy (informed consent, confidentiality, truth telling, and communication), beneficence, non-maleficence and justice.
- Not to decide with the intention of bringing about the death of the patient. However, it is absolutely essential to discuss closed relative before the decision made.

Challenges of curative health care in low resource setting

- Finance
- Quality of care
- Lack / insufficient resources (human, material: drugs, equipment)
- Equity
- Mal-distribution of staff
- Medical ethics

Strategies to improve the curative care

- Good referral system
- Specialist service should provide in township level.
- Ideal PHC services
- Support diagnostic and therapeutic facilities.
- Patient-centered, bio-psycho-social approach
- Well-coordinated Private-Public- Partnership
- Well-coordinated public health and curative care.
- Involvement of community in PHC curative care.

REHABILITATIVE HEALTH CARE

- Rehabilitative health care is a process aimed at enabling the disabled persons to reach and maintain their optimal physical, sensory, intellectual, psychological and social functional levels. Rehabilitation provides disabled people with the tools they need to attain independence and self-determination.
- The combined and coordinated use of medical, social, educational and vocational measures for training and retraining the individual to the highest possible level of functional ability
- The physical and mental restoration, as far as possible, of all treated patients to normal activity, so that they may be able to resume their place in the home, society and industry.
- Challenges of rehabilitative health care are: Scarce resources (human, fund, material, technology) and less interest than curative care (i.e. duration, slow progress)
- Strategies to improve Rehabilitative Health Care service: Multidisciplinary team approach, community involvement (Community Based Rehabilitation), allocation of fund, training and refresher courses, upgrade in health department.

EXPANDED PROGRAMME OF IMMUNISATION (EPI)

The Expanded Program of Immunization, Myanmar has been launched in May'1978. Since 2005, the routine immunization has been providing seven antigens to children who are under one year of age. Since November'2012 pentavalent vaccine has been introduced and eight diseases are preventable for the children. Fully immunized children are protected against Poliomyelitis, Measles, Diphtheria, Pertussis, Tetanus, Hepatitis B, H. influenza infection and severe Tuberculosis. The pregnant women are given two doses of Tetanus toxoid to prevent maternal and neonatal tetanus.

Objectives of Immunization

Main aim is to attain the highest possible level of herd immunity against those diseases for which artificial immunization is available. Therefore, program aims at target population groups with low level of herd immunity. Herd immunity is also called group immunity or population immunity.

Herd immunity can be defined as "Level of immunity in a population of a defined area, at a specified point in time.

If epidemic disease occurs in a population with low herd immunity easy transmission high morbidity and mortality. Later, herd immunity gradually rises (acquired active natural immunity)

At high level of herd immunity, cessation of disease transmission and decline epidemic wave. If epidemic disease occurs in a population with high herd immunity;

Probability of an outbreak depends on ratio of immune persons and susceptible persons at a time.

If immunized persons are more than susceptible persons there will be decrease chance of contact between infected persons and susceptible persons as the immunized persons serve as a kind of immune barrier.

Targeted vaccine prevented diseases are

1. BCG
2. Hepatitis B
3. Diphtheria
4. Pertussis
5. Tetanus
Haemophilus Influenzae type b disease (2, 3,4,5,6 – Pentavalent)
6. Pneumococcal disease
7. Poliomyelitis
8. Measles
9. Rubella and congenital rubella syndrome
10. Japanese encephalitis
11. Rotavirus gastroenteritis
12. Human papillomavirus infection and cervical cancer
13. Seasonal influenza
14. Yellow fever
15. Meningococcal disease
16. Mumps

Vaccine for number 12 to 17 diseases are not available in Myanmar public sector

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Community Oriented Primary Care (COPC)

Separated lecture

Today Reality

- Substantial progress in health since 1978 BUT deeply unequal: improved health in many parts, but lots of countries increasingly lagging behind or losing ground.
- Health systems do not gravitate naturally towards the goals of health for all through primary health care.
- Health systems are developing in directions that contribute little to equity and social justice and fail to get the best health outcomes for their money.

Revitalizing Alma-Ata Goals

1. *Concrete strategies & processes*
 - Clear targets, more equitable allocation of resources, balance between horizontal and vertical programs
2. *Social policies*
 - Labor policies, education (especially of girls)
3. *Intersectoral forums*
 - Opportunities for different sectors to meet and develop common goals, strategies, programs
4. *Funding commitments*
 - Sustained funds; private sector involvement; community participation in funding
5. *Trained health personnel*: Good HR plans at all levels; better PHC training, supervision & management
6. *Long-term social intervention*: Shift from vertical short-term measures to revitalization of PHC goals of poverty alleviation and community participation.

Four set of PHC reforms necessary to refocus health systems towards health for all by following reforms.



REASONS FOR UNSUCCESSFUL IMPLEMENTATION OF PHC (after > 2 decades)

The process of implementing primary health care and national health for all policies and strategies has faced numerous problems, some of which were identified by the regional health-for-all policy and strategy for the 21st century Health. The Regional Office conducted a review of progress in implementing primary health care in the Region. The review came out with the following reasons responsible for unsuccessful implementation of primary health care.

1. Lack of community participation. Community involvement is poor as a result of conviction that the state is responsible for providing the totality of health services. In addition, the civic infrastructure and civic organizations are not well developed.
2. Lack of intersectoral collaboration. This has led to limited intersectoral cooperation for health development.

3. Lack or misuse of human resources and material resources. The review reported inappropriate human resources policies and planning, leading to imbalances between the number of health professionals in different disciplines and categories and to inequitable geographical distribution. As well, in some countries working conditions of health workers are unsatisfactory, with low salaries, poor living conditions and inadequate career structures.
4. Concentration on sophisticated technology. Inappropriate use of medical technology leads to escalating cost of health care services. In addition to inefficient use of national resources, such concentration has resulted in inequitable and insufficient resource allocation, with limited resources for promotive and preventive activities and programmes.
5. Mismanagement. A major reason was weaknesses of national health systems with respect to policy analysis and formulation, coordination and regulation. Weak managerial capabilities at all levels of care have hindered the effective and efficient implementation of health programmes. Weak management also caused poor organization and delivery of health services at all levels including ineffective referral systems. The weakness of health information systems at central and peripheral levels has resulted in difficulties in collecting and using information to measure performance of health facilities.
6. Lack of intercountry collaboration and lack of operational research.

Universal Health Coverage and PHC relationship

The movement towards universal health coverage (UHC) is now one of the most prominent global health policies. According to the United Nations Sustainable Development Goals, all UN Member States have agreed to try to achieve Universal Health Coverage by 2030. This includes financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all. As more countries make commitments to universal health coverage, they face challenges on how to quantify it and track progress towards its key goals, both in terms of health services and financial protection coverage.

Emphasis should be placed on the role of primary health care in achieving universal health coverage. Health for all is an indispensable need which must be integrated into an overall framework for organizing and delivering care based on a patient-centered, efficient, fair, and cost-effective way. According to the World Health Report 2008: Primary Health Care (Now More Than Ever), primary health care can provide such a framework. Patient-centeredness, comprehensiveness, integration and continuity of care are among primary health care's core features that have been repeatedly associated with better health outcomes, cost-effectiveness and higher user satisfaction. However, it is recognized that primary care can offer much more than reduction of costs. A recent study on 102 low- and middle-income countries reported that broader coverage of primary care services was linked to longer life expectancy, lower infant mortality and lower under-five mortality, suggesting that investment in primary care is a wise choice.

Universal health coverage is currently the aspiration of many countries worldwide. Health-care system development requires more than financing and human resource considerations. Although essential, these components must be integrated into an overall framework for organizing and delivering care that best meets population needs. Primary health care provides such a framework, builds the backbone of an effective health-care system, and can improve health, reduce growth in costs, and lower inequality. Strong orientation towards primary health care and its core principles (often outlined as first contact, continuous, comprehensive, and coordinated care) is shown to be stable over time and was often incorporated in the early days of many health-care systems that have a strong primary health-care orientation today. This is where universal health coverage should be reconnected with primary health care. Emphasis should be placed on the role of primary health care in achieving universal health coverage.

No universal health coverage without primary health care.

Three decades after the 1978 Health for All declaration, WHO called for a renewed focus on primary health care with the launch of the 2008 World Health Report. When countries sought guidance on financing health care, WHO commissioned a 2010 report on universal health coverage, a concept then pioneered as central to the Sustainable Development Goals and the ambition to leave no one behind.

Forty years ago, a generation of leaders expressed their commitment to achieve health for all through primary health care in the Declaration of Alma-Ata. Since then, numerous summits, global, regional, and national conferences have reiterated those commitments; however, the implementation of primary health care has been insufficient and uneven among and within countries.

UHC, sustainable development goals and PHC are closely interrelated as well as overlapping. Without PHC, UHC and sustainable development goals can't be materialized.

In October 2018, Astana Declaration came out from 2nd international conference on PHC. This declaration is reinforced the Alma-Ata declaration.

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PART VII: BASIC EPIDEMIOLOGY
OUTBREAK: THE WORST PANDEMICS IN HISTORY

Death Toll: 36 million

Cause: HIV/AIDS

First identified in Democratic Republic of the Congo in 1976, HIV/AIDS has truly proven itself as a global pandemic, killing more than 36 million people since 1981. Between 2005 and 2012 the annual global deaths from HIV/AIDS dropped from 2.2 million to 1.6 million.

HIV/AIDS PANDEMIC

(AT ITS PEAK, 2005-2012)

THE BLACK DEATH (1346-1353)

Death Toll: 75 – 200 million

Cause: Bubonic Plague

From 1346 to 1353 an outbreak of the Plague ravaged Europe, Africa, and Asia, with an estimated death toll between 75 and 200 million people.

ASIAN FLU (1956-1958)

Death Toll: 2 million

Cause: Influenza

Asian Flu was a pandemic outbreak of influenza A of the H2N2 subtype, that originated in China in 1956 and lasted until 1958. In its two-year spree, Asian Flu traveled from the Chinese province of Guizhou to Singapore, Hong Kong, and the United States. Estimates for the death toll of the Asian Flu vary depending on the source, but the World Health Organization places the final tally at approximately 2 million deaths, 69,800 of those in the US alone.

THIRD CHOLERA PANDEMIC (1852–1860)

Death Toll: 1 million

Cause: Cholera

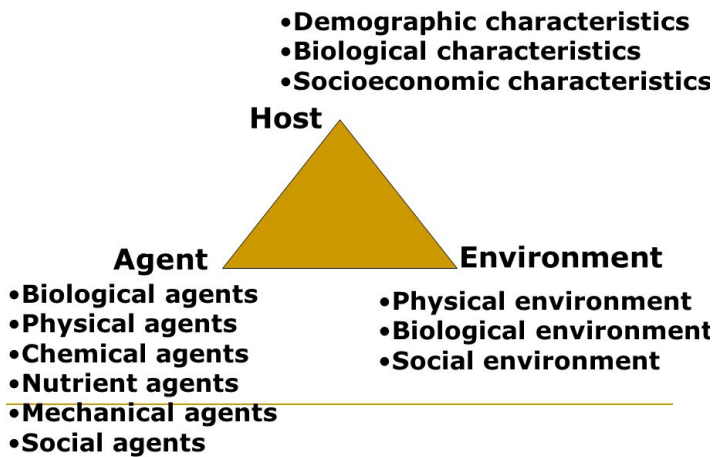
Generally considered the most deadly of the seven cholera pandemics, the third major outbreak of Cholera in the 19th century lasted from 1852 to 1860. Like the first and second pandemics, the Third Cholera Pandemic originated in India, spreading from the Ganges River Delta before tearing through Asia, Europe, North America and Africa and ending the lives of over a million people.

EPIDEMIOLOGY

Epidemiology is the study of the distribution and determinants of health-related states or events in specified populations, and the application of this study to the control of health problems.

Study:	collection, analysis and interpretation
Distribution:	Frequency (number of health events) and Pattern (by time, place, person)
Determinants:	Why? How?
Health-related states:	Disease
Specified population:	Community
Application:	Community based practice.

EPIDEMIOLOGIC TRIANGLE



THE EPIDEMIOLOGIC APPROACH

As with all scientific endeavors, the practice of epidemiology relies on a systematic approach. In very simple terms, the epidemiologist:

Counts cases or health events, and describes them in terms of time, place, and person;

Divides the number of cases by an appropriate denominator to calculate rates; and

Compares these rates over time or for different groups of people.

DESCRIPTIVE EPIDEMIOLOGY

The 5W's of descriptive epidemiology:

What = health issue of concern

Who = person

Where = place

When = time

Why/how = causes, risk factors, modes of transmission

ANALYTIC EPIDEMIOLOGY

Experimental study

- Clinical trials
- Community trials

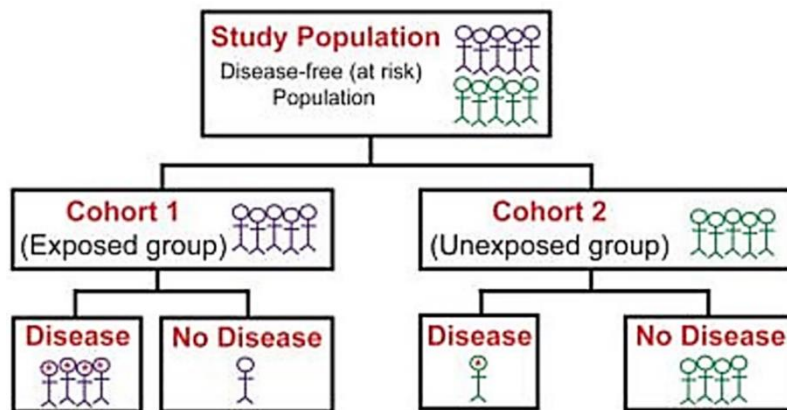
Observational study

- Cohort study
- Case control study
- Cross-sectional study

OBSERVATIONAL COHORT STUDY

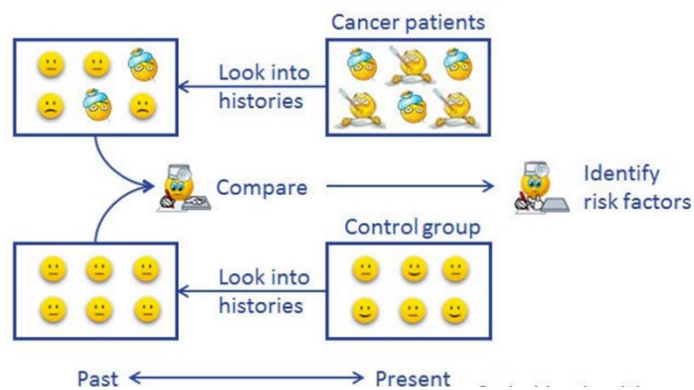
- Similar in concept to the experimental study.
- The epidemiologist records whether each study participant is exposed or not, and then
- Tracks the participants to see if they develop the disease of interest.
- After a period of time, the investigator compares the disease rate in the exposed group with the disease rate in the unexposed group.

COHORT STUDY



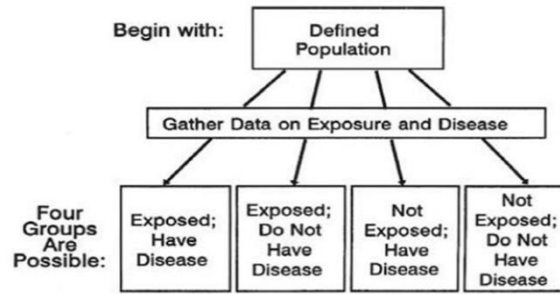
OBSERVATIONAL CASE-CONTROL STUDY

- Enrolling a group of people with disease (cases)
- As a comparison group, enrolls a group of people without disease (controls).
- Then compare previous exposures between the two groups.
- The control group provides amount of exposure as well as in case group.
- If the amount of exposure among the case group is substantially higher than the amount you would expect based on the control group, then illness is said to be associated with that exposure.



OBSERVATIONAL CROSS-SECTIONAL STUDY

- A sample of persons from a population is enrolled
- Their exposures and health outcomes are measured simultaneously.
- The cross-sectional study tends to assess the presence (prevalence) of the health outcome at that point of time without regard to duration.
- For example, in a cross-sectional study of diabetes, some of the enrollees with diabetes may have lived with their diabetes for many years, while others may have been recently diagnosed.
- Cross-sectional studies are used routinely to document the prevalence in a community of health behaviors (prevalence of smoking), health states (prevalence of vaccination against measles), and health outcomes, particularly chronic conditions (hypertension, diabetes).



- Purpose of an analytic study in epidemiology is to identify and quantify the relationship between an exposure and a health outcome.
- The hallmark of such a study is the presence of at least two groups
- In an observational cohort study, subjects are enrolled or grouped on the basis of their exposure, then are followed to document occurrence of disease. Differences in disease rates between the exposed and unexposed groups lead investigators to conclude that exposure is associated with disease.
- In an observational case-control study, subjects are enrolled according to whether they have the disease or not, then are questioned or tested to determine their prior exposure. Differences in exposure prevalence between the case and control groups allow investigators to conclude that the exposure is associated with the disease.

Cross-sectional studies measure exposure and disease status at the same time, and are better suited to descriptive epidemiology than causation.

PART VIII: DISEASE SURVEILLANCE AND OUTBREAK MANAGEMENT

SURVEILLANCE DEFINITIONS

A systematic and continuous process of data collection, analysis and interpretation as well as the timely dissemination of data for effective prevention and control activities.

Surveillance systems

Networks of organizations and activities which maintain the process; for instance, a health system of administration and its policy, a standardized classification system for disease or specific health problem, organized health care system, statistical resources and methods of presentation and analysis resulting in useful surveillance information.

Public health surveillance

A systematic continuous collection, analysis and interpretation of outcome-specific data such as disease specific mortality and/or incidence; mortality and or incidence of specific health-related problems; immunization or antibody status; prevalence of behavioural risk factors for use in the planning, implementation and evaluation of public health practice.

List of syndromes

In Myanmar, National Surveillance System routinely monitors 17 diseases monthly, vaccine preventable diseases weekly and event- based reporting immediately. In the acute phase of an emergency and post emergency phase, the major diseases/syndromes to be reported are identified as follows:

1. Acute bloody diarrhea (Suspected shigellosis)
2. Acute watery diarrhea (suspected cholera)
3. Acute watery diarrhea (mild/moderate diarrhea)
4. Acute jaundice syndrome
5. Severe Acute Respiratory Illness
6. Influenza Like Illness
7. Acute Flaccid Paralysis (Suspected poliomyelitis)
8. Suspected Meningitis
9. Suspected dengue hemorrhagic fever
10. Suspected measles
11. Fevers of unknown origin
12. Confirmed malaria
13. Neonatal tetanus
14. Acute encephalitis syndrome
15. Unusual cluster of health event
16. Unexplained deaths

Under routine surveillance, the minimum data like **case-based data** are needed for each health event/disease for reporting and investigation. Within the context of Early Warning Alert Reporting System (EWARS), this case-based data should be provided for each alert threshold.

Case-based data for routine surveillance

- Name
- Date of birth (or age, approximate if necessary if date of birth is not known)
- Sex (female and male)
- Camp district/area
- Date of onset
- Treatment
- Outcome

In a major emergency, this is not necessary for all events and often a tally may suffice as health personnel will not have the time to record case-based information.

Disaggregated data for EWARS

- Number of cases (less than 5 years old, 5 years old and over) and number of deaths.
- Sex (female and male)

Important Points for reporting

- avoid double counting: o if a patient comes to the health center for a follow-up visit for the same condition, he/she should be counted only once; only the new cases should be counted (i.e. incidence rate)

If the patient was referred by a mobile clinic to a health facility which also reports EWARS, the same case must only be counted once

- only count those cases diagnosed by a professional health worker, unless well motivated community workers trained in specific program areas can be identified as reliable sources of information
- Zero reporting is important for EWARS. This avoids the confusion of equating “no report” with “no cases”.

REPORTING

Chart 2; Flow Chart of Integrated Surveillance Weekly Reporting

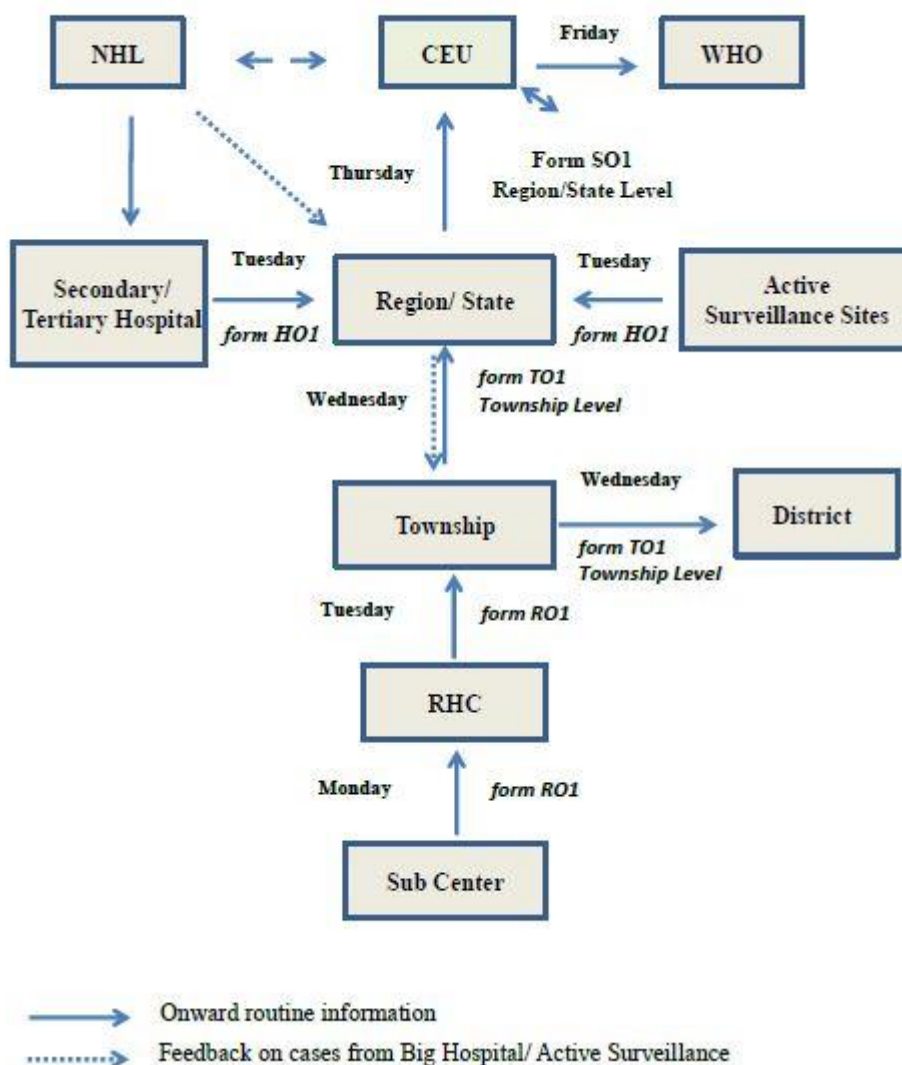


Figure 10 MOHS's surveillance disease reporting pathway

Report submission date: (____/____/____)
DD MM YYYY**Daily Early Warning, Alert and Response (EWARS) Report**

Department of Public Health, Ministry of Health and Sports, Myanmar

Reporting organization		Reporting date		(____/____/____)		DD		MM		YYYY	
Name of reporter		Job title									
State/Region		Township									
Name of location		Type of location		<input type="checkbox"/> Temporary shelter <input type="checkbox"/> School <input type="checkbox"/> Monastery <input type="checkbox"/> IDP camp <input type="checkbox"/> Village <input type="checkbox"/> Ward <input type="checkbox"/> Other: _____							
Sr.	DISEASE	Code	Cases				Deaths				
			Male		Female		Male		Female		
			<5	>=5	<5	>=5	<5	>=5	<5	>=5	
1.	Acute bloody diarrhea (suspected shigellosis)	ABD									
2.	Acute watery diarrhea with severe dehydration (suspected cholera) *	AWD-SC									
3.	Acute watery diarrhea with mild/moderate dehydration	AWD-MD									
4.	Acute jaundice syndrome	AJS									
5.	Severe Acute Respiratory Illness	SARI									
6.	Influenza Like Illness	ILI									
7.	Acute Flaccid Paralysis *	AFP									
8.	Suspected Acute Meningitis*	MEN									
9.	Suspected dengue hemorrhagic fever	SDHF									
10.	Suspected measles*	MSL									
11.	Confirmed malaria	CM									
12.	Neonatal tetanus	NNT									
13.	Acute encephalitis syndrome	AES									
14.	Unusual cluster of health event *	UCE									
15.	Unexplained deaths*	UED									
16.	Unexplained fevers (e.g. Typhoid)	FUO									
Total consultations (1-16 PLUS other consultations not reported in EWARS e.g. SCD, SCD, SCD, SCD)		C									
Please explain any unusual cluster of health event, or unexplained deaths or unexplained fevers: Please explain syndromes of patients referred.											
Please note: <ul style="list-style-type: none"> Immediately notifiable diseases* should be reported immediately. HOTLINE CONTACT: XXXXX SHOC room, xxx State/Regional Public Health Department Report new cases only (first visit). Write '0' (zero) if no case has been reported for any of the above listed diseases. Do not leave any spaces blank.											



Report submission date: (____/____/____)
DD MM YYYY

Weekly Early Warning, Alert and Response (EWARS) Report

Department of Public Health, Ministry of Health and Sports, Myanmar



Reporting organization		Epidemiological week number	(____/____/____) WW YYYY							
Name of reporter		Job title								
State/Region		Township								
Name of location		Type of location	<input type="checkbox"/> Temporary shelter <input type="checkbox"/> School <input type="checkbox"/> Monastery <input type="checkbox"/> IDP camp <input type="checkbox"/> Village <input type="checkbox"/> Ward <input type="checkbox"/> Other:							
Sr.	DISEASE	Code	Cases				Deaths			
			Male		Female		Male		Female	
			<5	>=5	<5	>=5	<5	>=5	<5	>=5
1.	Acute bloody diarrhea (suspected shigellosis)	ABD								
2.	Acute watery diarrhea with severe dehydration (suspected cholera) *	AWD-SC								
3.	Acute watery diarrhea with mild/moderate dehydration	AWD-MD								
4.	Acute jaundice syndrome	AJS								
5.	Severe Acute Respiratory Illness	SARI								
6.	Influenza Like Illness	ILI								
7.	Acute Flaccid Paralysis *	AFP								
8.	Suspected Acute Meningitis*	MEN								
9.	Suspected dengue hemorrhagic fever	SDHF								
10.	Suspected measles*	MSL								
11.	Confirmed malaria	CM								
12.	Neonatal tetanus	NNT								
13.	Acute encephalitis syndrome	AES								
14.	Unusual cluster of health event *	UCE								
15.	Unexplained deaths*	UED								
16.	Unexplained fevers (e.g. Typhoid)	FUO								
Total consultations (1-16 PLUS other consultations not reported in EWARS - e.g. SRH, Nutrition, etc)		C								
Please explain any unusual cluster of health event, or unexplained deaths or unexplained fevers: Please explain syndromes of patients referred.										
Please note: <ul style="list-style-type: none"> Immediately notifiable diseases* should be reported immediately. HOTLINE CONTACT: xxxxxx, SHOC room, xxx State/Regional Public Health Department Report new cases only (first visit). Write '0' (zero) if no case has been reported for any of the above listed diseases. Do not leave any spaces blank.										

No	DISEASE / SYNDROME	CODE	DEFINITION ³	Differential diagnoses/ Possible causes	Alert threshold ⁴
1	Acute bloody diarrhea (suspected shigellosis)	ABD	A person with diarrhea (three or more abnormally loose or fluid stools in the past 24 hours) with visible blood in stool (preferably observed by the clinician)	Shigellosis, amoebiasis or salmonellosis	Five or more cases in one location in 1 day or double the weekly average number of cases
2	Acute watery diarrhea with severe dehydration (suspected cholera) *	AWD-SC	Any person 5 years or older with severe dehydration or death caused by acute diarrhea (three or more abnormally loose or fluid stools in the past 24 hours) During a cholera epidemic, any person 2 years or older with acute diarrhea (three or more abnormally loose or fluid stools in the past 24 hours), with or without dehydration	Cholera, viral/bacterial gastroenteritis	1 case
3	Acute watery diarrhea with mild/moderate dehydration	AWD-MD	Sudden onset of acute watery diarrhea with mild or moderate dehydration with or without vomiting.		
4	Acute jaundice syndrome	AJS	Acute onset of jaundice (yellowing of whites of eyes or skin or dark urine), AND Severe illness with or without fever AND ; The absence of any known precipitating factors.	Viral hepatitis, leptospirosis, chemical toxins	Five or more cases in one location or double the weekly average number of cases seen in the previous 3 weeks for a particular location
5	Severe Acute Respiratory Illness	SARI	Person with a severe acute illness onset within the last 7 days with ☑ History of fever or measured fever (>38.0°C) ☑ Cough, AND ☑ <i>Requires</i> hospitalization		
6	Influenza Like Illness	ILI	Sudden onset of symptoms <i>And</i> at least one of the following four systemic symptoms: (1) Fever (2) Malaise (3) Headache (4) Myalgia <i>And</i> at least one of the following three respiratory symptoms: (1) Cough (2) Sore throat (3) Shortness of breath		

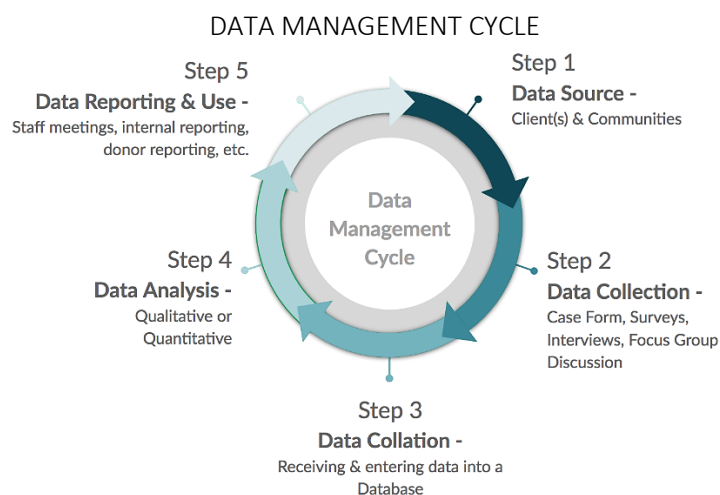
No	DISEASE / SYNDROME	CODE	DEFINITION3	Differential diagnoses/ Possible causes	Alert threshold4
7	Acute Flaccid Paralysis *	AFP	Any child < 15 years with acute flaccid paralysis, OR ; Any paralytic illness in a person of any age if poliomyelitis is suspected	Poliomyelitis, Guillain-Barre syndrome, Traumatic Neuritis, Acute Transverse Myelitis, neurologic disorders, electrolyte imbalance, vitamin deficiency	1 case
8	Suspected acute meningitis *	SMN	Any person with sudden onset of fever (>38.0 °C axillary) AND ONE of the following signs: neck stiffness altered consciousness petechial or purpural rash Other meningeal signs (severe neck stiffness causing the patient's hip and knees to flex when the neck is flexed, severe stiffness of the hamstrings causing inability to straighten the leg when the hip is flexed 90 degrees) In children < 1 year, meningitis is suspected when fever is accompanied by a bulging fontanel	Bacterial meningitis, viral meningitis, encephalitis	One case in a crowded camp setting or ≥30,000 people: five cases per 100,000 people per week
9	Dengue hemorrhagic fever	DHF	Acute onset of fever with nonspecific symptoms. This is followed by hemorrhagic manifestations that may include a positive tourniquet test and/or minor or major bleeding phenomena, thrombocytopenia (less than or equal to 100,000/mm superscript 3), and hemoconcentration (hematocrit increased by greater than or equal to 20%), or other objective evidence of increasing capillary permeability; or decreasing hematocrit after severe frank hemorrhage, such as upper gastro- intestinal bleeding.		

No	DISEASE / SYNDROME	CODE	DEFINITION ³	Differential diagnoses/ Possible causes	Alert threshold ⁴
10	Suspected measles*	FWR	Any person with fever AND maculopapular (nonvesicular) generalized rash AND ONE of the following: cough, runny nose (coryza) or red eyes (conjunctivitis)		1 case
11	Confirmed malaria	CM	Positive laboratory confirmation by blood smear or rapid diagnostic test for malaria		Twice the average number of cases seen in the previous 3 weeks
12	Neonatal tetanus	NNT	Any neonate with normal ability to suck and cry during the first 2 days of life, and who between 3 and 28 days of age cannot suck normally and becomes stiff or has convulsions (i.e. jerking of the muscles) or both.		
13	Acute encephalitis syndrome	AES	Acute onset of fever and a change in mental status (including symptoms such as confusion, disorientation, coma, or inability to talk) AND/OR new onset of seizures (excluding simple febrile seizures)	Bacterial meningitis, viral meningitis, encephalitis	
14	Unusual cluster of health events *	UCE	Any emerging disease or event of an unknown cause that is of public health concern or any communicable disease with an increased number from the expected particularly if clustered (cases that are closely grouped in time and/or place: two or more cases from the same family, school or workplace...).		
15	Unexplained death *	UED	Any deaths due to unknown or unidentifiable causes		
16	Unexplained fever	FUO	fever $\geq 38^{\circ}\text{C}$ for > 48 hours AND without known etiology		

PART IX: HEALTH INFORMATION SYSTEM

INTRODUCTION

The role of a Health Information System (HIS) is to ensure the primary source of information, timely data collection, data collation, analysis and finally dissemination of health information to all stakeholders for correct decision making. These data are used to present the health profile of the target community, to inform health priorities and to monitor the quality and effectiveness of the programme whether in the right track or not.



Source: Global Legal Empowerment Network

OBJECTIVES

1. RAPIDLY DETECT AND RESPOND TO HEALTH PROBLEMS AND EPIDEMICS

Early detection of suspected disease outbreaks and the initiation of timely and effective response efforts can have a major impact in reducing the numbers of cases and deaths during an outbreak.

2. MONITOR TRENDS IN HEALTH STATUS AND CONTINUALLY ADDRESS HEALTH-CARE PRIORITIES

Monitoring health status allows field managers and coordinators to observe trends in the health profile of a population, detect the emergence of new health problems and continually address public health priorities. This is closely integrated with timely dissemination and sharing of information with field partners, UN agencies, Ministries of Health and Sports (MoHS) and donors.

3. EVALUATE THE EFFECTIVENESS OF INTERVENTIONS AND SERVICE COVERAGE

The availability and use of health services are important measures of health system performance. Monitoring of consultation data allows health planners to evaluate demand for health care services within the population and therefore examine issues of accessibility.

4. EVALUATE THE QUALITY OF HEALTH INTERVENTIONS

Health programs should continually monitor service quality through measures of community participation, program acceptability (e.g. the rate of defaulting) and coverage. Rates of hospitalization, outpatient service utilization and admission and discharge can also provide useful indicators of the appropriateness of health seeking behavior in a community and provide a measure of the capacity of the health service to respond to needs in terms of time and quality of care at the point of delivery.

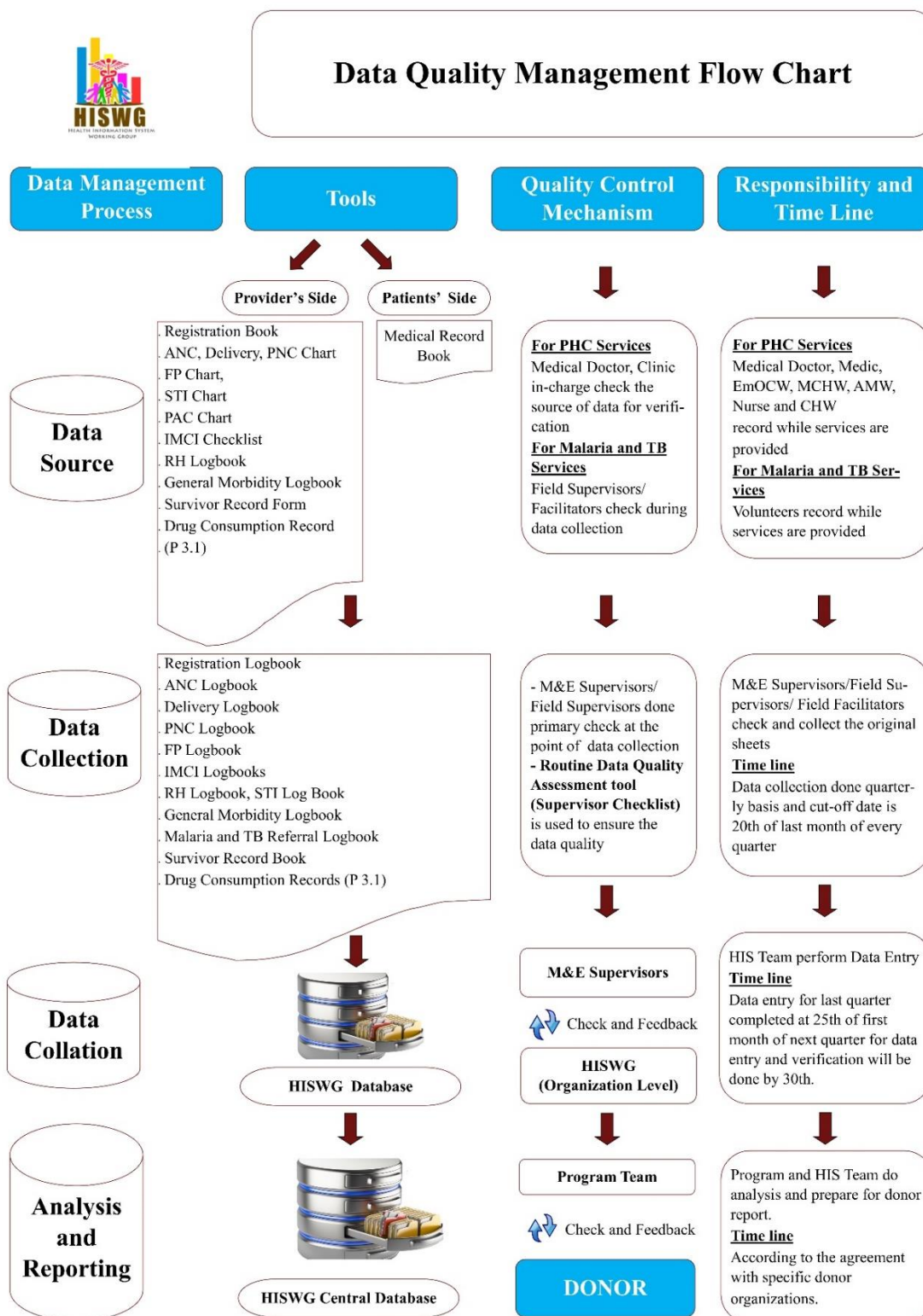
5. ENSURE THAT RESOURCES ARE CORRECTLY TARGETED TO THE AREAS AND GROUPS OF GREATEST NEED

Observing for health inequities in coverage, use of services, and health outcomes are important functions of the HIS. Key information such as age, sex, residents or migrants, and geographical location are used to describe trends. Special efforts should be made to ensure balanced male and female representation across all health services and to explore possible barriers to service use.

PROCESS

The data are continuously collected during the medical activities by all health workers. Every health worker is responsible to collect good data on each format. The data are collected using different

formats, such as tally sheet, forms, registers and reports. There are guideline and specific training to help the medical workers to fill in the format and report. Figure (1) represents the current practice of data management at facility level to organization level ensuring the quality of information.



HOW AND WHEN SHOULD THE DATA BE REPORTED?

Clinical officer in-charge thoroughly checks the data completeness and correctness in respective charts and logbooks in weekly basic. If there is something missing in the recording documents, in-charge will

provide opinions and explain the importance of information to respective person. Monthly report will be completed at 20th of every months and M&E Supervisor will come, check and collect logbooks to respective head quarter office.

HOW AND WHEN SHOULD THE DATA VERIFIED?

Daily

Front-line health staff should receive continuous and regular supervision from their supervisors, particularly for new health workers working in the health facilities.

Weekly

The HIS data are compiled on weekly basis. Each health section collects, reports and verify the data at the end of every week, because of: The weekly reporting enables the health workers to monitor potential outbreak

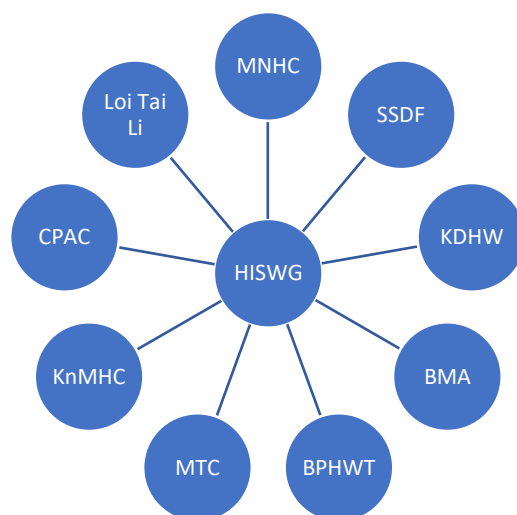
Monthly

Monthly reports are aggregates of complete reporting weeks, which consist of 4 or 5 weekly reports depending on the reporting calendar. Monthly reports often offer the first opportunity for indicator analysis and interpretation for the period in question. They are reviewed closely by managers and coordinator of each health partner and submitted to district level.

Steps in Developing Ethnic Health Management Information System

- (1) Review the existing system
- (2) Standardization of case definitions and core indicators
- (3) Define the data needs of relevant units within the health system
- (4) Determine the most appropriate and effective data flow
- (5) Design the data collection and reporting tools
- (6) Develop the procedures and mechanisms for data processing
- (7) Develop and implement a training programme for data providers and data users
- (8) Pre-test, and if necessary, redesign the system for data collection, data flow, data processing and data utilization
- (9) Monitor and evaluate the system
- (10) Develop effective data dissemination and feedback mechanisms
- (11) Enhance the Health Management Information System (HMIS)

Figure (2) Health Information System Working Group Structure



References forms and format used at facilities will be attached in annexes.

Annex (1) Medical Record Book

Annex (2) Registration Logbook

Annex (3) ANC, Delivery, PNC Chart
Annex (4) Family Planning Chart
Annex (5) PAC Chart
Annex (6) IMCI Checklist
Annex (7) General Morbidity Logbook
Annex (8) Drug Consumption Record (P 3.1)
Annex (9) ANC Logbook
Annex (10) Delivery Logbook
Annex (11) PNC Logbook
Annex (12) FP Logbook
Annex (13) IMCI Logbook
Annex (14) RH Logbook
Annex (15) Malaria and TB logbook

PART X: PHARMACY MANAGEMENT

1. Introduction

Drugs are important because the management of the drug supply in the health unit is one of the most responsible functions of the health worker.

Drugs are powerful because drugs must be used with skill, knowledge, and accuracy, otherwise they are dangerous.

Drugs are expensive as wasting or misusing drugs may cause a shortage of supply, with the result that some patients cannot be treated properly.

POLICIES OF PHARMACY

3.1 General work environment organizing

- a) All stabilized clinics must be assigned an appropriated room for pharmacy
- b) Assign one staff to supervise pharmacy.
- c) All medicine and supplies are stored in pharmacy store under monitoring their quality
- d) All departments must be received medicine and supplies from pharmacy store according to dispensary schedule.
- e) Every pharmacy store/warehouse need to be controlled room temperature properly
- f) All pharmacy store and warehouse must be secured, cleaned, dried and good ventilated with sufficient light.

3.2 General Policy

- a) All orders are approved by authorized persons.
- b) There is regular ordering to ensure that there is enough stock.
- c) There is regular monitoring of all stocks, at both department and central pharmacy.
- d) Controlled drugs are stored in a locked cabinet.
- e) Every medicine and medical supplies are managed systematically according to procedure.
- f) Pharmacy management training and training curriculum development must be exiting for pharmacy management.

3.3 Quality control

- a) The temperature inside the storerooms within Central Pharmacy will be maintained between 20 °C and 25 °C.
- b) Humidity control should be maintained to be optimal (<60% RH)
- c) All medicines and medical supplies must be kept inside the central pharmacy to keep under temperature control.
- d) Pharmacy warehouse staff, clinic pharmacy staff will check the room temperature at 9 AM and at 3 PM and the refrigerators and fridges are checked twice daily of the week.
- e) The temperature is recorded daily on the Temperature Log Sheet.
- f) A new Temperature Log Sheet should be hung each month and the old sheets will be kept on file for 1 year.
- g) If temperature is too high or too low 2 times in a row, pharmacy staff should adjust the Air Conditioner unit level accordingly.
- h) Doors in the pharmacy should remain closed to keep the rooms cool at all time.
- i) Fridges in every pharmacy area have to be cleaned at least once a week by the pharmacy staff.
- j) If the Central Pharmacy runs out of space, items which do not need strict temperature control (such as gauze, gloves, and masks) may be stored in the outside storage space.
- k) Medication expiry dates are checked monthly and 6 monthly audits are conducted in the central pharmacy.

- l) Routine process for pests controls biannually or annually.
- m) Medicines and Supplies with the earliest expiry date are stored closest to the front of the shelves, to limit waste, utilizing the “first Expired First Out” (FEFO) principle.
- n) Supplies that is without expiry date are stored closest to the front of the shelves and utilizing their “First In First Out” (FIFO) method to control quality.
- o) All expired medication from department of clinic will be returned to the central pharmacy store of clinic for disposal.
- p) Medicines will be displayed on the shelves with their generic names, not their brand name.

3.3 Security and setting

- a) Pharmacy store/ warehouse must be locked for security.
- b) Focal person keeps the store key.
- c) In front of doors must be described warning sign strictly such as Staff only, No entry without permission etc.)
- d) Children are not allowed to stay in the pharmacy for security reasons.
- e) Cooking, Smoking and drinking alcohol are not allowed in the pharmacy.
- f) Food and drink in the pharmacy store room is prohibited strictly to prevent insects and pests prompting.
- g) During working hours, the presence of one staff member in the pharmacy is required at all times. Otherwise, the pharmacy has to be closed for security and to maintain temperature.
- h) One fire extinguisher should be available with accessible location in all central pharmacy. Otherwise prepare for other emergency situation.
- i) All pharmacy areas are cleaned daily by the pharmacy staff.
- j) Every pharmacy store needs to describe rule and regulation for anyone when acceptable it.

3.4 Donation of medication

- a) Donors are advised to read the “Wish list” or essential drugs list from clinic before sending donations. Clinic does not encourage donations in kind of medications, according to WHO recommendations.
- b) All donation medicine should be required drugs for clinics with good expiry date and good condition.
- c) Don’t accept expired date drugs and not good condition.
- d) Donated medicines should not be sent without prior consultation and consent from clinics.
- e) All donations come with a detailed information, showing names of items, quantity, date of expiry and value/cost (if possible). The name and contact details of the donor should be known. Donated medicines should be labeled in a language understood by pharmacy staff.
- f) Central Pharmacy is the only authorized department to receive donations for all medicine and medical supplies. If donations in kind are directly submitted to other Departments, medicine and medical supplies are forwarded directly to the Central Pharmacy where the same process is followed as with other donations.
- g) Medicine and medical supplies will only be accepted if in the original/unopened packaging and expiry date is not reached.
- h) The wish list and essential drugs list should be updated regularly.

2. Purpose of Drug Management

There are three main purposes.

- To use drug wisely
- To avoid wasting the drugs
- To have enough for the patient’s needs

3. Precautions in Drug Use

AVOID!

- using too many different drugs on one patient
- using expensive, brand name drugs when cheaper standard drugs of certified quality would be equally effective and safe
- prescribing drugs before a proper diagnosis has been made, “Just to try them”
- using a larger dose than necessary
- giving drugs to patients who have no faith and throw them away OR target to take them
- ordering more drugs than are needed
- not maintaining in the refrigerator (E.g. Vaccination)
- exposing drugs to damp, heat, or light
- Issuing too many drugs from store at one time so that they are used extravagantly or even stolen.

4. Educating the staff in the use of drugs

A leader of health center can educate the staff on the followings:

- Makes notes on the common drug used, explaining their uses and side effects and gives copies to all staff.
- Sets out the correct doses of common drugs on well-boards
- Holds staff meetings to discuss causes of drugs wastage
- Informs all staff about the cost of various drugs
- Discuss one drug each week at the staff meeting
- Put one or more copies of a sample book on pharmacology in the library.

5. Educating the patient about drugs

The patient should be given education as follow:

- Each drug has a particular action.
- The dose of the drug is very important.
- Treatment must be regular to ensure that the desired level of the drug in the body is maintained.
- The whole course of treatment must be completed; if not, the patient may relapse into an even more serious condition than before.
- Drugs must be kept out of the reach of children to prevent poison to them.

6. Preparing a standard drug list

Usually a health center or sub-center has the standard list of the commonly used drugs. These are essential drugs for respective community. As new drugs appear, the nature of treatments is constantly changed. Therefore, the standard lists of the drugs are often out of date or inadequate.

Standard drug lists may need to be changed for the following reasons;

- Diseases are being treated which were not previously treated
- The new drug has become available.
- the budget for drug is no longer sufficient to purchase all the listed drugs and cheaper alternatives are needed

To change a standard drug list, it is essential to know

- what disease and health problems are expected to be treated in the unit
- which drugs are available or could be used for these diseases and health problems
- the comparative effectiveness, convenience, toxicity and cost of alternative drugs
- how to decide between alternatives

Procedure for modifying a standard drug list

- Depends on 6 months newly morbidity, standard drug list is needed to update.
- If there is duplication (different types of drugs for one condition, E.g. NSAIDs), choose one drug for each purpose and remove the others from the list.
- Remove any drugs from the list if never used.

7. Examples of essential Drug List used in VTHC

- 1) Antibiotics
Penicillin V, Cloxacillin, Cotrimoxazole, Ampicillin/amoxicillin, Metronidazole, Etc.
- 2) Antipyretics
Paracetamol
- 3) Anti-tussive
Dextromethophan
- 4) Drugs used in asthma
Salbutamol, Aminophylline
- 5) Drugs used in peptic ulcer
Aluminum hydroxide, Cimetidine/Ranitidine, Sodium bicarbonate, Atropine Sulphate, Magnesium Trisilicate
- 6) Anti-helminths drugs
Mebendazole, Albendazole
- 7) Laxatives
Magnesium sulphate
- 8) Anti-emetics
Promethazine
- 9) Drugs used in allergy
Chlopheniramine mealate, Adrenalin
- 10) Drugs used in skin disorder
Chlorhexidine gluconate, Calamine, Methylated spirit, Boric acid, Gention violet, Iodine, Benzoic acid with salicylate acid, Benzyl benzoate, Gamma Benzene Hexachloride
- 11) Anti-anemic drugs
Ferrous sulphate, Folic acid
- 12) Oxytocics
Ergometrine
- 13) Replacement Solution
Normal saline (0.9 % Na Cl in 500 ml), Dextrose saline (5% dextrose, 0.9 % Na Cl in 500 ml), Compound Sodium Lactate, Oral rehydration salts

8. Estimating drug requirements: ordering and stocking drugs

Factors that influence choice and quantity of drugs include:

- Population which the health institution serves,
- Disease pattern,
- Seasonal variation in disease pattern,
- Monthly (rate of) drug consumption,
- Dosage and regular consumption
- Delivery (lead) time
- Time lag between placing orders and receiving the orders,
- Request indicator (re-order level): quantity of drug product that serves as a signal for re-ordering.

The maximum quantity of drugs held in stock is determined by:

- Distance from the central health services area or regional medical store,
- Size of the health center store,
- Number of clients (patients) visiting the health center

Formula for calculation

Drugs needed = One course of the drug x Average no. of patients/day x Purchasing Interval

Example: Amoxicillin 250 mg Capsules used for Adult patient

Amoxicillin	= 30 capsules x 5 patients/day x 180 days (6 months) = 27000 capsules One bottle contains 1000 capsules. So, 27 bottles are needed to order/require.
-------------	--

Purchasing Interval = usually drug order takes **6 months** duration to complete process (Order > Receive)

9. Ordering drugs

Same procedures as equipment

- requirements should be listed
- Non-brand name drugs should be ordered if these drugs are effective, safe, and cheaper.
- Complete the order form.

10. Stocking drugs

Systematic stocking is an essential part of drug management. Drugs received are recorded in a stock ledger or on stock cards. Most drugs must be kept dry, cool and away from light.

The storage environment should possess the following:

- Adequate temperature,
- Sufficient lighting,
- Clean conditions,
- Humidity control,
- Cold storage facilities,
- Adequate shelving to ensure integrity of the stored drugs.

The following guidelines are for arranging drugs.

- Shelves should be made of steel or treated wood.
- Shelves should be strong and robust.
- Drugs are arranged in alphabetical order of generic names.
- Each dosage form of drug is arranged in separate and distinct areas.
- Sufficient empty space should demarcate one drug or dosage form from another.
- Most recently received drugs are placed behind old stock on the shelf except where new drugs have shorter expiration dates.
- Dangerous drugs should be kept in a locked cupboard with a special issuing register.

Stock Inventory system

Every clinic should keep stock record in a stock ledger properly.

In practically, stocks are come from different side. But we need to combine them to be each clinic stock list. And also, we need to record each drug consumption daily/weekly/monthly. It is used for reporting of drugs usage or taken reference in drugs calculation to procure for each clinic.

Instead of a stock ledger, stock card system can be used. The same procedure as ledger, balance is kept by adding items received and subtracting. Those issued in stock ledger each item has a separate page in the book and in stock card system each item is written on a separate card.

The card relating to each particular item can be printed to the shelf next to the drug stock to which it refers for drugs.

Example:

Table 1 Stock ledger book recording a weekly issue of Amoxicillin

Stock Ledger Book (ပစာညှိစာရင်းအကျမ်းအစည်း)								P1
Item (အမှတ်အသား)		Amoxicillin 250 mg		Accounting Unit (စာရင်းအကျမ်းအစည်း)			Capsule	
Date (ရက်)	Reference No. (ကိုးကားနံပါတ်)	From/To (ထံမှ/သို့)	Quantity In (ဝေအားထည့်ပေးမှု)	Quantity Out (ဝေအားထုတ်ပေးမှု)	Blance (ဝေအားလက်ရှိ)	Exp Date (သတ္တိမရှိနေ့ရက်)	Remark (မှတ်ချက်)	Staff (ဝန်ထမ်းအမည်)
12/8/2018		Opening balance			2000	23/03/2020		PSM
15/08/2018	ANB.34/067	DFID	10000		12000	3/12/2021	FEFO	PSM
20/08/2018	HSS.32/023	Clinic A		2000	10000	23/03/2020	FEFO	PSM
25/08/2018	HSS.32/024	Clinic B		2000	8000	3/3/2021		PSM
28/08/2018	HSS.32/025	Clinic C		2000	6000	3/3/2021		PSM

Stock Ledger Book (ပစာညှိစာရင်းအကျမ်းအစည်း)								P1
Item (အမှတ်အသား)		Thermometer		Accounting Unit (စာရင်းအကျမ်းအစည်း)			Each	
Date (ရက်)	Reference No. (ကိုးကားနံပါတ်)	From/To (ထံမှ/သို့)	Quantity In (ဝေအားထည့်ပေးမှု)	Quantity Out (ဝေအားထုတ်ပေးမှု)	Blance (ဝေအားလက်ရှိ)	Exp Date (သတ္တိမရှိနေ့ရက်)	Remark (မှတ်ချက်)	Staff (ဝန်ထမ်းအမည်)
12/8/2018		Opening balance			50	No Expiry Date		PSM
15/08/2018	ANB.34/067	DFID	200		250	No Expiry Date	FIFO	PSM
20/08/2018	HSS.32/023	Clinic A		50	200	No Expiry Date	FIFO	PSM
25/08/2018	HSS.32/024	Clinic B		25	175	No Expiry Date		PSM
28/08/2018	HSS.32/025	Clinic C		25	150	No Expiry Date		PSM

Consumption report

Every clinic needs to be medicine and medical supplies. Medicine is an expensive thing and need to save wastage in use. So, we need to manage them properly. Consumption record is an important issue to monitor medicine movement. All clinic should be made recording in drugs use and process reporting system routinely.

Monthly physical stock report Example P4

Monthly Physical Stock Report (လစဉ်ဆေးအသုံးပြုမှုစာရင်း)														P4	
Stock Inventory															
Store Location/Clinic (ဆေးခန်းအမည်)				Clinic A				Name of the Partners Org (အမြတ်အစွမ်း အမည်)				BMA			
Reporting Period of Month (အစီရင်ခံစာ လ)				October				Reporting Date (အစီရင်ခံစာ ရက်)				...07..D/ ...11..M ..2019... Y.			
No. (1)	Item Description (2)	Unit (3)	Donors (4)	Batch Number (5)	Expiry Date (6)	Opening Balance (7)	In (Receive) (8)	In (Loss/adjustment) (9)	Total In (10= 7+8+9)	Out (Used) (11)	Out (Loss/adjustment) (12)	Out Total (13= 11+12)	Closing Balance (14= 10-13)	Physical Inventory (15=14-9)	Remark (16)
1	Para 500 mg	Tab	DFID		2/9/2020	3,000	2000	0	5000	1000	0	1000	4,000	4,000	
2	Para 300 mg inj	Amp	DFID		4/2/2021	45	100	0	145	25	3	28	117	117	3 Broken

Monthly drugs use report (P 3.1) form is also used in reporting process. But who can use or who is available trained pharmacy staff are using monthly physical stock report form (P 4) in reporting system. P 3.1 is easy to use than P4 without complete pharmacy management training but it is limitation to report all of medicine consumption which is using in clinics because it describes only common usage medicine in form. P4 is more complete to report medicine consumption and not limitation to report medicine used.

Note: Clinics should be used at least a form in reporting process according to their capacity available.

Monthly Drug Use Report (လစဉ်ဆေးအသုံးပြုမှုအစီရင်ခံစာ) P 3.1

Location/Clinic (ဆေးခန်းအမည်)				Organization (အဖွဲ့အစည်းအမည်)											
Reporting Period (အစီရင်ခံသည့်လ)				Reporting Date (အစီရင်ခံသည့် နေ့စွဲ)											
				DD.....MM.....YY.....											
	Albendazole 200 mg	Amoxicillin 125mg/5ml, 60ml powder for oral susp	Amoxicillin 250 mg	Benzyl Benzoate (BBE) 25%, 450ml, emulsion	Buscopan Oral	Chlorampheniramine Oral	Ciprofloxacin 500mg	Clotrimazole 1%, 20g, cream	Cloxacinil 250mg	Cloxacinil Powder or Syrup 125mg/ml-60ml	Co-trimoxazole 400/80mg	Depo Injection	Diclofenac Injection	Doxycycline 100 mg	Emergency contraceptive pill
Week 1															
Week 2															
Week 3															
Week 4															
Week 5															
Total															
စာရင်းပြည့်စွက်သူ		အမည် (.....)				ရာထူး (.....)				လက်မှတ် (.....)					

11. Issuing and controlling the use of drug

Categorize the drugs in store.

- Frequently used drugs (E.g. NSAIDs and Antibiotics)
- Controlled drugs (E.g. Diazepam)

It is important to record each issue of drug in the appropriate stock card or ledger and balance must be calculated. The remaining drugs must be checked.

Maintain drug issue is useful to

- notice when stocks need re-ordering
- check drug use against patient treatment
- become rapidly aware of discrepancies in drug treatment
- check changes in drug use in different sections of health center

Compare the amount of drug expected to be used and actual use to know that there is discrepancy or not.

Educate team members to prevent overuse of drug.

12. Life-Saving Drugs

Life-saving drugs must always be in the stock!

- make a list of life-saving drugs (cortisone, adrenalin, aminophylline, Inj chlorphenamine, 5% dextrose water, dextrose saline etc) and check regularly

13. Preparing drugs for the outpatient department

- Prepare the drugs bag with full-course (E.g. Amoxillin 250 mg 30 tabs bag)

Reduce medication Error

Medication error is an important issue to reduce in health care. It can cause patient any problem. So, every health care provider needs to avoid or reduce this issue. In clinic our clinical supervisor and pharmacists should check all prescribing carefully before dispensary medication.

- A pharmacist check prescribing first. It should be prescriber approved sign.
- Double check to prescribing and ensure it. (Check Right person, Right dose, Right time, Right period, Right medicine)
- If reach something wrongs or not understand clearly on prescribing, a pharmacist needs to discuss with prescriber and ensure it till correct.
- Syrup for children need to give original bottle as possible.
- Use clean counting tray in preparation tablet & capsule.
- Make packing for each drug separately and avoid mixing all drugs to protect medicine error.
- Labelling each drug on packing how to take it correctly. (medicine name, dosage, time, period)
- Give right information to client till they understand on each medicine how to use them.
- The dispensary person needs to sign again after dispensing medication.

**It is important that drugs are not allowed to expire in the health center
Because of changes in disease pattern or for any other reasons.**

Checklist for Pharmacy

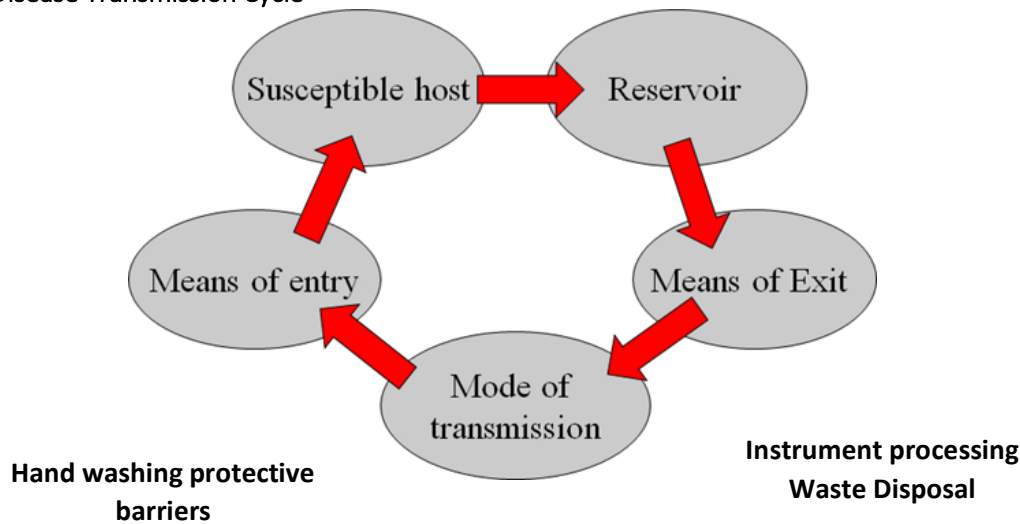
Name of State/Region				
Name of Township				
Name of Village Tract				
Name of Health Facility/Village				
Name of Interviewer				
Inspected Date				
Check list (Observe)	Score			
1. Organization of pharmacy				
1.2 General Work place condition	Yes = 1	No = 0	NA	Comment
A storeroom is available for pharmacy separately				
Store area has sufficient capacity				
Storeroom is dry and well ventilated				
Store area has sufficient light				
Storeroom structures (walls, floors, ceiling, windows, and shelves) are in good conditions.				
Store is enough shelves and fridges for placing medicine				
Storage area is free from insects and other pests				
Storeroom is clean, Sanitary and orderly				
Are work surface kept dry and the surfaces are slip resistant?				
The staff don't keep the food in store/fridges and not allow to eat in the pharmacy.				
1.2 General medical store safety				
Pharmacy store is locked for security, when the staff is out				
Are there warning signs for security? (e.g. Staff only, No entry without permission)				
Are the windows and doors safe?				
1.3 Storage Condition				
Room temperature is recorded regular by a pharmacy staff in working day.				
Are the room temperature able to control?				
Each stock item has a sufficient and well-defined space				
Each stock item be labelled with the generic name, form and dose				
Expire dates are written clearly on the boxes				
Each group of medicine and supplies arrange in alphabetical order by generic name. Not their brand name.				
Top shelves are stored light thing according to SOP. (e.g. tablet, capsule, cotton, ORS, syringe etc..)				
Middle shelves are stored injectable, liquid and ointments.				
Heavy things, surgical items and lab supplies are stored on bottom shelves or pallet.				
Vaccine and other heat sensitive drugs are stored in cold chin between +2°C and +8°C				
Are the cupboards for controlled or special medicine?				
All controlled drugs are stored in a locked cabinet.				
Damaged or expired medicine and vaccines are kept separately.				

Comply standard procedure First-Expired, First Out (FEFO) in medicine arrangement.				
Comply standard procedure First-In, First Out (FIFO) in supplies arrangement.				
2. Record Keeping				
Every stock are recorded in stock ledger with updating.				
Every medicine and some supply that describe Exp - date are recorded with its expired date.				
Damage items are recorded.				
Are drug requisition/issued forms filed systematically and update?				
Are other pharmacy record forms available and use? (eg. Temperature record form)				
The temperature is recorded daily on the temperature log sheet.				
Are all records filled and kept systematically and clean and tidy?				
Are stock verification forms filled and reported regularly?				
Develop clinic essential medicine list and describe.				
Daily cleaning is recorded on a specific form				
3. Drugs Distribution				
Every drugs distribution is based on requisition amount.				
Every issue form is described detail information for each item. (e.g. Name, strength, amount, Expiry date, unit. Etc..)				
All Issue forms are signed by both dispenser and receiver				
Each issue form is sent with medicine package				
4. Patient Safety				
4.1 Drugs use or ready to use				
Every prescribing are prepared by supervisor/medic with approved sign.				
Pharmacy staff clean their hands regularly before dispensary.				
Drugs are counted using clean trays				
Drugs are labelled on the plastic bag (name, dose, posology)				
Every prescribing is checked double by dispensary person and sign again.				
Each diagnose match with its proper treatment				
Correct dosage for each treatment able to perform.				
Emergency trolley are available in clinic and located in the right place				
A list of items is available in the box				
All items are in the trolley, expiration dates are OK				
Trolleys are checked 2 times/month and checks are recorded (date, Name)				
4.2 Quality control system				
Room temperature stays in the 20-30°C range				
Room temperature is recorded 2 times/day.				
Fridge temperature stays in 2°C to 8°C				
Fridge temperature is recorded 2 times/day.				
All medicine and IV bags are kept inside the storeroom under temperature control.				

Doors in the pharmacy closed to keep the room cool at all time.				
Check and List the nearly expired drugs regularly and distribute it quickly				
Medicine expiration dates are check regularly by pharmacy staff.				
Abnormal temperature events have been managed properly and quickly				
5. Fire protection - Risk protection				
Is debris, waste store safety and removed promptly from work site?				
Is there a fire alarm system?				
Do you have outside private fire hydrants				
Fire hydrants are flushed at least once a year.				
Are there adequate number and type of portable fire extinguishers?				
Are the fire extinguishers mounted in readily accessible locations?				
6. Responsibility				
Assign duty to one staff to supervise pharmacy				
The staff passed pharmacy management training				
The staff understand pharmacy management properly				
The staff comply pharmacy policy and SOP in pharmacy management				
He/she make hand over to available staff when he/she out of duty or taken leave.				
The staff routine calculates and record daily drugs consumption				
Are monthly drugs consumption inventory done to report regularly and timely?				
7. Damage, Missing, Expired items assessment				
Stocks are checked regularly by pharmacy staff at least 3 months				
Expired drugs are found in store				
Essential medicines are available in store.				
Nearly expired medicines are managed according to SOP				
Expired/damage drugs are managed according to SOP				
Stock in the stock card is the same amount on physical check				
Total score				
Excellent score = 80				
Good > 70				
Fair > 50				
Poor < 50				
Comment/recommendation				
Done by (names/signatures)				

PART XI: INFECTION PREVENTION

Infection Prevention: Safe guarding for Health care providers, patients and community
Disease Transmission Cycle



What are the ways disease transmitted in health facilities?

- To Client
- To provider

Aseptic Technical

The combination of efforts made to prevent the entry of microorganisms into any area of the body where they are likely to cause infection. The goal of asepsis is to reduce or eliminate the number of microorganisms on surfaces and instruments to a safe level.

Antiseptics

Antiseptics are chemicals which kill or inhibit many, but not all, microorganisms while causing little damage to tissue.

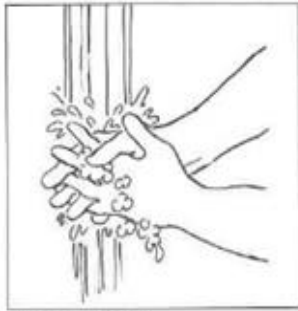
Antiseptic are used for Surgical scrub Skin or vaginal preparation before Norplant insertion, IUD insertions, injections Hand washing before touching patients.

- Do not use alcohol on mucous membranes - it burns them
- Do not use antiseptics for cleaning operating tables or equipment - they are not strong enough.

Ways to minimize the risk of transmission

- Hand washing
- Appropriate use of barriers
 - drapes, masks, gloves
- Cleaning of environmental surfaces
- Correct processing of instruments
- Correct use of needles and syringes
- Separation of contaminated waste
- Safe disposal of medical waste

What are universal precautions?



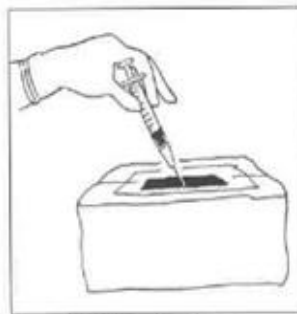
Wash your hands.



Wear gloves, eye protection or face shields, and gowns, when appropriate.



Correctly process instruments, other items used in clinical procedures, and client-care equipment.



Prevent injuries with sharps.



Maintain correct environmental cleanliness and waste-disposal practices.

Hand Washing

- Protects provider and patient
- One of most important infection prevention measures
- Should be done:
 - ✓ at beginning and end of day, before eating, after using toilet facilities
 - ✓ before and after examining patients
 - ✓ before and after doing procedures
 - ✓ after handling specimens and contaminated materials

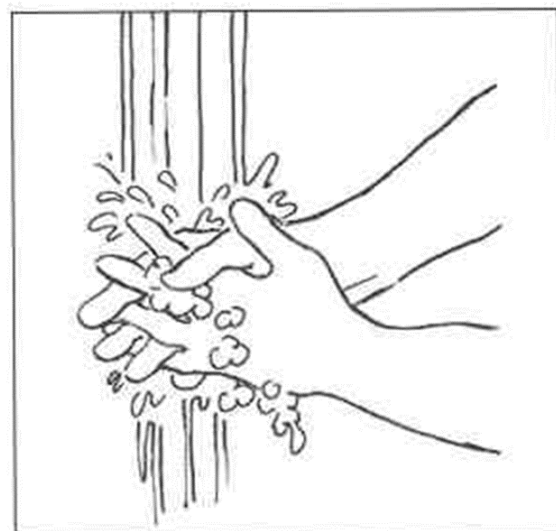
Basic Requirement: Running water, Soap Clean, dry towels

Glove, Barrier

- Protective barrier for provider and patient
- Worn when there is danger of infection from hands or contaminated surfaces and materials

Three types of gloves:

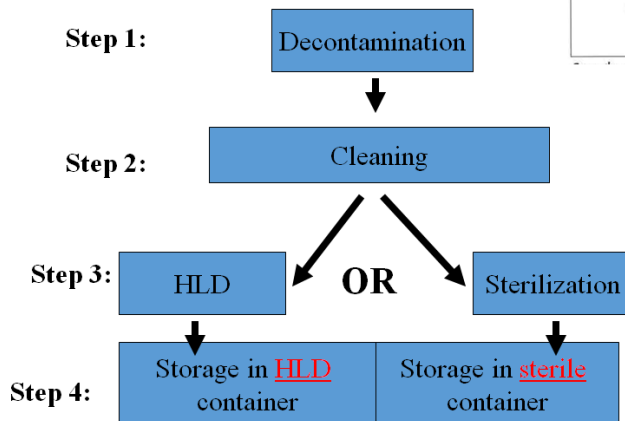
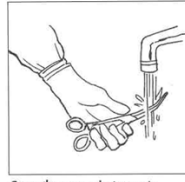
1. utility
2. non-sterile gloves
3. sterile (surgical) gloves



Wash your hands.



Instrument Processing



Step 1: Decontamination

The process which makes objects safer to be handled by staff (especially cleaning staff) before cleaning.

Decontamination applies to:

- Surgical instruments
- Contaminated gloves
- Sharps (both disposable and reusable)
- Lights
- Instrument trays
- Patient surfaces
- exam tables
- procedure tables
- guerneys and wheel chairs
- Floors, any contaminated surface
- Contaminated medical waste

Decontamination Process

- Soak contaminated instruments in 0.5% chlorine solution for 10 minutes
 - Use plastic (non-metal container)
 - Do not soak instruments for prolonged periods
- Decontaminate blood spills with chlorine solution prior to clean up
- Wipe surfaces with disinfectant solution between uses

Step 2: Cleaning

The process that physically removes all visible blood, tissue, bodily fluids or any other foreign material such as dust or soil from instruments or the skin.

Cleaning Applies to:

- All instruments, supplies and equipment that will be reused
 - used surgical and examination instruments
 - linen
 - reusable gloves, needles and syringes
- Cleaning must be done prior to definitive disinfection step
- Skin surfaces and hands for procedures

Cleaning Process

- Rinse decontaminated instruments and supplies
- Clean all surfaces using detergent and brushes, pay attention to hinges and other movable parts
- Rinse again
- Allow to dry (unless boiling as next step)

Step 3: Disinfection

The process that eliminates most, but not all, disease-causing microorganisms from objects.

- High Level Disinfection (HLD), eliminates all microorganisms except some bacterial endospores.
- Sterilisation eliminates all organisms (bacteria, viruses, fungi, and parasites) including bacterial endospores).

High Level Disinfection applies to:

Instruments and supplies that will come in contact with mucosal surfaces and broken skin

Examples: vaginal specula, uterine sounds, examination gloves, thermometers

High Level Disinfection process:

- Soaking in 0.5% Chlorine solution for 20 minutes, or
- Soaking in 2% Glutaraldehyde solution for 20 minutes, or
- Boiling for 20 minutes, or
- Steaming items for 20 minutes

Sterilization

The process that eliminates all microorganisms (bacteria, viruses, fungi, and parasites) including bacterial endospores from objects.

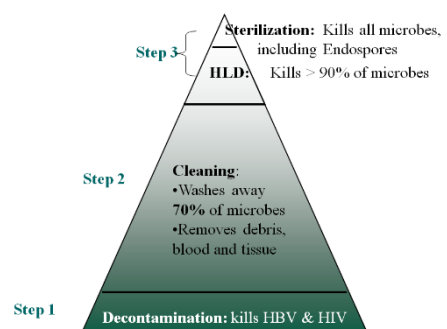
Sterilisation applies to:

Surgical supplies and instruments that will come in contact with: tissues underneath the skin, the blood stream, other sterile body cavities

Examples: scalpels, surgical scissors, retractors, curettes surgical gloves reusable needles and syringes

Methods for Sterilization

- Steam under Pressure (autoclaving)
- Dry heat at high temperatures for several hours
- Soaking in 2% Glutaraldehyde solution for 10 hours

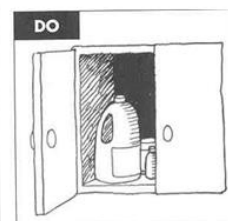
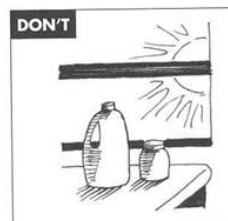
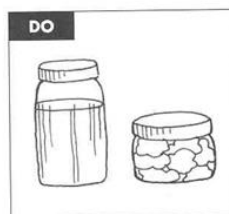
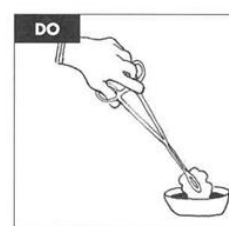
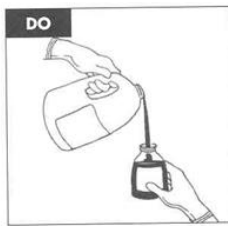
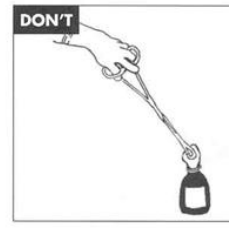


Step	Purpose	Methods used
1. Decontamination	Kills viruses, including HIV, HBV	0.5% chlorine
2. Cleaning	Removes dirt, organic matter and most micro-organisms	Detergent, (not soap!) scrub brush, water
3. High level disinfection or Sterilization	Kills all micro-organisms except endospores ----- Kills all micro-organisms, including endospores	Boiling for 20 minutes 0.5% chlorine for 20 min 2% Cidex for 20 min ----- Autoclaving Dry heat sterilization 2% cidex for 10 hours

Step of Instrument Processing

Step 4: Storage of sterile supplies

- Store items dry: never store instruments in disinfectants or other solutions
- Wrapped items: keep dry and in sealed package
- Unwrapped items - use immediately or:
 - Store sterile items in covered, freshly sterilized container
 - Store HLD items in covered, freshly HLD container
 - Use within 1 week or reprocess



Maintaining quality of disinfectants and stock solutions

- Use low level disinfectants for environmental surfaces, NOT for instruments.
- Pour stock solutions into smaller containers for short term use.
- Store in cool dry place
- Store gauze and pickup forceps dry, not in disinfectant solution

Maintenance of Sterile Field

- Sterile items should be kept separate from non-sterile items on a tray
- “No touch” technique should be used whenever possible to avoid contaminating the working part of the instrument
- Once contaminated, instruments and equipment should be replaced with sterile ones
- The sterile field must be kept dry in order to remain sterile

Use of multidose vials

- Clean the top of the vial with disinfectant prior to inserting the needle for aspiration
- Use a new needle and syringe for each new person
- Never use a contaminated needle or syringe that has been used previously
- Do not leave needles in multiple dose vials

Waste Disposal: Types of Waste

- General waste: Non-hazardous waste. Poses no risk of injury or infection. Ex: paper, boxes, plastic containers
- Medical waste: Blood, blood products, body fluids. Examples: Bandages, surgical sponges containing fresh or dried fluids.
- Pathology waste: human tissue, placenta, products of conception
- Sharps: used or unused (scalpels, needles)
- Hazardous chemical waste: (cleaning products, disinfectants)

Waste Disposal

- Contaminated medical waste is material that is contaminated with infectious agents or body fluids
- Waste should be burned or buried ASAP, or stored safely until these can be done
- Contaminated sharps should be disposed of in puncture proof containers (Sturdy plastic or aluminum are preferable to glass or cardboard)

Proper Handling and Disposal of Medical Waste:

- Minimises spread of infections and reduces the risk of accidental injury
- Reduces odours
- Reduces the number of insects and does not attract animals
- Reduces contamination of soil or ground water with chemicals or micro organisms

Four Steps of Waste Management

- **SORT:** Separate into non-hazardous (general waste) and hazardous (medical and chemical).
- **SAFE HANDLING:** Wear thick gloves when handling medical waste, wash hands after handling.
- **SAFE INTERIM STORAGE:** Area minimally accessible to staff, clients, visitors. Containers should have lids. Store no longer than 1 – 2 days
- **FINAL DISPOSAL**

LIQUID MEDICAL WASTE:

- Wear thick utility gloves when handling
- Avoid splashing, spillage
- Carefully pour down utility sink drain, toilet or latrine. Otherwise, bury in a pit.
- Rinse toilet with water, clean with disinfectant at the end of each day
- Decontaminate the container with 0.5% chlorine solution before washing
- Wash hands after handling liquid waste. Decontaminate and wash gloves.

Disposal of Sharps (Scalpels, needles, glassware):

- Use Sharps containers (puncture proof containers: heavy cardboard boxes, thick plastic bottles)
- Burial is the safest way to dispose of sharps
- Burning does not destroy sharps, however can dispose of needles, syringes & scalpels by $\frac{3}{4}$ filling a metal container, add fuel, burn, melt down plastic to entrap sharps. Bury the lump.
- Wash hands after handling sharps containers,
- Decontaminate and wash gloves.



Suitable containers for contaminated waste



Waste receptacles need frequent cleaning and disinfection



Wear utility gloves
Empty container directly into appropriate storage or disposal container



Do not handle contaminated waste with bare hands!

HAZARDOUS CHEMICAL WASTES

(glutaraldehyde, formaldehyde, disinfectants, cleaning solutions)

- Rinse containers thoroughly with water.
- Glass containers may be washed with detergent, water and reused.
- Plastic containers should not be re-used for holding solutions.
- GENERAL WASTE:
- Dispose with general rubbish

FINAL DISPOSAL

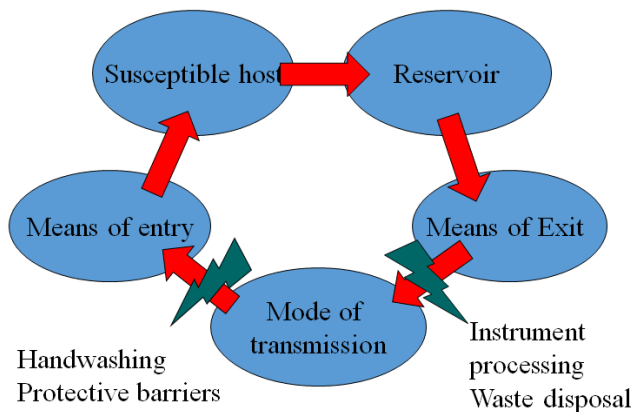
GENERAL WASTE:

- Dispose with general rubbish

SOLID MEDICAL WASTE:

- Best disposed of on premises
- Burning is best (not open burning) Or Burial

Disease transmission cycle



PART XII: MEDICAL WASTE MANAGEMENT

1. Introduction

The waste produced from health care activities carries a higher potential for infection and injury than other type of waste. Safe and reliable method for its handling is essential. Inadequate and inappropriate handling of health care waste may have serious public health consequences and a significant impact on the environment.

2. Definition of Medical waste

Medical waste is any waste generated during the diagnosis, treatment or immunization of human beings or animals or in research activities pertaining thereto or in the production or testing of biological.

3. Biomedical Waste

Biomedical waste is defined as any solid, fluid or liquid waste, including its containers and any intermediate product, which is generated during the diagnosis, treatment and immunization of human beings or animals in research pertaining there to or in the production or testing of biological and the animal waste from slaughter houses or any other establishment.

4. Health Care Waste

Healthcare waste includes a large component of general waste and smaller proportion of hazardous waste. Exposure to hazardous waste can result in disease or injury.

5. Hospital Waste

Hospital waste refers to all waste, biological or non-biological that is discarded and is not intended for further use in a hospital. (All wastes come out from hospital)

Sources of hospital waste are:

- Office
- Cafeteria
- Billing
- Rest room
- Kitchen
- Guest room
- Residential areas
- Stores

6. Type of Health Care wastes

- 1) Clinical Waste
 - Generated during routine patient care and surgery
 - It is potentially dangerous due to presence of high risk of infectious agents to the general population.
- 2) Laboratory waste
 - High risk category
 - Should be labeled as a biohazard
- 3) Non- clinical Waste
 - Includes wrapping paper, office paper, plastic etc.
 - Has not been in contact with patient body fluid.
 - Bulky
- 4) Kitchen Waste
 - includes leftover food and dirty water
 - potential source of rats and vermin such as cockroaches
 - Indirect potential hazard.
- 5) Radioactive Waste
 - Includes low level radioactive waste arising from medical diagnosis, medical research and disease treatment

7. Classification of Health Care Waste

Health care wastes can be classified into two types.

- 1) **Non-hazardous waste** - It is general waste which includes domestic-type waste, kitchen waste, packing materials, non-infectious animal bedding, waste water from laundries and other substances that do not pose a special handling problem or hazard to human health or the environment.
- 2) **Hazardous waste** – It is the waste which has a special handling problem and/or hazard to human health or the environment. The followings are hazardous wastes.

Waste category	Description and example
Infection waste	Waste suspected to contain pathogens e.g. laboratory cultures; waste from isolation wards; tissues(swabs), material, or equipment that have been in contact with infected patients; excreta
Pathological waste	Human tissues or fluid e.g. body parts; blood and other body fluids; fetuses
Sharps	Sharp waste e.g. needles; infusion sets; scalpels; knives; blades; broken glass; lancets; sutures; intravenous catheters; broken ampoules
Pharmaceutical waste	Waste containing pharmaceutical e.g. pharmaceuticals that are expired or no longer needed; items contaminated by or containing pharmaceuticals (bottles, boxes)
Genotoxic waste	Waste containing substances with genotoxic properties e.g. waste containing cytostatic drugs (often used in cancer therapy); genotoxic chemicals
Chemical waste	Waste containing chemical substances e.g. laboratory reagents; film developer; disinfectants that are expired or no longer needed; solvents
Wastes with high content of heavy metals	Batteries; broken thermometers; blood-pressure gauge; etc.
Pressurized containers	Gas cylinders; gas cartridges. Aerosol cans
Radioactive Waste	Waste containing radioactive substances e.g. unused liquids from radiotherapy or laboratory research; contaminated glassware, packages, or absorbent paper; urine and excreta from patients treated or tested with unsealed radionuclides

8. Health Hazards of Health Care Waste

There are two effects of health facility wastes.

- (1) Occupational hazards
(Experienced by health care personnel and patients)
- (2) Impact on human health and environment

High concentration of micro-organisms is present in health facility waste. Commonly found pathogens are coliform organisms, fecal streptococci, *Candida albicans*, *Pseudomonas* etc. Almost all solid waste of health facility could be vehicle for transmission of viruses.

Due to following characteristics, exposure to hazardous health care waste can result in disease or injury.

- (3) It contains infection agents
- (4) It contains toxic or hazardous chemicals or pharmaceutical
- (5) It is genotoxic and
- (6) It is radioactive.

All individuals exposed to bio-medical waste are potentially at risk, including those who generate the waste or those who either handle such waste or are exposed to it as a consequence of careless management.

The main groups at risk are –

- (7) Health care professionals – doctors, health assistants, midwife, etc...
- (8) Patients in health institutions
- (9) Visitors to health institutions
- (10) Workers in support service laundries, waste handling and transporting
- (11) Workers in waste disposal facilities such as land fill or incineration.

1) Hazards from infection waste and sharps

Pathogens from infection wastes can enter into the human body through a punctive, abrasion or cut in the skin, through mucous membranes by inhalation or ingestion.

Example - HIV, Hepatitis B & C

2) Hazards from chemical and pharmaceutical waste

Many chemical and pharmaceutical wastes are toxic, genotoxic, corrosive, flammable, reactive, explosive, or shock-sensitive. Hazards are due to acute or chronic exposure, injury and burns.

E.g. Disinfections – large quantity cause burn.

3) Hazards from genotoxic waste

This hazard is due to toxicity of substance itself and the extent and duration of exposure. Exposure can occur during preparation or treatment with particular drugs or chemical. Hazards can get by inhalation, absorption through skin, ingestion of food accidentally contaminated with cytotoxic drugs, chemicals or waste.

4) Hazards from radioactive waste

It depends in type and duration of exposure. It can range from headache, vomiting and giddiness to serious problems. It can affect in genetic materials.

5) Public Sensitivity

It is due to visual of waste especially anatomical waste.

Disposable items

Disposable have been replacing re-usable gradually as these items are convenient to use at any place and at any time. Disposables provide high degree of safety, comfort and satisfaction. The advantage of disposables is reduction of infections.

9. Waste minimization

- Segregation
- Source reduction
- Substitute hazardous processes/substances
- Reducing losses by good practice
- Preferential purchases
- Resource recovery and recycling
- Treatment
- Proper disposal

10. Institutional Responsibilities

1) Color coding

To treat different waste safely a simple color-coding system should be used to separate waste.

2) Separation of waste

- Waste should be separated at source.
- All high-risk waste should be clearly labeled.
- Color-coded plastics bag and bins should be used. The destination of the bags will depend on the color coding.
- Bins should be emptied at least once daily and the internal lining should be replaced after each emptying.

Color	Waste	Treatment
Yellow	Human anatomical waste, Microbiology waste, soiled cottons/ dressings/linen, bedding etc.	Incineration/ Deep burial
Red	Tubing, catheters, IV sets	Autoclaving, Microwaving, Chemical treatment
Blue/White	Sharps (Needles, Syringes, Scalpels, and Blades etc.)	Autoclaving, Microwaving, Chemical treatment and destruction/Shredding
Black	Discarded drugs, cytotoxic drugs, incineration ash, Chemical waste	Disposal in secured landfill

3) Storage of waste

- The color-coded bags in the wards should be emptied when they are two-thirds full. The bags should be tied securely at the neck and labeled clearly.
- The bags should be carried by the neck to avoid swing away from the body, and taken to a pre-designated area for collection.
- The collection staff should ensure that the waste is segregated properly according to the color-coding and sent to the appropriate destination.
- The bags should be stored in vermin and vandal-proof cages ready for transportation on to their destination.

4) Handling of waste

- The color-coded should be handled only after they have been secured.
- The bags should be carried by the neck.
- Staff should wear protective clothing when transporting the bags.
- If external contamination occurs, the solid bags should be placed inside a clean new bag (double bagging)

11. Disposal Methods

1) Incineration

Incineration is a high temperature dry oxidation process that reduces organic and combustible waste to inorganic incombustible matter and results in a very significant reduction of waste-volume and weight. The process is usually selected to treat wastes that cannot be recycled, reused or disposed of in a land fill site. Incineration requires no pre-treatment, provided that certain waste types are not included in the matter to be incinerated.

Advantages are

- The volume and weight of the organic waste are reduced by more than 95%.
- Humidity up to 35% is no problem for the process.
- Transport bins made of polyethylene or cardboard boxes are incinerated as well.
- The ash or inorganic material is sterile due to the temperature in the burning chamber and can be handled as household waste.
- No ethical problem could arise for the persons handling the medical waste.

Disadvantages

- High investment operation costs.
- Formation of dioxins, furans
- Public opposition
- High maintenance, testing, repair, costs
- Future restrictive emissions laws

Waste that should not be incinerated

- Pressurized gas containers
- Waste with high mercury content, such broken thermometers and used batteries
- Halogenated plastics such as PVC
- Large amount of reactive chemical wastes
- Sealed ampoules or ampoules containing heavy metals

Waste requiring incineration

- Anatomical parts and animal carcasses
- Cytotoxic drugs (residues or outdated)
- Toxic laboratory chemicals other than mercury

Types of Incinerators

Incinerators can range from very basic combustion unit that operates at much lower temperature to extremely sophisticated, high temperature operating plants. Three basic kinds of incineration technology are of interest for treating health-care waste.

1. Double-chamber pyrolytic incinerators which may be especially designed to burn infectious health-care waste.

2. Single-chamber furnaces with static grate which should be used only if pyrolytic incinerators are not affordable.

3. Rotary kilns operating at high temperatures, capable of causing decomposition of genotoxic substance and heat-resistant chemicals.

2) Wet and dry thermal treatment

Wet Thermal Treatment: Wet thermal treatment or steam disinfection is based on exposure of shredded infectious waste to high temperature, high pressure steam, and is similar to the autoclave sterilization process. The process is inappropriate for the treatment of anatomical waste and animal carcasses, and will not efficiently treat chemical and pharmaceutical waste.

Screw-Feed Technology: Screw-feed technology is the basis of a non-burn, dry thermal disinfection process in which waste is shredded and heated in a rotating auger. The waste is reduced by 80 percent in volume and by 20-35 percent in weight. This process is suitable for treating infectious waste and sharps, but it should not be used to process pathological, cytotoxic or radioactive waste.

- **Advantages**
 - Reduction of waste volume
 - Low investment cost
 - Low operation costs
 - Easy biological testing
- **Disadvantages**
 - Waste appearance unchanged
 - Waste weight unchanged
 - Not suitable for all waste types
 - Uncharacterized air emissions

3) Microwave Irradiation

Most microorganisms are destroyed by the action of microwave of a frequency of about 2450 MHz and a wave length of 12.24 nm. The water contained within the waste is rapidly heated by the microwaves and the infectious components are destroyed by heat conduction. The efficiency of the microwave disinfection should be checked routinely.

- **Advantages**
 - Significant volume reduction
 - Waste made unrecognizable
 - No liquid discharges
- **Disadvantages**
 - High investment costs
 - Increased waste weight
 - Not suitable for all waste types
 - Potential contaminated
 - Shredder exposure
 - Uncharacterized air emissions

4) Chemical Disinfection

Chemical are added to waste to kill or inactive the pathogens it contains, this treatment usually results in disinfection rather than sterilization. Chemical disinfection is most suitable for treating liquid waste such as blood, urine, stools or hospital sewage. However, solid wastes including microbiological cultures, sharps etc. may also be disinfected chemically with certain limitations.

Disposal of Liquid Waste

These are waste generated from laboratory and washing, cleaning, housekeeping and disinfecting activities. Disinfection is done by chemical treatment using at least 1% hypochlorine solution or any other equipment chemical reagent. It must be ensured that chemical treatment ensures disinfection. After treatment the waste should be disposed into drains.

- **Advantages**
 - Significant waste volume reduction
 - Waste made unrecognizable
 - Rapid waste processing
 - Waste deodorization
- **Disadvantages**
 - High investment costs
 - Not suitable for all waste types
 - Chemical storage and use
 - Uncharacterized air emissions

5) Land Disposal

If a municipality or medical authority genuinely lacks the means to treat waste before, the use of a landfill has to be regarded as an acceptable disposal route. There are two types of land disposal; open dumps and sanitary landfill. Health-care waste should not be deposited on or around open dumps. The risk of either people or animals coming into contact with infectious pathogens is obvious.

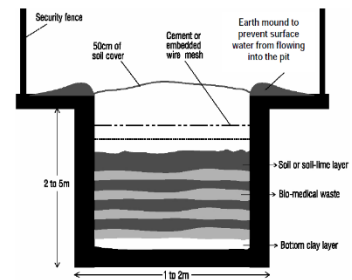


Figure 11 Sanitary landfill

Sanitary landfill is designed to have at least four advantages over open dumps: geological isolation of waste from the environment, appropriate engineering preparation before the site is ready to accept waste, staff present on site to control operations, and organized deposit and daily coverage of waste. This method is not recommended for Hazardous pharmaceuticals.

- **Advantages**
 - Low costs
 - Relatively safe if access to site is restricted and where natural infiltration is limited
- **Disadvantages**
 - Safe only if access to site is limited and certain precautions are taken

6) Waste Immobilization (Encapsulation or Inertization) then burial in a sanitary landfill

This process of “encapsulation” involves immobilization waste in drums. The process of “inertization” involves mixing waste with cement and other substance before disposal to minimize the risk of toxic substance contained in the waste migrating into surface water or groundwater. A typical proportion of the mixture is 65% pharmaceutical waste, 15% lime, 15% cement and 5% water. A homogeneous mass is formed and cubes or pellets are produced on site and then transported to suitable storage sites.

- **Advantages**
 - Simple
 - Low costs
 - Safe
 - May also be applied to pharmaceuticals
- **Disadvantages**
 - Not recommended or applicable to infectious waste including sharps

Land disposal

The two basic forms of land disposal in developing countries are uncontrolled and controlled. As its name implies, uncontrolled land disposal (i.e. open dumping) is not managed and is not acceptable. Open dumps have no controls over access of unauthorized persons or environmental pollutions. PHC waste should never be disposed in open dumps.

A variety of controlled land disposal options are available to PHC waste. The alternatives range from small pits to a modern sanitary landfill (which is a central facility). These alternatives have improved controls and site security. Methods of land disposal are described by Pruess et al., 1999; Diaz et al., 1996; and Savage et al., 1998.

Examples of disposal pit designs for sharps and for organic wastes are presented in Figures 1 and Figures 2.

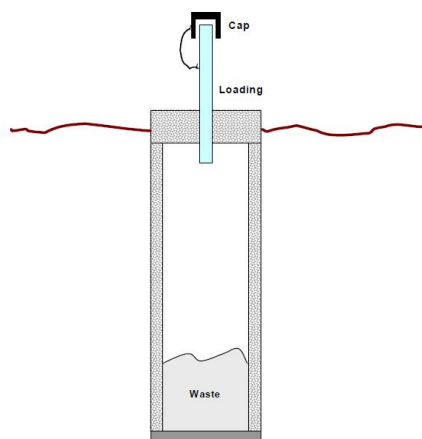


Figure 12 Cross - sectional view of secured disposal pit for sharps

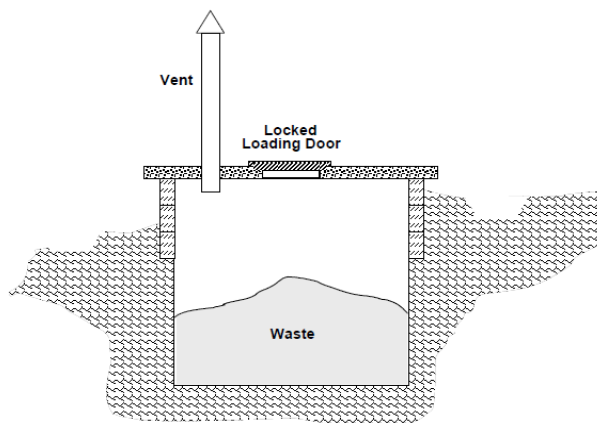


Figure 13 Cross - Sectional view of secured disposal pit for PHC organic waste

ANNEXES:

SUPERVISOR MEDICAL JOB DESCRIPTION

Job Title	Supervisor Medical
Location	Day Bu Noh Clinic, Hpa Pu distract, Karen State
Travel Requirements	Trip to target village three days in a week
Full Time/Part Time	Full time
Salary Range	Banding level 4
Benefits	Stipend, Leave, Holiday and other social benefits
Contract Length	One-year contract
Relationships	
Reports to	VTHC In Charge
Supervises	<i>Direct:</i> VTHC In Charge <i>Indirect:</i> Health Worker Level 1 and Level 2 <i>Others:</i>
Coordinates with	<i>Internal:</i> In Charge, Supervisor, VTHC staff, VTHC committee <i>External:</i> Community leader, Partners, donors, Program Coordinator
Financial/Budget	<i>Direct:</i> In Charge, Program coordinator, finance staff or accountant <i>Indirect:</i> VTHC staff
Responsibilities	
Summary	Supervisor Medical is working under the VTHC In-charge. Oversee all community disease in target population. Supervise the health worker, assist VTHC in-charge as needed and coordinate with co-worker and partner organization. Protect image and be accountable on the grounds of ethics and etiquettes of medical professionals, Be proactive and punctual. Perform any duties assigned directly by the immediate supervisors and indirectly by the management bodies when requested

Job Specific

1. Community Care
 - a. Oversee all community diseases in the village, for the assigned village/health facility by outreach supervisions
 - b. Supervise the infection prevention and control activities in the community
 - c. Be assured of community HIS documentations as part of the HIS team of HQs (e.g., surveillance, campaigns, etc.)
 - d. Prompt action and response on the expected or unexpected disasters depending on the conditions with limited resources
 - e. Lead the community mobilizing activities such as awareness raising, desensitization, participatory action and research (PAR), etc. assuring the sustainability resulted from each community-based project (e.g., WATSAN, Livelihoods, etc.)
 - f. Manage, supervise and train the local staff with updated public health information.
 - g. Provide regular CME related to public health topic.
 - h. Plan and schedule the outreach activities and home-based health education and counseling sessions for each population in the community
 - i. Review on Health Education and counseling sessions conducted (Community Health worker) against guidelines and checklists
2. Clinical Care (Clinic based)
 - a. Solely responsible for providing diagnosis, perform investigation procedures with provided checklists, and supervise or perform treatment and follow-ups resulted from outreach investigations
 - b. Supervise the infection prevention and control activities in the facility.
 - c. Be assured of HIS documentations such as log book and medical record.
 - d. Quality control/assurance on Log book and medical record review, competency check list, share clinical knowledge from CME training, Case Study, Clients satisfaction assessment.
 - e. Participate in Local CME workshop.
3. Management and Supervision
 - a. Be a panel member in local recruitment team upon request
 - b. Initiate and coordinate the recruitment of VHWS/ community health worker
 - c. Responsible for delegated duty by In-Charge
 - d. Involve in pharmacy requesting and ordering
4. Planning, Communication and Coordination
 - a. Work together with the VTHC In-charge in coordination with VHC or other management bodies
 - b. Conduct the trainings related to diseases under surveillance and case definition sessions for community with related issues
 - c. Coordinate the VTHC In-charge in building up a referral network and maintaining communication with all partners
 - d. Be present at all coordination meetings together with clinic manager/ VTHC In-charge
5. Referral
 - a. Responsible for decision maker of the case for referral
 - b. Communicate with referral center as needed
 - c. Organize the referral process and supervise co-worker.
6. Reporting and Documentation

	<ol style="list-style-type: none"> a. Has the responsibility to submit the monthly written clinical reports to VTHC In-charge. b. Taking the responsibility in recording and keeping of patients' log books, records, growth charts, logistic and supplies documents, as needed c. Perform any duties assigned directly by the immediate supervisors and indirectly by the management bodies when requested
General	

Position Requirements	
Education	<ul style="list-style-type: none"> • Provision of documented evidence on completion of advanced trainings level 2 health worker training • (CHFM, HA, Medic, Pharmacy Management Training) is prefer
Work Experience	<ul style="list-style-type: none"> • At least 2 years practicum in community health or clinical care and service with community health worker position
Skills/Knowledge/Aptitude	<ul style="list-style-type: none"> • Skilled to communicate and maintain networks with a diverse range of people. • Computer skills: Microsoft Office • Good skills in consultation, facilitation and training
Language(s)	<ul style="list-style-type: none"> • Fluent in local ethnic language. Burmese and/or English is a plus.
Motivation	<ul style="list-style-type: none"> • At least 5-year commitment to work in organization • Willingness to travel to remote areas
Other	

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